R. Alton Gilbert

R. Alton Gilbert is an assistant vice president at the Federal Reserve Bank of St. Louis. Richard I. Jako provided research assistance.

Supervision of Undercapitalized Banks: Is There a Case for Change?

THE RECENT REPORT on deposit insurance reform by the Department of the Treasury (1991) calls for stronger enforcement of bank capital requirements. Among the recommended changes is "prompt corrective action" by supervisors in dealing with undercapitalized banks.[1] Under the Treasury's plan, banks would be divided into five groups, based on their capital ratios. Those with the highest capital ratios would be subject to the fewest restrictions. As an incentive to maintain relatively high capital ratios, holding companies with banks in this first group would be permitted to engage in nonbanking activities. As banks move downward into groups with lower capital ratios, they would be subject to increasingly stringent sanctions, including restrictions on their dividends and the growth of their assets. Banks in the lowest group, with relatively low but still positive capital ratios, would be closed unless their shareholders promptly injected new capital.[2]

Prompt corrective action by bank regulators is intended to reduce both the number of bank failures and the losses by the deposit insurance fund. The Treasury proposal would reduce the discretion that bank supervisors have in handling troubled banks, making the sanctions against banks with relatively low capital ratios mandatory. The policy is designed to give healthy banks the incentive to keep their capital ratios above the critical levels at which they would be subject to mandatory sanctions. Prompt corrective action also would constrain the actions of undercapitalized banks which might increase exposure of the deposit insurance fund to losses and give the owners of banks with relatively low capital ratios the incentive to inject capital into their banks promptly, if they wish to retain control of their banks.

The effectiveness of the proposed policy in achieving its goals of lower bank failure rates and reduced losses to the deposit insurance

[1]Department of the Treasury (1991), pp. 38-42, and Chapter X. The U.S. General Accounting Office (GAO, 1991) recently recommended a different system of prompt corrective action by bank supervisors. The GAO's proposal requires that the actions of supervisors be tied to specific unsafe banking practices, defined more broadly than capital ratios below some required level. The GAO study criticizes the Treasury proposal for focusing too narrowly on these ratios.

[2]The Treasury proposal is not as specific as some earlier proposals. For instance, it does not specify the criteria for classifying banks into the five groups nor does it provide details about the sanctions to be imposed on banks in each group. For a similar, but more detailed proposal, see Benston and Kaufman (1988).

fund depend on whether the actions to be taken by supervisors under the new policy differ substantially from the actions taken by supervisors in recent years in dealing with undercapitalized banks. The case for the policy of prompt corrective action rests on the assumption that, for a given capital ratio of a bank, sanctions under the proposed policy would be more severe than those imposed by supervisors in recent years. In essence, the Treasury proposal is based on the view that supervisors in the past have permitted banks to remain undercapitalized for overly long periods and that undercapitalized banks have been permitted to engage in activities that made them more likely to fail and more likely to increase the deposit insurance fund's losses.

The purpose of this paper is to investigate whether the behavior of troubled commercial banks in recent years is consistent with these assumptions. The paper looks at banks whose capital ratios fell below the minimum required level for periods longer than one year. It examines whether these undercapitalized banks violated the types of constraints that would be imposed under the Treasury's scheme for prompt corrective action. The paper also considers whether such violations reduced the chances that the banks would, once again, achieve acceptable capital ratios.

ENFORCEMENT OF CAPITAL REQUIREMENTS

In 1985, federal supervisory agencies established minimum capital requirements for all commercial banks. The minimum ratio of primary capital to total assets was set at 5.5 percent. This minimum remained in effect until the end of 1990, when supervisors began phasing in new risk-based capital requirements. The shaded insert lays out the components of primary capital and total assets used to calculate the primary capital ratio and indicates the effects of loan losses on this ratio.

Because the objective of this paper is to examine how rigorously and consistently supervisors have enforced capital requirements in recent years, it is necessary to identify undercapitalized banks in terms of the capital requirements in effect at the time. This paper defines undercapitalized banks as those with primary capital ratios below 5.5 percent. The proposed policy of prompt corrective action might specify higher capital levels as the critical levels for mandatory actions.

This paper examines the behavior of banks whose primary capital ratios remained below 5.5 percent for more than four consecutive quarters between 1985 and 1989. This choice of period reflects the fact that most capital injections occur in the fourth quarter of each year, perhaps because of the practice of "window dressing," where banks devote special attention to the capital ratios that appear on their year-end balance sheets. By focusing on more than four consecutive quarters, we include only those banks whose primary capital ratios remained below 5.5 percent through the fourth quarter of the year in which they first became undercapitalized.

Figure 1 illustrates some of the characteristics of the banks included in this study. Undercapitalized banks fall into three groups. Those in one group quickly raised their capital ratios by increasing their capital and/or reducing their assets. Another group consists of those that were closed quickly by their supervisors. Clearly, no banks in these two groups remained undercapitalized for long. This study focuses on a third group of banks — those that remained undercapitalized for more than four consecutive quarters.

Slow Response to Enforcement Actions

There are several reasons why banks can remain undercapitalized for more than a year. Some banks respond more slowly than others to directives from supervisors to raise their capital ratios, in part because they know that supervisors lack the authority to close them because of their low capital ratios alone. Instead, banks must be judged insolvent (that is, with zero or negative net worth) or nonviable by their chartering agencies to justify closure.

Supervisors do have a variety of enforcement actions that they can take against undercapitalized banks short of closing them down. Among the more severe are the removal of their officers, the imposition of fines and the termination of insurance coverage on the banks' deposits. Supervisors generally try first to induce a bank to comply with banking regulations with less formal or severe enforcement actions, like writ-

An Introduction To Bank Capital Accounting

The text assumes a basic understanding of accounting principles applied to the balance sheets of commercial banks and the items in the capital accounts of banks. This insert provides an introduction to these topics. This introduction abstracts from some of the detail of bank capital accounting.[1]

The accounting principles can be illustrated by referring to the balance sheets of a hypothetical bank in tables A1 and A2, constructed as of December 31, 1986. Table A1 indicates the values of balance sheet items under the assumption that there are no loan losses in 1986. Table A2 is a revised balance sheet for the same period, indicating the effects of $1 in loan losses.

Table A1 provides definitions of items in the balance sheet. One of the key items for our purposes is the allowance for loan and lease losses. The position of the allowance for loan and lease losses on the balance sheet, as a negative item on the assets side, reflects its position in the Report of Condition, which banks file with their supervisors. Increases in the allowance, called provision for loan and lease losses, are expense items in the calculation of profit and loss. Through periodic provisions, the bank increased its allowance for loan and lease losses to $3. Loan losses are charged against that allowance, rather than against current income or equity capital directly.

At some time in the past, the bank purchased another firm for more than its book value, with the difference of $1 recorded as "goodwill." The bank's $4 in equity capital reflects the dollar value of shares sold to stockholders and accumulated retained earnings. The items under "Capital Accounts" other than equity capital, that is, limited life preferred stock and subordinated notes and debentures, have fixed maturity dates. Supervisors consider these items less desirable forms of bank capital than equity because of their fixed maturity dates. Funds raised by selling stock, in contrast, are not scheduled to be returned to shareholders at any particular point in time and, to conserve capital, banks can forego dividend payments to shareholders. Within limits, the limited life preferred stock and subordinated notes and debentures are included in total capital, but not primary capital. In 1985, the federal bank supervisors set the minimum requirement of total capital to total assets at 6 percent.

Based on the values of the items in table A1, the hypothetical bank has a primary capital ratio of 6 percent. Table A2 indicates the impact on the primary capital ratio if the bank had a loan loss of $1 in 1986. To simplify the example, suppose the bank pays no dividends or income taxes. After recognizing the $1 loan loss, the bank wants to keep its allowance for loan and lease losses equal to $3, to cover potential losses on the remaining $50 in gross loans.

The effects on the balance sheet can be illustrated in two steps. First, the provision for loan and lease losses in 1986 is increased by $1, temporarily raising the allowance for loan and lease losses to $4. The increase in the provision for loan and lease losses reduces net income for 1986 by $1, relative to the case illustrated in table A1. The reduction in net income of $1 reduces equity capital from $4 to $3, reflecting lower retained earnings. In the next step, gross loans are reduced by $1, and the allowance for loan and lease losses is reduced by $1, back to $3. Primary capital is reduced to $5 and the primary capital ratio to 5.05 percent. These entries illustrate how the loan losses of a bank can reduce its primary capital below the minimum required level.

The nature of the change in balance sheet items from table A1 to table A2 can also illustrate how losses can make the equity of a bank negative. Suppose the loan loss were $5, instead of $1. A provision for loan and lease losses of $5 would make equity capital equal to negative $1.

[1]For additional detail on the minimum capital requirements adopted by the federal bank supervisors in 1985, see Gilbert, Stone and Trebing (1985).

Table A1

Balance Sheet of a Hypothetical Bank, December 31, 1986
Status of loan losses: none in 1986

ASSETS			LIABILITIES AND CAPITAL	
Cash		$ 5	Liabilities	
Securities		45	Deposits	$92
Loans			Capital Accounts	
Gross loans	$50		Equity capital	4
Reserve for loan and lease losses	3		Limited life preferred stock	1
Net loans		47	Subordinated notes and debentures	1
Goodwill		1		
		$98		$98

Definitions:

Allowance for loan and lease losses: the amount set aside to absorb anticipated losses. Increases in the allowance are an expense item in calculating profit and loss. All charge-offs of loans and leases are charged against this capital account, and recoveries on loans and leases previously charged off are credited to this capital account.

Goodwill: Purchase price of firms that have been acquired in excess of their book value.

Equity capital: Includes the following components:

a. Perpetual preferred stock
b. Common stock: the par or stated value of outstanding common stock
c. Surplus: amount received from the sale of common stock in excess of par or stated value
d. Undivided profits: accumulated value of retained earnings

Limited life preferred stock: Preferred stock with maturity dates.

Subordinated notes and debentures: Debt obligations with fixed maturity dates. They are subordinated to deposits. If a bank fails, the holders of its subordinated notes and debentures receive payment only if depositors are paid in full.

Primary capital: Equity capital, plus allowance for loan and lease losses, minus goodwill = 4 + 3 − 1 = 6.

Total capital: Primary capital plus limited life preferred stock plus subordinated notes and debentures = 6 + 1 + 1 = 8.

Primary capital ratio: Primary capital divided by total assets plus allowance for loan and lease losses minus goodwill = 6 ÷ (98 − 1 + 3) = 0.06

Table A2

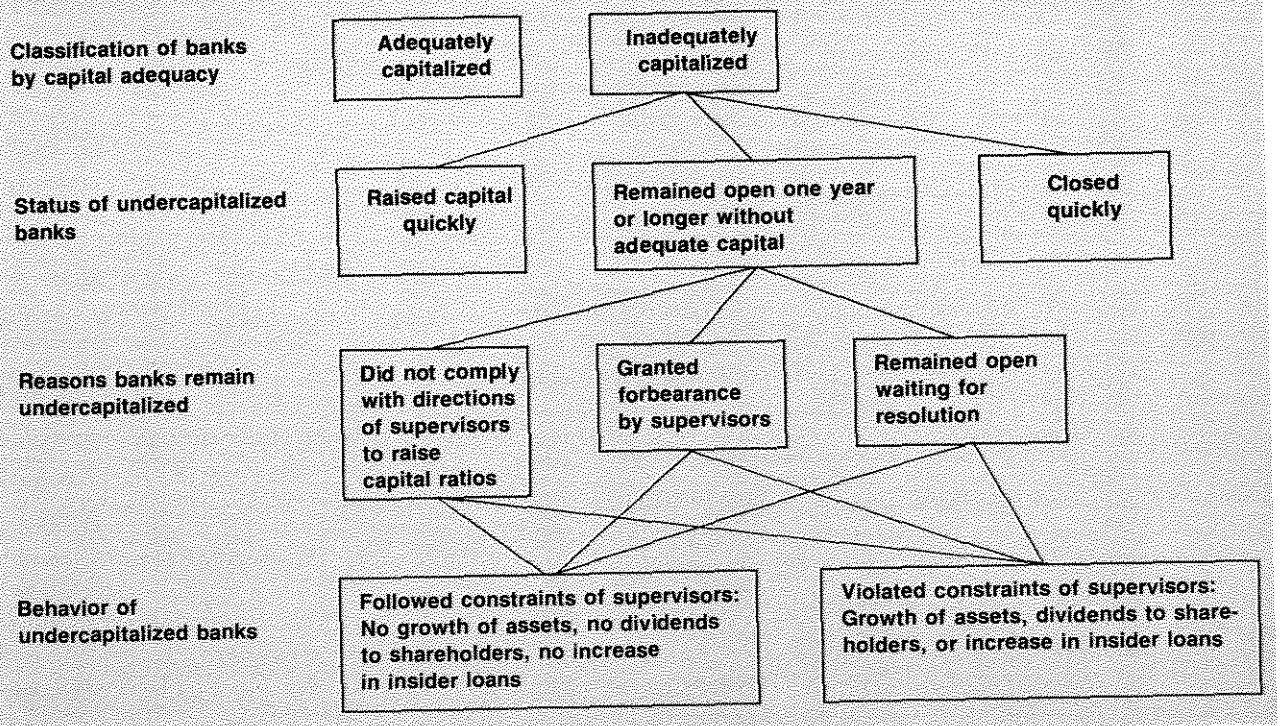
Balance Sheet of a Hypothetical Bank, December 31, 1986
Status of loan losses: loss of $1 in 1986

ASSETS			LIABILITIES AND CAPITAL	
Cash		$ 5	Liabilities	
Securities		45	Deposits	$92
Loans			Capital Accounts	
Gross loans	$49		Equity capital	3
Reserve for loan and lease losses	3		Limited life preferred stock	1
Net loans		46	Subordinated notes and debentures	1
Goodwill		1		
		$97		$97

Primary capital: 3 + 3 − 1 = 5.

Primary capital ratio: 5 ÷ (97 + 3 − 1) = .0505.

Figure 1
Classification of Undercapitalized Banks



ten or verbal agreements with the bank's officers and directors.[3] Thus, considerable time can pass before supervisors feel the need to resort to more severe enforcement actions.

The terms of such actions—whether formal or informal—depend on the conditions and circumstances at each bank. Most enforcement actions require the banks' officers and directors to submit a plan to restore their banks' capital ratios to adequate levels. Other actions include restrictions on growth of total assets, dividends, and loans to officers and directors. Enforcement actions may also address violations of specific regulations.

The various restrictions typically imposed on bank behavior are similar to those that would be imposed under the Treasury proposal. This proposal, therefore, does not involve *new* types of restrictions on undercapitalized banks. Rather, it calls for more rigorous and less discretionary enforcement of these restrictions, facilitated by legislation that would limit the ability of banks to impede prompt action by supervisors through litigation.

Slow to Close Due to Problems with Finding Buyers

Another reason why banks may have primary capital ratios below 5.5 percent for extended periods is if they were kept open while their supervisors searched for other banks to buy them. Such cases were especially common in Texas, where considerable time passed before buyers could be found for some troubled bank holding companies.[4]

[3]Spong (1990), pp. 90-93. For descriptions of specific enforcement actions by the Office of the Comptroller of the Currency in recent years, see articles entitled "Special Supervision and Enforcement Activities" in various issues of the *Quarterly Journal* of the Comptroller of the Currency.

[4]Bovenzi and Muldoon (1990), p. 4.

Capital Forbearance

Still other undercapitalized banks were granted official forbearance by their supervisors. Forbearance occurs when supervisors decide to forego enforcement of some regulations, including capital requirements, under special circumstances. As their losses on agricultural and energy loans rose in the 1980s, many banks turned to Congress for relief from capital requirements. In the Competitive Equality Banking Act (CEBA) of 1987, Congress mandated capital forbearance for agricultural banks. Banks in this program were permitted to defer formal acknowledgement of losses on agricultural loans for several years. The typical rationale for capital forbearance is that the economic forces responsible for the declines in capital ratios, such as lower farm income and reduced prices of farm land, are only temporary.

In response to this evidence of congressional intent, the federal supervisory agencies established capital forbearance programs that set broader terms for participation than those specified in CEBA. Cobos (1989), for example, describes the capital forbearance program of the Federal Deposit Insurance Corporation (FDIC) and gives his perspective, as an FDIC official, on the objectives of the program and the actions that banks granted forbearance are expected to follow. According to Cobos, banks granted forbearance should be considered viable by their supervisors; they also should be expected to:

1. limit the growth of their total assets and relatively high risk investments.
2. restrict dividends to their shareholders.
3. limit the benefits of forbearance to insiders, including insider loans.[5]

There is virtually no way to tell which of these three reasons explains why any particular bank remained undercapitalized for an extended period. In fact, more than one of these reasons may apply. Knowing why these banks remained undercapitalized is unimportant, however, if bank supervisors generally expect them to conform to similar constraints on their behavior. That is, regardless of why they were allowed to remain undercapitalized for so long, these banks should at the very least not have experienced rapid asset growth, paid dividends to shareholders or increased their loans to insiders. This paper investigates whether banks that were undercapitalized for more than a year indeed conformed to these constraints.

THE CHARACTERISTICS OF UNDERCAPITALIZED BANKS

Table 1 indicates that 531 federally insured commercial banks were undercapitalized for more than a year, about 4 percent of the average number of banks operating in the years 1985-89.[6] The vast majority (87 percent) of these inadequately capitalized banks were relatively small, with total assets of less than $100 million. Undercapitalized banks whose assets exceeded $100 million were concentrated in the energy-producing states of Louisiana, Oklahoma and Texas (63 percent). Only one undercapitalized bank (located in California) had total assets greater than $1 billion.

Outside Texas, a majority of the undercapitalized banks (60 percent) were state nonmember banks, supervised by the FDIC. In Texas, in contrast, 73 percent were national banks, supervised by the Office of the Comptroller of the Currency (OCC).[7]

As table 1 shows, a sizable proportion of the 531 banks had primary capital ratios below 5.5 percent for two years or more. In this 20-quarter period (1985-89), 178 banks had primary capital ratios below the minimum level for eight or more consecutive quarters, and six had capital ratios below this level for 16 or more quarters.

Table 1 also shows that banks in 22 states had *negative* equity capital for at least one quarter.[8] Some of these observations may reflect lags in the process by which supervisors get information on banks and arrange for their resolution; they are not necessarily evidence of supervisory policies that permit banks with negative equity to remain in operation. Indeed, for most of these banks, the period of negative equity lasted only one or two quarters. Some banks, however, had

[5]Cobos (1989).

[6]The banks included in this study are domestically owned commercial banks. Savings banks and foreign owned banks are excluded, as are several special purpose banks, including bankers' banks.

[7]The undercapitalized banks included in this study remained under the same federal supervisory authorities in the years 1985-89.

[8]See the shaded insert for a description of equity capital and the type of accounting entries that can make equity capital negative.

Table 1

Characteristics of Banks with Primary Capital Ratios Below 5.5 Percent for Over Four Consecutive Quarters, 1985-89

State[1]	Number of under-capitalized banks	Banks with assets greater than $100 million	Federal supervisory agency			Banks with capital ratios below the required level for eight or more consecutive quarters	Banks with negative equity capital for:		Banks that recover[2]
			OCC	FR	FDIC		At least one quarter	Four or more quarters	
Alaska	2	2	0	0	2	0	2	1	0
Arizona	1	1	0	0	1	0	1	0	0
California	25	5	5	2	18	11	4	1	10
Colorado	15	4	10	4	1	4	7	1	7
Connecticut	1	0	1	0	0	0	1	0	0
Florida	9	1	4	4	1	1	6	1	4
Idaho	1	0	0	0	1	1	0	0	1
Illinois	11	0	5	0	6	4	0	0	9
Indiana	8	0	3	0	5	3	3	0	4
Iowa	12	0	2	1	9	5	2	0	7
Kansas	26	0	4	0	22	10	5	1	7
Kentucky	4	0	0	0	4	0	0	0	4
Louisiana	43	9	8	0	35	13	18	4	2
Massachusetts	3	0	2	0	1	0	0	0	3
Michigan	3	0	0	1	2	1	0	0	2
Minnesota	23	0	5	1	17	12	4	2	9
Missouri	10	0	0	2	8	2	4	1	4
Montana	6	0	3	3	0	2	2	1	2
Nebraska	7	1	2	0	5	4	0	0	4
New Hampshire	1	1	0	0	1	0	0	0	1
New Jersey	3	1	3	0	0	1	0	0	2
New Mexico	5	2	3	0	2	3	2	1	1
New York	3	2	2	1	0	1	0	0	1
North Dakota	1	0	1	0	0	0	0	0	0
Ohio	6	1	3	1	2	2	1	1	3
Oklahoma	54	7	24	4	26	18	29	10	5
Oregon	6	2	0	0	6	3	0	0	4
Pennsylvania	1	0	1	0	0	0	1	0	0
Rhode Island	1	0	0	0	1	0	0	0	1
South Dakota	2	1	2	0	0	0	1	0	1
Tennessee	6	1	1	0	5	2	1	0	4
Texas	223	27	162	7	54	73	117	46	26
Virginia	4	0	2	1	1	2	1	1	1
West Virginia	2	0	0	0	2	1	1	0	0
Wisconsin	1	0	0	0	1	0	0	0	1
Wyoming	2	0	1	0	1	0	0	0	0
Totals	**531**	**68**	**259**	**32**	**240**	**178**	**213**	**72**	**130**

[1]States that are not listed had no banks that were undercapitalized for five or more consecutive quarters during 1985-89.

[2]Banks that recover are identified as those whose primary capital ratios were consistently above 5.5 percent by IV/1989.

Note: Identification of federal supervisory agencies:
OCC = Office of the Comptroller of the Currency
FR = Federal Reserve
FDIC = Federal Deposit Insurance Corporation

negative equity for extended periods of time. Of the 72 banks with negative equity for four or more quarters, 83 percent were in Louisiana, Oklahoma and Texas; two national banks in Texas had negative equity for nine quarters.

The last column of table 1 shows the number of undercapitalized banks that recovered, that is, had primary capital ratios consistently above 5.5 percent, by the fourth quarter of 1989.[9] Only 130 of the 531 banks had recovered by IV/1989, an average recovery rate of only 24 percent. The 46 percent rate of recovery for banks outside of Louisiana, Oklahoma and Texas is much higher than the 10 percent recovery rate for banks undercapitalized for more than a year in these energy-producing states.

As might be expected, the recovery rates were significantly lower for banks with negative equity. Of the 213 banks with negative equity for at least one quarter, the recovery rate was only 6.57 percent, compared with a recovery rate of 36.48 percent among the remaining 318 banks.[10]

The geographic distribution of the 531 undercapitalized banks is quite uneven. For instance, 14 states and the District of Columbia had no banks that were undercapitalized for more than a year. While these 14 are not clustered in any particular part of the country, they have one characteristic in common—relatively liberal branching laws (see table 2). Eleven of the 14 states permit statewide branching and the three

Table 2

Relationship between Number of Undercapitalized Banks and Bank Failures, 1985-89

States grouped by number of banks undercapitalized for more than one year	Number of undercapitalized banks	Number of failed banks
None[1]	0	17
1 or 2[2]	16	45
3-6[3]	49	40
7-26[4]	146	258
More than 26[5]	320	483
Total	**531**	**843**

[1] Alabama, Arkansas, Delaware, Georgia, Hawaii, Maine, Maryland, Mississippi, Nevada, North Carolina, South Carolina, Utah, Vermont and Washington.

[2] Alaska, Arizona, Connecticut, Idaho, New Hampshire, North Dakota, Pennsylvania, Rhode Island, South Dakota, West Virginia, Wisconsin and Wyoming.

[3] Kentucky, Massachusetts, Michigan, Montana, New Jersey, New Mexico, New York, Ohio, Oregon, Tennessee and Virginia.

[4] California, Colorado, Florida, Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri and Nebraska.

[5] Louisiana, Oklahoma and Texas.

[9]One objection to this definition of recovery is that it understates the actual recovery rate, because many banks' capital ratios fell below 5.5 percent only near the end of the 1985-89 period. This possibility is investigated by examining capital ratios in the first three quarters of 1990 for those banks whose primary capital ratios were below 5.5 percent in the fourth quarter of 1989. Reclassifying these banks as recovered if their primary capital ratios rose consistently above 5.5 percent in the first three quarters of 1990 raises the recovery rate from 10 percent to 12.5 percent in the energy-producing states and from 46 percent to 55.5 percent in the other states. The significance of these increases in recovery rates may be offset by the possibility that some other banks, previously classified as recovered, might be reclassified if their capital ratios for 1990 were examined. Since examination of 1990 data did not change the recovery rates substantially, the recovery rates cited in the text are those based on observations through IV/1989.

[10]The difference between these proportions is significant at the 1 percent level. See, for example, Wonnacott and Wonnacott (1990), pp. 273-75, for the equation to test the statistical significance of the difference between two proportions.

others permit limited branching. Only 12 of the other 36 states are classified as statewide branching states.[11]

As table 2 indicates, many of the banks that failed during 1985-89 were *not* undercapitalized for a year or longer. Instead, they were closed within a year after their capital ratios fell below the minimum required level. For instance, 17 banks failed in the 14 states that had no banks undercapitalized for more than a year. In the nation, the number of banks that failed exceeded the number that were undercapitalized for more than a year. These observations suggest that many bank failures in recent years cannot be attributed to actions taken by banks *while undercapitalized for extended periods of time*; many banks failed before their primary capital ratios had fallen below the minimum required level for a year or longer, and many banks that were undercapitalized for extended periods of time did not fail.

ENFORCEMENT OF CONSTRAINTS ON UNDERCAPITALIZED BANKS

The Treasury proposal for prompt corrective action is based on the view that supervisors have delayed too long in imposing constraints on undercapitalized banks. This section investigates whether the banks that were undercapitalized for over more than a year violated the types of constraints that would be imposed under the Treasury proposal.

Two constraints on the behavior of undercapitalized banks mentioned in the Treasury proposal are examined here: constraints on asset growth and dividend payments.[12] A third constraint is also investigated: no increase in loans to bank officers and directors (the bank insiders) while a bank is undercapitalized. An examination of insider loans is included because supervisory authorities often focus on such loans when monitoring the condition of undercapitalized banks. Also, undercapitalized savings and loan associations in the recent past were found to have increased the losses to their deposit insurance funds through loans to insiders, and one study has found that banks with relatively high ratios of insider lending to total assets had lower earnings and higher bank failure rates than other banks.[13]

Table 3 presents selected information about the behavior of undercapitalized banks. The results are divided into regions, except for Louisiana, Oklahoma and Texas, which account for most of the undercapitalized banks. This method of presentation highlights both regional concentrations of undercapitalized banks and differences in bank behavior.

Asset Growth

When the capital ratio of a bank falls to a relatively low level, its shareholders have less to lose and, correspondingly, more to gain by assuming additional risk, in the hope of a sufficiently large turnaround in income to eliminate the capital deficiency. One way that a bank assumes additional risk is to increase its assets. Bank supervisors, of course, prefer to see undercapitalized banks reduce their assets, to raise their capital ratios.

Most of the 531 banks reduced their assets substantially while undercapitalized, consistent with the desires of bank supervisors. A sizable number, however, actually experienced rapid asset growth. At 84 banks (16 percent of the total), asset growth exceeded 10 percent while primary capital ratios were below 5.5 percent; in fact, asset growth exceeded 25 percent at 44 undercapitalized banks.[14] Most banks whose asset growth exceeded 25 percent were Texas national banks supervised by the OCC—26 of the 28 Texas banks in this study with asset growth in excess of 25 percent were national banks.[15]

[11]See Conference of State Bank Supervisors (1986), p. 83. This classification is based on state laws as of January 1986.

[12]Department of the Treasury (1991), p. 39.

[13]Kummer, Arshadi and Lawrence (1989).

[14]Twelve banks with asset growth in excess of 10 percent were involved in mergers during the periods in which their primary capital ratios were below 5.5 percent. Mergers distort the measure of asset growth for the purposes of this paper, because they increase capital and assets. Asset growth of banks engaged in mergers does not necessarily reflect greater leverage. Some mergers, for example, involve subsidiaries of the same holding companies, which do not change the leverage of these holding companies. For each of these 12 banks, asset growth in the period in which their primary capital ratios were below 5.5 percent is measured as the percentage change in the period before or after the merger, whichever is the longer.

[15]See O'Keefe (1990) for a thorough discussion of the performance problems of Texas banks and the problems with bank supervision in Texas in recent years.

Table 3
Behavior of Undercapitalized Banks

Census Region	Number of banks	Banks with growth in assets while capital ratios below the required level: Asset growth in excess of 10 percent	Banks with growth in assets while capital ratios below the required level: Asset growth in excess of 25 percent	Banks that paid dividends while undercapitalized	Banks with their highest levels of insider loans when undercapitalized
New England	6	4	2	2	1
Middle Atlantic	7	4	0	2	1
South Atlantic	15	3	2	3	3
East South Central	10	1	0	3	3
West South Central[1]	320	53	28	46	71
Louisiana	43	0	0	11	10
Oklahoma	54	3	0	7	14
Texas	223	50	28	28	47
East North Central	29	2	0	3	9
West North Central	81	9	6	14	20
Pacific Northwest	17	2	2	2	1
Pacific Southwest	46	6	4	5	17
TOTAL	**531**	**84**	**44**	**79**	**126**

[1]The West South Central Region also includes Arkansas, which had no banks that were undercapitalized for more than four consecutive quarters.

Note: States in census regions:
New England: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont
Middle Atlantic: New Jersey, New York and Pennsylvania
South Atlantic: Delaware, Florida, Georgia, Maryland, North Carolina, South Carolina, Virginia and West Virginia
East South Central: Alabama, Kentucky, Mississippi and Tennessee
East North Central: Illinois, Indiana, Ohio, Michigan and Wisconsin
West North Central: Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota
Pacific Northwest: Alaska, Idaho, Montana, Oregon, Washington and Wyoming
Pacific Southwest: Arizona, California, Colorado, Hawaii, Nevada, New Mexico and Utah.

Dividends

A bank's capital absorbs its losses, thereby protecting uninsured depositors and the deposit insurance fund from the prospect of the bank's failure. Dividends reduce this capital cushion. Thus, a bank must obtain permission from its supervisors to pay dividends that exceed its current earnings, and supervisors can restrict the payment of dividends if a bank's capital ratio is below the required level.[16] About 15 percent of the banks in this study, however, paid dividends on their common stock while their primary capital ratios were below the minimum level.

The recent Treasury study reports similar findings on dividends paid by undercapitalized banks. In 1989, for instance, about 14 percent of the 525 banks with ratios of equity capital to assets below 4.5 percent paid dividends.[17]

Loans to Insiders

Banks are permitted to make loans to their officers and directors (or "insiders").[18] If a bank's shareholders and insiders are not exactly the same group, the shareholders have an incentive to limit insider loans, because of the "moral hazard" of having insiders assess their own

[16]Spong (1990), pp. 64-71.

[17]Department of the Treasury (1991), pp. X-12 through X-14.

[18]See Spong (1990), pp. 60-63, for a description of insider lending regulations.

creditworthiness. If, however, a bank's capital (and, hence, its capital ratio) has fallen to a relatively low level, shareholders may exert less constraint on insider lending simply because they have less to lose. Therefore, when banks become undercapitalized, supervisory actions to limit insider loans take on greater importance in limiting the deposit insurance fund's losses.

Table 3 displays information on the number of undercapitalized banks that reported their *highest* levels of insider lending while undercapitalized. This measure is important because it reflects the maximum exposure by these banks to losses on such loans. A sizable minority of the banks (about 24 percent) reported their highest levels of insider loans when their capital ratios were below the minimum required level.[19]

Differences in Constraints Across Supervisors

Differences in practices among the supervisors of commercial banks may explain some of the variation in behavior among the undercapitalized banks. As noted above, most undercapitalized banks with rapid asset growth were national banks located in Texas. In Texas, however, national banks are a majority of all commercial banks in the state. The concentration of national banks in Texas among the various groups of undercapitalized banks may reflect simply the relatively large share of national banks in Texas.

Table 4 examines the behavior of Texas banks by federal supervisory agency. The first row presents the distribution of these banks by their federal supervisory agency. The following rows show the numbers of undercapitalized banks in various categories by federal supervisory agency. Below the numbers of undercapitalized banks are their percentages of the total number of Texas banks supervised by the same federal agency. Asterisks indicate whether the proportions for national banks are significantly different from those for state-chartered insured banks.

Table 4 shows substantial differences in the representation of national and state-chartered banks among the undercapitalized banks in Texas. Almost 18 percent of the national banks had primary capital ratios below 5.5 percent for more than four consecutive quarters, compared with about 8 percent for state-chartered banks. Over 6 percent of national banks were undercapitalized for eight or more consecutive quarters, compared with 1.8 percent for state-chartered banks. Most of the banks with negative equity are national banks, especially those with negative equity for four or more quarters. National banks also account for most of the undercapitalized banks with rapid asset growth.

Table 5 makes the same comparisons among national and state-chartered insured banks outside of Texas. The only significant differences in proportions for banks outside of Texas involve undercapitalized banks with negative equity. Significantly higher proportions of national banks had negative equity than for state-chartered banks. The other differences in proportions are not significantly different from zero. Thus, the relatively high concentrations of national banks among the various groups of undercapitalized banks were primarily in Texas.

The Behavior of Undercapitalized Banks and their Recovery Rates

Because some undercapitalized banks violated the constraints that would be imposed under the Treasury proposal for prompt corrective action, we can test whether these constraints would have had a positive effect on bank capital recovery rates. If such constraints tend to increase the recovery rate, we should expect lower recovery rates among the banks that violated these constraints.[20]

[19]The 12 banks involved in mergers while undercapitalized may have had their insider loans rise while undercapitalized because they merged with banks that had insider loans before the mergers. To avoid such biases, these 12 banks are classified among those that did not have their highest level of insider loans while undercapitalized.

[20]This paper compares recovery rates across banks rather than failure rates because the distinction between failed and surviving banks is rather arbitrary in some cases. For example, banks with negative equity for several consecutive quarters would be classified as survivors simply because they remained in operation.

Table 4

Distribution of Federally Insured Commercial Banks in Texas by Their Primary Supervisory Agency

	Federal supervisory agency OCC	FR	FDIC	Total number of banks
Average number of banks 1985-89	916	76	705	1,697
Banks with primary capital ratios below 5.5 percent for more than four consecutive quarters	162** (17.69%)	7 (9.21%)	54 (7.66%)	223
Of these undercapitalized banks, number with the following characteristics:				
Primary capital ratios below 5.5 percent for eight or more consecutive quarters	59** (6.44%)	2 (2.63%)	12 (1.70%)	73
Negative equity for at least one quarter	97** (10.59%)	2 (2.63%)	18 (2.55%)	117
Negative equity for four or more consecutive quarters	45** (4.91%)	0 (0.00%)	1 (0.14%)	46
Asset growth in excess of 10 percent while undercapitalized	40** (4.37%)	4 (5.26%)	6 (0.85%)	50
Asset growth in excess of 25 percent while undercapitalized	26** (2.84%)	2 (2.63%)	0 (0.00%)	28
Paid dividends while undercapitalized	13 (1.42%)	0 (0.00%)	15 (2.13%)	28
Highest level of insider loans while undercapitalized	30** (3.28%)	3 (3.95%)	14 (1.99%)	47

Note: Figures in parentheses are percentages of the total number of banks supervised by that agency.

Single asterisk (*) indicates that the proportion of banks supervised by the OCC is significantly different from the proportion of state-chartered insured banks at the 5 percent level.

Double asterisk (**) indicates that the proportion is significantly different at the 1 percent level.

Table 5

Distribution of Federally Insured Commercial Banks Outside Texas by Their Primary Supervisory Agency

	Federal supervisory agency OCC	FR	FDIC	Total number of banks
Average number of banks 1985-89	3,689	1,018	7,261	11,968
Banks with primary capital ratios below 5.5 percent for over four consecutive quarters	97 (2.63%)	25 (2.46%)	186 (2.56%)	308
Of these undercapitalized banks, number with the following characteristics:				
Primary capital ratios below 5.5 percent for 8 or more consecutive quarters	31 (0.84%)	8 (0.79%)	66 (0.91%)	105
Negative equity for at least one quarter	47** (1.27%)	7 (0.69%)	42 (0.58%)	96
Negative equity for 4 or more consecutive quarters	15* (0.41%)	0 (0.00%)	11 (0.15%)	26
Asset growth in excess of 10 percent while undercapitalized	12 (0.33%)	4 (0.39%)	18 (0.25%)	34
Asset growth in excess of 25 percent while undercapitalized	3 (0.08%)	3 (0.29%)	10 (0.14%)	16
Paid dividends while undercapitalized	18 (0.49%)	0 (0.00%)	33 (0.45%)	51
Highest level of insider loans while undercapitalized	28 (0.76%)	6 (0.59%)	45 (0.62%)	79

Note: Figures in parentheses are percentages of the total number of banks supervised by that agency.

Single asterisk (*) indicates that the proportion of banks supervised by the OCC is significantly different from the proportion of state-chartered insured banks at the 5 percent level.

Double asterisk (**) indicates that the proportion is significantly different at the 1 percent level.

Table 6
Recovery Rates of Undercapitalized Banks

	Total number of banks	Percentage that recovered by IV/1989
Banks with asset growth exceeding 10 percent	84	23.81%
Other banks	447	24.61
		(0.16)
Banks with asset growth exceeding 25 percent	44	22.73
Other banks	487	24.64
		(0.29)
Banks that paid dividends while undercapitalized	79	32.91
Other banks	452	23.01
		(1.75)
Banks that increased insider loans while undercapitalized	126	24.60
Other banks	405	24.44
		(0.04)

Note: Absolute values of t-statistics for tests of differences in proportions are in parentheses.

Table 6 compares the recovery rates of banks that violated the constraints with those that did not. The recovery rates of the two groups of banks are not significantly different. The recovery rate for banks that paid dividends is slightly *higher* than that for the other undercapitalized banks, although this difference is not statistically significant at the 5 percent level. Similarly, the other observed differences are not significantly different from zero.

A comparison of recovery rates in table 6 shows that asset growth, dividends and insider loans are not important determinants of recovery. These results imply that imposing constraints on this behavior should not significantly affect the recovery rates of undercapitalized banks.[21]

CONCLUSIONS

Bank supervisory reform is a major component of the overall plan for deposit insurance reform recently proposed by the U.S. Department of the Treasury. Under this proposal, supervision would be based on the capital ratios of banks. If a bank's capital ratio fell below the level acceptable to supervisors, it would be subject to mandatory constraints on its behavior. This proposal for prompt corrective action would limit the discretion of supervisors in dealing with undercapitalized banks.

The proposal's objective is to reduce the number of bank failures and the losses by the deposit insurance fund. Advocates of the proposal assume that imposing sanctions on banks whose capital ratios fall below critical levels would give the managers of healthy banks the incentive to keep their capital ratios above the critical levels at which the sanctions become mandatory. By authorizing the closing of banks with low but positive capital ratios, the proposal gives shareholders of undercapitalized banks incentive to inject capital promptly, if they wish to retain control of their banks. Finally, the sanctions are assumed to constrain the types of behaviors that make undercapitalized banks more likely to fail and to increase the losses of the deposit insurance fund.

[21]Dahl and Spivey (1991) report similar results. They examine the characteristics of undercapitalized banks that help distinguish between those that once again have capital ratios above the required level and those that do not recover. They find that asset growth and dividends do not help distinguish between the banks that recover and those that do not.

In the years 1985-89, many banks remained in operation for extended periods of time with primary capital ratios below the minimum required level. Substantial minorities of these undercapitalized banks violated the constraints that would be imposed under the proposed policy of prompt corrective action. This behavior, presumably, would not be permitted under the proposed policy.

The evidence does not support the hypothesis that once the capital ratio of a bank falls below the minimum required level, enforcing the sanctions specified in the Treasury proposal would increase the chances that the undercapitalized bank will recover. The recovery rates of undercapitalized banks that violated these constraints were no lower than the recovery rates of other undercapitalized banks. Data are not available to test the hypothesis that the failures of the banks violating the constraints specified in the proposal for prompt corrective action imposed relatively large losses on the deposit insurance fund.

Thus, if the proposed policy of prompt corrective action can be expected to reduce the rate of bank failure, this effect must work through the incentives for healthy banks to keep their capital ratios relatively high. To draw conclusions about the strength of this incentive, it is necessary to make assumptions about how bank management would view the penalties to be imposed on banks with and without legislation requiring prompt corrective action by supervisors. Evidence presented in this paper indicates that the sanctions imposed on undercapitalized banks in recent years have been similar to those to be imposed under the proposed policy.

First, several hundred banks were closed in recent years shortly after their capital ratios fell below the minimum required level. Their failure did not result from violation of the types of constraints that would be imposed under the Treasury proposal. Resolutions of these cases appear to have been handled much as they would under the policy of prompt corrective action.

Second, while a large number of banks had capital ratios below the required level for more than a year, most of them did not violate the constraints to be imposed under the policy of prompt corrective action.

Indeed, the fact that a large share of the cases in which undercapitalized banks violated these constraints involves banks in one state under the jurisdiction of one supervisory agency suggests that such cases are the exception, rather than the norm. Thus, there is some evidence that the nature of bank supervision in recent years provided banks with the incentive to keep their capital ratios above the required level without additional legislation.

The evidence on recovery rates of the banks that were undercapitalized for more than a year provides empirical support for one element of the Treasury proposal: the prompt closing of banks with low but positive capital ratios unless their shareholders act promptly to raise their capital ratios. As this paper shows, only 24 percent of the undercapitalized banks recovered in the period examined. Thus, the Treasury proposal would not result in premature closings of large numbers of banks that ultimately would recover if given enough time.

REFERENCES

Benston, George J., and George G. Kaufman. *Risk and Solvency Regulation of Depository Institutions: Past Policies and Current Options,* Monograph Series in Finance and Economics, Graduate School of Business Administration, New York University, Monograph 1988-1.

Bovenzi, John F., and Maureen E. Muldoon. "Failure-Resolution Methods and Policy Considerations," *FDIC Banking Review* (Fall 1990), pp. 1-11.

Cobos, Dean Forrester. "Forbearance: Practices and Proposed Standards," *FDIC Banking Review* (Spring/Summer 1989), pp. 20-28.

Conference of State Bank Supervisors. *A Profile of State-Chartered Banking* (1986).

Dahl, Drew, and Michael F. Spivey. "Moral Hazard, Equity Issuance and Recoveries of Undercapitalized Banks," Proceedings of a Conference on Bank Structure and Competition, Federal Reserve Bank of Chicago, May 1991.

Department of the Treasury. *Modernizing the Financial System* (February 1991).

Gilbert, R. Alton, Courtenay C. Stone, and Michael E. Trebing. "The New Bank Capital Adequacy Standards," this *Review* (May 1985), pp. 12-20.

Kummer, Donald R., Nasser Arshadi, and Edward C. Lawrence. "Incentive Problems in Bank Insider Borrowing," *Journal of Financial Services Research* (October 1989), pp. 17-31.

O'Keefe, John. "The Texas Banking Crisis: Causes and Consequences, 1980-89," *FDIC Banking Review* (Winter 1990), pp. 1-34.

Spong, Kenneth. *Banking Regulation: Its Purposes, Implementation, and Effects,* 3rd ed., (Federal Reserve Bank of Kansas City, 1990).

U.S. General Accounting Office. *Deposit Insurance: A Strategy for Reform* (March 1991).

Wonnacott, Thomas H., and Ronald J. Wonnacott. *Introductory Statistics for Business and Economics* (John Wiley and Sons, 1990).