

The role of bank capital in a post-FDICIA world

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Without a doubt, capital reduces the likelihood of failure. This is true for any business, but has special implications for banks. In a world where there is deposit insurance, the more capital a bank has, the greater the bank's potential to absorb losses and the lower insurance fund losses are in the event of failure. The Treasury described capital in this way:

"The single most powerful tool to make banks safer is capital. It is an 'up-front' cushion to absorb losses ahead of the taxpayer, and banks are less likely to take excessive risk when they have substantial amounts of their own money at stake."¹

Regulators have long realized the critical role bank capital plays in the safety and soundness of the financial system. However, it has been very difficult to reach agreement on the "right" amount of capital and even what to count as capital.

The Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) institutes a system of capital-based regulation that is ultimately intended to reduce Bank Insurance Fund (BIF) losses by reducing the number of bank failures and the cost of resolving the banks that do fail. Although banks with more capital should have fewer losses, there is still a question about whether supervisory intervention based on bank capital can accomplish these objectives. The cost to the banking system, in terms of increased regulation, may exceed the benefits. This article discusses how regulatory views on bank capital have evolved and explores whether supervisory intervention based on bank capital levels can reduce bank failure and curtail risky activities to a

greater extent than traditional supervisory approaches.

Historical perspective on capital regulation

Because of capital's role in protecting the solvency of the BIF, regulators have traditionally emphasized the importance of maintaining an adequate capital cushion. The framework for evaluating capital has evolved over the last forty years. Chart 1 shows that bank capital levels have varied over time. Although capital regulations are not the sole determinant of bank capital, declining bank capital in the 1970s and increasing capital in the 1990s roughly correlate with changes in capital regulation.

Capital-based regulation is not a new idea. In the 1950s, the Federal Reserve used the Analysis of Bank Capital System to formalize the evaluation of the adequacy of bank capital. This system related capital requirements to the level of risk in the bank's portfolio, using asset categories, trust activities, and bank size to measure risk. As the system evolved, it became more complex, and regulators found it was difficult to precisely determine "adequate" capital on the basis of a formula approach. As a result, in the mid-1970s, the Analysis of Bank Capital System was dropped. Regulators continued to look upon capital as a critical factor in evaluating safety and soundness, but they primarily relied on "moral suasion" rather than specific requirements to influence banks' capital levels.

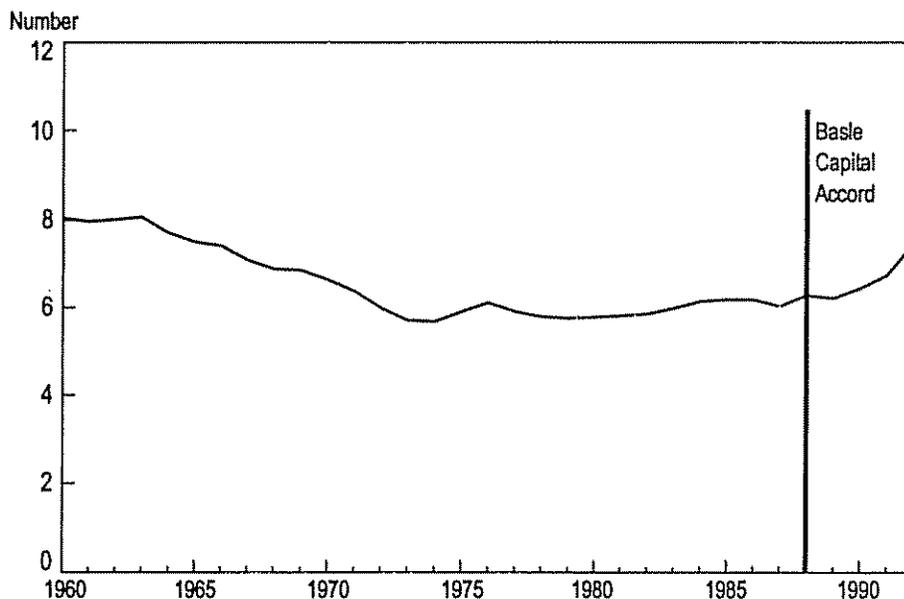
In 1981, regulators instituted guidelines for minimum capital-to-asset ratios, but

¹ U.S. Treasury, *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks*, February 5, 1991, p. 12.

Chart 1

Bank equity capital to assets

Reports of condition



they were not in complete agreement on how to define adequate capital. The Federal Reserve and the Comptroller of the Currency set higher capital standards for banks with less than \$1 billion in assets than did the FDIC, and the 17 largest U.S. banks were considered on an individual basis because of concerns about their declining capital ratios and increased domestic and international risk. Finally, in 1985, all three federal regulators reached agreement on a uniform definition of adequate capital for all banks. However, the guidelines were based on total assets and did not distinguish between risky and less risky assets.

In 1988, capital evaluation changed significantly with the adoption of the Basle Capital Accord. Regulators worldwide recognized the importance of bank capital regulation. Twenty-five foreign coun-

tries adopted the Accord, evening out requirements for banks competing internationally. U.S. banking regulators jointly adopted the standard which, for the first time, made all U.S. banks subject to the same capital requirements based on the relative riskiness of a bank's assets. The Basle Capital Accord relates a bank's capital to the risk profile of its assets and off-balance sheet assets so that higher risk activities require relatively more bank capital.

The passage of the FDICIA placed added emphasis on capital-based regulation. The prompt corrective action section of

FDICIA encourages banks to hold more capital by imposing mandatory supervisory restrictions on bank activities as capital falls below certain "tripwires". The ultimate restriction is early closure if a bank's capital falls below two percent of assets. With the passage of FDICIA, capital levels now drive the regulatory process as never before. Banks now face increasingly severe mandatory restrictions on their activities if capital falls below regulatory tripwires. Banks responded by increasing capital over \$44 billion during 1992, increasing average industry capital ratios from 6.7 percent in 1991 to 7.5 percent in 1992.

The impact of capital-based regulation

Lawmakers adopted capital-based regulation as an answer to the increased

cost of bank resolutions because of both the number of bank failures and the cost of resolving these failures. This supervisory framework presumes that:

- banks will engage in more risky behavior as capital declines, contributing to bank failures, and
- reported capital ratios are leading indicators that accurately reflect a bank's condition. Early supervisory intervention based on these leading indicators can reduce the number of bank failures.

The following sections discuss the assumptions and examine the potential effectiveness of these new regulations.

Capital as an incentive to reduce risky behavior. Business owners with little equity have an incentive to engage in risky investments that offer high returns. As equity declines, owners have less to lose and more to gain on high-risk, high-yield investments. For banks, the existence of deposit insurance limits the downside risk of failure. If investments turn sour, the insurance fund pays off the insured depositors and bank owners lose their equity. If the investment succeeds, bank owners will have generated a high return on their investment. As their "at risk" equity in the bank declines, management's incentive to take risks increases.

But the "real world" is not this simple. If bank supervision is effective, undercapitalized banks will be prevented from engaging in risky activities, even if deposit insurance provides incentives for such behavior. FDICIA addresses the risk-taking incentives inherent in deposit insurance by imposing mandatory supervisory restrictions on bank activities as bank capital declines. But the question is, will mandatory restrictions be superior to the historical discretionary approach in curtailing risky behavior of undercapitalized banks?

The General Accounting Office contended that if capital-based regulation with mandatory restrictions and higher capital standards had been in effect in the 1980s, the banks comprising the Bank of New England Corporation would have had restrictions on asset growth in the mid-1980s and formal enforcement actions by 1986 or 1987.² They concluded that "such interventions could have compelled the banks to correct problems before they adversely affected earnings and capital."

While supervisory intervention based on capital levels may have been warranted in the case of the Bank of New England Corporation, studies that looked at a large number of bank failures over several years did not find evidence that supervisory intervention based on capital levels would have altered the outcome for these institutions. Gilbert focused on two risky behaviors, rapid asset growth and excessive dividend payments, and did not find that these activities occurred to any great extent.³ None of the banks in his 854-bank sample that had equity capital below five percent for five or more consecutive quarters before failure had asset growth or dividend payments in their last year. Additionally, banks in the sample that were responsible for disproportionately high losses to the insurance fund did not have above average asset growth or dividend payouts.

In another study, Gilbert found that supervisors were effective in slowing the asset growth and reducing the dividends of problem banks.⁴ Also, banks that were examined in the 12 months prior to failure had significantly lower insurance fund losses as a percent of total bank assets when compared to banks that were not examined. These results demonstrate that, at least during the second half of the 1980s, bank supervisors were effective in constraining the activities of undercapitalized banks and mandatory supervisory restraints would most prob-

² U.S. General Accounting Office, *Bank Supervision: OCC's Supervision of the Bank of New England Was Not Timely or Forceful*, U.S. General Accounting Office, GAO/GGD-91-128, September 1991, p. 20.

³ R. Alton Gilbert, "Supervision of Undercapitalized Banks: Is There a Case for Change?" *Review* (Federal Reserve Bank of St. Louis) May/June 1991, pp. 16-30.

⁴ R. Alton Gilbert, "Implications of Annual Examinations for the Bank Insurance Fund," *Review* (Federal Reserve Bank of St. Louis) January/February, 1993, pp. 35-52.

ably not have changed the outcome for these institutions.

Capital as a leading indicator. For capital-based regulation to be effective in reducing insurance fund losses, declining capital must serve as an accurate and early indicator of bank problems. Clearly, declining capital is indicative of problems. But, studies of capital levels at failed banks have found that deteriorating conditions were often times not signaled by a decline in capital ratios. In a sample of 206 banks that failed in 1989, only 41 percent had capital ratios below regulatory minimums as of June 30, 1988, and only 48 percent had capital ratios below regulatory minimums by year-end 1988.⁵ These numbers indicate that, at least for a majority of the banks that failed in 1989, reported capital levels gave no warning of impending failure less than four quarters prior to failure. Similar results were reported by Gilbert.⁶ In his study, only 44 percent of his sample of 854 banks that failed between 1985 and 1990 had capital consistently below regulatory minimums for 5 or more quarters prior to failure. These results illustrate the problem with relying on capital ratios to identify troubled banks.

Traditional regulatory supervision, which focuses on asset quality, management, earnings, and liquidity, in addition to capital, has historically had a better record for identifying problem banks than the results reported above. For example, in Gilbert's study 66 percent of the 854 failed banks would have been identified as troubled banks using the composite CAMEL rating, the traditional supervisory tool which reflects all five aspects of a bank's condition, at the examination prior to failure. This compares favorably with the 44 percent that would have been identified by capital ratios alone.

Similar conclusions can be drawn from comparing the number of banks on the

FDIC problem bank list with the number of banks subject to prompt corrective action based on capital ratios alone. According to December 31, 1992, Reports of Condition, less than 1.4 percent of all U.S. banks were undercapitalized. The FDIC classified more than seven percent of U.S. banks as problem banks in need of close supervision as of year-end 1992. If it is argued that mandatory supervisory actions are the major changes contained in prompt corrective action, then only a small percent of U.S. banks will be affected by this provision. Traditional supervisory methods—focusing on capital, asset quality, management, earnings and liquidity—identified more than five times the number of institutions needing close supervision. Therefore, it is not obvious that focusing on capital as an indicator of bank soundness will provide additional insights over what is already covered in the supervisory process.⁷

Part of the drawback to relying on capital measures alone is the difficulty in accurately measuring capital. A bank's reported capital can be significantly overstated if the loan loss reserve has not been adequately funded. For example, Box 1 describes what would have happened to the capital ratios of banks that failed during the 1980s if they had funded reserves to cover average loan losses. Based on unadjusted reported capital, only 24 percent of sample banks would have had capital below the early closure "tripwire" in FDICIA, at the examination prior to failure. However, when capital measures were adjusted for losses inherent in the loan portfolio, 83 percent would have hit the early closure tripwire at the examination prior to failure. This study demonstrates that accurate measurement of capital is critical to the identification of troubled banks under capital-based supervision.

An added complication of accurately measuring capital is the magnifying effect of regional economic downturns

⁵ U.S. Treasury, *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks*, February 5, 1991, p. X-2.

⁶ R. Alton Gilbert, "The Effect of Legislating Prompt Corrective Action on the Bank Insurance Fund," *Review* (Federal Reserve Bank of St. Louis) July/August, 1992, pp. 3-22.

⁷ FDICIA does not ignore the traditional supervisory process. Procedures were included in the law that allow a regulator to downgrade a bank's capital zone for a less than satisfactory supervisory rating on asset quality, management, earnings, or liquidity.

on loan losses. Economic downturns can cause capital shortfalls when declining loan performance and/or declining collateral values force banks to write down the value of their loan portfolio. A review of loans classified substandard at a sample of Kansas and Oklahoma agricultural banks found that loss rates on these loans reached 52 percent of substandard loans in 1983 when real per farm income in Kansas and Oklahoma bottomed out.^{8,9} By 1989, agricultural income had improved, and losses on substandard classifications dropped to 22 percent of substandard loans. Over a ten-year period, charge-offs on substandard loans averaged 36 percent for these sample banks. This actual loss rate was significantly higher than the 20-percent rate traditionally used as a "rule of thumb".

Given the impact of the economy on loan values, reserve allocations should be increased when economic conditions deteriorate. Results of the previous study suggest that this is not done as aggressively as it should be. The banks in the study were healthy and not in danger of failing. However, if their reserves had been adjusted in line with the sample's average historical loss rate, their reported capital ratios would have fallen at least two percentage points during the height of the farm crisis. By the end of the decade when the agricultural economy improved, there was little difference between reported capital and capital measures that were adjusted for the sample's average historical losses.

The accuracy of the loan loss reserve, and consequently capital, could improve with more frequent examinations and more consistent policies on valuation reserves for impaired loans. However, the impact of loan loss provisions on earnings, and in turn capital, will still provide an incentive to minimize the recognition of loan losses. The write-down of a loan portfolio sufficient to affect bank capital will likely occur only

after asset quality problems become severe. For this reason, bank capital is more likely to serve as a lagging indicator of bank performance rather than a leading indicator.

Implications

Theoretically, capital-based regulation should reduce insurance fund losses, reduce bank failures, and improve economic stability. Insurance fund losses would be reduced if capital-based supervision could identify problem banks more quickly and accurately than traditional supervision and if banks were closed before they became insolvent. Bank failures would be reduced if capital-based supervision counteracted the incentive for undercapitalized banks to engage in risky activities provided by deposit insurance.

Overall, capital-based supervision may offer some benefits in encouraging banks to maintain adequate capital and promptly correct problems. However, historical data does not clearly support that supervisory intervention based solely on capital levels will be more effective than traditional supervisory methods in curtailing risky activities at undercapitalized banks. While supervisory intervention based on capital levels may have altered the outcome of a few specific bank failures, aggregate data suggest that there would not have been a significant change in the risky activities of troubled banks under capital-based regulation.

There is also the question that capital ratios alone may not be the best indicator of a bank's condition. Historical studies show that capital tends to be a lagging—not a leading—indicator of bank problems. Further, the complexities of adequately assessing loan losses can significantly impact the accuracy of reported capital, particularly for troubled banks or banks impacted by regional economic downturns. Accordingly,

⁸ Catharine Lemieux and Kenneth Spong, "The Relationship between Loan Classifications and Losses: The Effects of a Changing Economy," *Financial Industry Perspectives* (Bank Supervision and Structure Division, Federal Reserve Bank of Kansas City), December 1992, pp. 1-14.

⁹ These states are particularly relevant because more than 55 percent of the banks that failed during the 1980s were located in Texas, Oklahoma, Kansas, or Louisiana, states affected by regional economic downturns in the agriculture and energy sectors.

Improved methods of analyzing the accuracy of reserves will be important to enhancing the effectiveness of capital-based supervision. With the increased importance of reserves for loan losses, regulators will be ever vigilant in their scrutiny of bank reserve practices. In light of the difficulty in accurately measuring bank capital and reserving for expected losses and the accompanying reporting burden for the banking industry, capital-based regulation may not provide enough benefits to outweigh its costs.

There are no easy answers to bank reform, but recognition of potential problems will help policymakers in their efforts to create a financial system that contains the economic incentives necessary to promote safety and soundness in the banking system. Capital-based regulation is not a replacement or substitute for traditional supervisory analysis that considers the multitude of factors affecting a bank's condition as well as the underlying economic conditions.

Box 1: Supervision Intervention Based On Capital Levels at Midwestern Banks During the 1980s

The FDIC Improvement Act of 1991 for the first time gives regulators the authority to close a bank when its capital falls below two percent of assets. This study looks at what might have happened during the 1980s if capital-based, early closure rules had been in effect. The study also investigates the impact loan loss reserve adequacy could have on these results.

Data and procedures

Information was obtained from 15,774 examinations of 2,402 national, state nonmember, and state member banks between 1980 and 1991. The sample contains 87 percent of the bank failures in the Tenth District. Examinations were eliminated from the sample if they were partial scope examinations or if incomplete information was available on equity capital.

The advantages of capital over previous indicators of bank problems can be evaluated by determining how accurately capital tripwires identify troubled banks prior to failure. This analysis is extended by incorporating the adequacy of the bank's reserve for loan losses in relation to its classified loans in the calculation of the capital ratio. Two different adjustments are used to estimate the amount of future loss represented by the classified loan portfolio. Adjustment I assumes that 20 percent of the dollar volume of loans classified substandard, 50 percent of the dollar value of loans classified doubtful, and the total dollar value of loans classified loss will be charged off. These weights are a standard "rule-of-thumb" used by the Federal Reserve. Adjustment II assumes 36 percent of loans classified substandard, 65 percent of loans classified doubtful, all of loans classified loss, and 0.6 percent of unclassified loans will be charged off. This weighting scheme comes from a study of actual losses from classified loans for 15 banks in Kansas and Oklahoma during the 1980s done by Lemieux and Spong.¹ If a reserve was found to be inadequate, the additional amount needed to adequately fund the reserve was deducted from capital and the leverage ratio recalculated.

It is important to remember that the analysis is based on data from bank examinations. All failed banks eventually had capital ratios below two percent, but this may have occurred after the last examination.

Identification of troubled banks

Chart 1A shows the number of failed banks in the sample that would have been identified as critically undercapitalized in the examination prior to closure. If capital is not adjusted for losses inherent in the loan portfolio, capital-based, early closure rules would have only identified 68 of the 285 failed banks in the sample. Adjustment I,

¹ Catharine Lemieux and Kenneth Spong, "The Relationship between Loan Classifications and Losses: The Effects of a Changing Economy", *Financial Industry Perspectives* (Bank Supervision and Structure Division, Federal Reserve Bank of Kansas City), December 1992, pp. 1-14.

Box 1—continued

which adjusts loan loss reserves and reported capital using the rule-of-thumb estimate of losses inherent in the loan portfolio, would have identified 193 of the 285 failed banks. Adjustment II, which uses actual experience to estimate losses inherent in the loan portfolio, would have identified 237 of 285 failed banks.

If capital is adjusted for loan loss reserve deficiencies, failed banks became critically undercapitalized banks 309 days before closure. This increased to 466 days under Adjustment I and 657 days under Adjustment II. Adjusting reported capital not only identified more problem banks but identified them earlier. These results demonstrate the importance of adequate funding of a loan loss reserve to the effectiveness of supervisory intervention based on capital levels.

Effectiveness of capital-based versus traditional supervision

Traditional supervision relied on a "CAMEL" rating which evaluated asset quality, management, earnings, and liquidity as well as capital. Institutions with the lowest composite CAMEL ratings of "5" were considered to be in poor condition. If a composite CAMEL rating of "5" had been used as a criteria for early closure, 189 of the 285 failed banks would have been identified as troubled, and they would have been identified approximately 441 days prior to closure. These results are very similar to the results obtained using Adjustment I. It appears that supervisory intervention based on capital levels is not significantly better than traditional supervision when it comes to identifying troubled banks.

Capital measures and underfunded reserves

The results reported for unadjusted and adjusted reserves show that underfunded loan loss reserves can impact the reliability of capital as an indicator of bank problems. Unadjusted and adjusted capital ratios were significantly different for banks that survived the 1980s and those that did not. For survivors, the average unadjusted capital ratio was 9.1 percent while the average capital ratio after Adjustment II was 7.5 percent. For banks that failed, the average unadjusted and adjusted (Adjustment II) capital ratios were 8.0 and 3.8 percent, respectively. This indicates that underfunded reserves are a more serious problem among troubled banks than among banks that survived.

Chart 1A

Identification of troubled banks under capital-based supervision
Failed Tenth District banks during the 1980s

