Differentiating Among Critically Undercapitalized Banks and Thrifts*

*by Lynn Shibut, Tim Critchfield, and Sarah Bohn***

The Prompt Corrective Action (PCA) provisions in Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) require that regulators set a threshold for critically undercapitalized institutions, and that regulators promptly close institutions that breach the threshold unless they quickly recapitalize or merge with a healthier institution. Many economists expected these provisions to result in dramatically reduced loss rates, or even zero loss rates, for bank failures.

Bank regulators set the threshold for critically undercapitalized institutions to 2 percent tangible capital. There are a number of reasons why a threshold above 0 percent is appropriate. Since the value of many types of bank assets is opaque and difficult to estimate, and since troubled banks have an incentive to overstate asset values, it is not unusual for the capital levels of troubled banks to be overstated.[1] Thus a threshold slightly above 0 percent may better approximate insolvency on a market-value basis. In addition, a higher threshold may increase the likelihood that a private-sector solution can be found for a failing institution.

Critics have complained that the 2 percent capital threshold set by regulators is too low. For example, Benston and Kaufman (1997, p. 154) argued that it appears to be "much too low" and should be increased, citing as evidence the likelihood that most banks with 2 percent tangible capital already have negative market-value capital, the ability of troubled banks to change risk exposure quickly by using derivatives, and the loss rates of post-FDICIA failures.[2]

* Reprinted with minor edits from *Prompt Corrective Action in Banking: 10 Years Later*, edited by George G. Kaufman, pp. 143–202, © 2002, with permission of Elsevier.

** Lynn Shibut is the Section Chief for Consulting Services in the Division of Insurance and Research, FDIC. Tim Critchfield is a Senior Financial Analyst in the Division of Insurance and Research, FDIC. Sarah Bohn is in graduate school at the University of Maryland. The authors wish to thank Tyler Davis, Heather Gratton, Toni Holloman-Spinner, Terry Kissinger, Jennifer Merrill, and Katherine Samolyk for assistance, and Charles Collier, Robert Ferrer, Grovetta Gardineer, Alton Gilbert, Herb Held, James Marino, Rae-Ann Miller, Larry Mote, Dan Nuxoll, John O'Keefe, Bob Storch, Bob Walsh, and Jim Wigand for valuable comments.

[1] If troubled banks overstate asset values, their capital is artificially increased: this may allow them to avoid or delay adverse consequences. The U. S. General Accounting Office (1992) documented the problem. There is also ample evidence that examinations of troubled banks often result in increased reserve levels (which cause capital to fall). See for example Dahl et al. (1998) and Gunther and Moore (2000).

[2] Throughout the article, loss rates are defined as the FDIC loss divided by total assets of the failed bank.

Setting the thresholds involves making trade-offs. Peek and Rosengren (1996, p. 50) summarized them as follows:

> It is easy to identify a problem bank at the time of its failure. The challenge is to identify a problem bank in time to prevent its failure or at least in time to alter its behavior in order to limit the losses to the deposit insurance fund. Thus an appropriate slogan for early intervention might be "the earlier the better." However, such an approach must be tempered by giving appropriate weight to the costs associated with supervisory intervention in banks that are incorrectly identified as "troubled."

In this article, we studied institutions insured by the Federal Deposit Insurance Corporation (FDIC) that crossed the 2 percent tangible capital threshold or failed between 1994 and 2000. We separated these banks[3] into four groups (low-cost failures, high-cost failures, near-failures that survived, and near-failures that were purchased), and we analyzed differences among the groups. If there are consistent differences that separate failed banks (and particularly high-cost failed banks) from other seriously troubled banks, there may be opportunities to improve the regulatory treatment of troubled banks—either through a change in the PCA threshold for a critically undercapitalized bank or by other means.

This article begins by providing background information, including a discussion of related literature and the tradeoffs associated with setting the threshold for critically undercapitalized banks. The article then discusses the data and methodology and reports the results of various comparisons across groups. The final sections provide concluding remarks and make recommendations.

Background and Literature Review

The PCA provisions in FDICIA were motivated by a desire to reduce supervisory forbearance and failure costs in the banking industry. Many people, including members of Congress, believed that regulators should have supervised banks and thrifts differently in the 1980s. Appendix 1 provides a summary of these provisions.

Carnell (1997b) concisely described the overarching goal of PCA: "to resolve the problems of insured depository institutions at the least-possible long-term loss to the deposit insurance fund (i.e., to avoid or minimize loss to the fund)." The means for achieving the goal center on incentives. For banks, PCA was designed to reduce the "moral hazard" inherent in federal deposit insurance by giving the owners and managers of troubled banks an incentive to avoid taking excessive risks by encouraging them to maintain enough capital and by limiting their discretion if capital is impaired. For regulators, PCA was designed to encourage aggressive action against troubled banks by limiting their ability to practice forbearance and by requiring audits after failures. PCA also clarified the rules of the game for both bankers and regulators.

Technically, the goal of PCA can be accomplished by reducing either the loss rate of failed banks or the failure rate of banks (or both). The limits triggered by the thresholds for an undercapitalized bank focus largely on avoiding failure and thus reducing the failure rate. In contrast, the closure rules triggered by the threshold for a critically undercapitalized bank focus more heavily on reducing the loss rate by ensuring prompt closure of nonviable banks. But the closure rules could also reduce the failure rate by encouraging banks to seek capital earlier than they would if closure occurred when banks become insolvent on a book-value basis.[4]

[3] Throughout this article, we use the term banks to mean all FDIC-insured depository institutions.

[4] Since the 2 percent threshold allows the bank only 90 days to improve its condition before closure, the bank's viability at this point is almost entirely determined by events that occurred before it reached the threshold. If banks have not begun seeking capital well before reaching the 2 percent threshold, the 90-day time limit is tantamount to closure. However, regulators are allowed to delay closure for up to 270 days (inclusive of the first 90-day period) if the primary supervisor determines, and the FDIC concurs, that the delay would better achieve the purpose of FDICIA. The act also prescribes extremely narrow and explicit conditions for a delay beyond 270 days.

We found no empirical studies that concentrated specifically on the 2 percent PCA threshold. However, several studies have focused on early intervention and the likelihood that the new thresholds reduced regulatory forbearance. Peek and Rosengren (1996) studied commercial banks and savings banks in New England from 1988 through 1994, and they found that more than two-thirds of banks downgraded to a CAMEL rating of 4 had a tangible capital ratio indicating they were adequately capitalized under PCA. Peek and Rosengren concluded that "examiners usually identify problems before PCA guidelines are triggered."[5] The U. S. General Accounting Office (GAO, 1996) came to a similar conclusion in its review of activities from 1992 through 1995. Peek and Rosengren (1997) also studied the pattern of formal and informal enforcement actions imposed on commercial banks and savings banks in New England from 1989 through 1992. They found that "formal regulatory actions tend to occur well before most banks become undercapitalized according to PCA capital thresholds, and they include restrictions on bank behavior that tend to be more comprehensive than those in the PCA provisions." Jones and King (1995) studied commercial banks operating from 1984 through 1989, and they concluded that the risk-based capital (RBC) thresholds for undercapitalized banks do little to limit supervisory forbearance.[6] Thus several authors suggest that the PCA capital thresholds do little to force earlier or stronger intervention by regulators at the stage when the probability of failure is most likely to be reduced by such intervention.[7]

Two studies investigated changes to the RBC threshold for undercapitalized institutions. Berger et al. (1991) examined RBC thresholds as part of an analysis of the problems associated with market-value accounting proposals. Noting that the GAO (1990) had found that some banks in poor condition underreport their loan-loss reserves, they explored several alternative RBC standards that incorporated adjustments to the loan-loss reserve based on nonperforming loan data. Using Call Report data for all banks from 1982 through 1989, they developed statistical methods for estimating alternative loan-loss reserves. They used the revised loan-loss reserve figures to adjust the RBC ratios for all banks as of year-end 1989, and compared the adjusted results with the actual RBC ratios. All of their alternative measures resulted in substantial increases in the number of banks that would have been classified as undercapitalized.[8] They concluded that the revision would expand and probably improve the distribution of regulatory scrutiny.

Jones and King (1995) developed an alternative RBC threshold by using data on classified assets and noncurrent loans to enhance the current threshold. To measure the effectiveness of their alternative, they estimated the prediction error of the actual and revised RBC standard, assuming that all troubled institutions should be classified as undercapitalized under the RBC standard.[9] Their revised RBC standard resulted in a significant reduction in the prediction error.

These studies suggest that an investigation of the tradeoffs associated with the 2 percent threshold might bear fruit. If one can identify the tradeoffs related to the threshold, consider the costs inherent in each, and consider the effects of changing the threshold, one can make a well-informed judg-

[5] Peek and Rosengren (1996, p. 49). They tested only for the 4 percent leverage-ratio threshold. There are two other capital thresholds that define undercapitalized banks, and some of the banks with leverage ratios above 4 percent may have breached one of the other thresholds.

[6] Jones and King found that regulators have already downgraded the institutions to a CAMEL 4/5 rating before the institutions meet the RBC threshold for an undercapitalized institution.

[7] PCA may have had significant indirect effects on the behavior of both banks and regulators that were not addressed in these studies. For example, banks might protect themselves from the PCA restrictions by holding more capital than they would have held absent PCA.

[8] Depending on the method used, from 214 to 314 banks would have been adequately capitalized under the RBC standards in place but would have been undercapitalized under the revised RBC standards. Very few banks that were undercapitalized under the RBC standard in place at that time would have become adequately capitalized under the revised method. The authors normalized the RBC levels across banks so that they captured only differences in the distribution of RBC across banks, instead of a combination of an increased standard and changes in the distribution across banks.

[9] They used three definitions for troubled institutions: (1) all institutions with a CAMEL rating of 4 or 5, (2) all institutions with tangible capital below 2 percent, and (3) all institutions that met either of the first two standards. Their estimates of prediction error assumed that all such institutions should be classified as undercapitalized and that all other institutions should not.

ment about the threshold that provides the highest net benefit to society.[10] In this article, we are most interested in the potential costs and benefits associated with a marginal change in the 2 percent threshold for critically undercapitalized institutions.[11] We examine the consequences of thresholds that identify failure candidates either before or after the optimum time.

We first review the costs associated with the delay of closure. Theoretically, this includes the operating costs of running an insolvent institution, plus any additional costs associated with risks taken by the banks in hope of surviving. Gilbert (1992) analyzed commercial banks and concluded that both of these costs may not be very high. Based on a review of commercial bank failures from 1985 through 1990, he found no statistically significant differences in the loss rates of BIF-member banks that were undercapitalized for different lengths of time before closure. Thus, whether PCA encourages regulators to close undercapitalized banks earlier (or later), Gilbert predicts that the loss rates do not change significantly. However, the U.S. savings-and-loan crisis and Japan's banking crisis provide ample evidence that these costs can be extremely high—particularly if regulators do not carefully monitor undercapitalized banks and limit their activities, or if the delay lasts a long time.

One might argue that the costs of delay can be calculated as the cost of failure (for both the FDIC and other creditors of the receivership), since regulators have the authority to close banks when their market value is zero.[12] However, a large part of these costs is probably attributable to the difficulties of measuring the market value of a troubled bank, large shifts in market value, or fraud, rather than the capital threshold used for PCA.[13] It is very difficult to separate losses attributable to measurement errors inherent in certain assets or market shifts from losses attributable to a delay in closure caused by a sub-optimal PCA threshold—especially since regulators have the authority to define capital (effectively changing accounting standards) as well as choose the capital threshold.[14] The cost associated with fraud may be somewhat easier to ascertain, but one should not automatically assume that there were no delays in closure for bank failures that involved fraud.

Next, we look at the consequences of a PCA threshold that flags failure candidates too soon. The associated costs differ depending on the outcome of the PCA action. Possible outcomes include

- The bank is closed.
- The bank survives, either with or without a capital infusion.
- The bank is quickly sold to another institution.

If the bank is closed, the costs are relatively high. The owners suffer a loss of the freedom to control their assets and the stigma of failure. They also bear costs that would have been avoided if the bank had stayed open.[15] In some circumstances,

[10] The literature on public finance supports the assumption that government intervention should strive to maximize the net benefit to society. Therefore, when setting PCA thresholds, banking regulators should not focus solely on minimizing losses to the insurance funds.

[11] More general discussions of the benefits of PCA can be found in Carnell (1997a) and Mishkin (1997).

[12] Regulators have the authority to close banks when they are operating in an unsafe or unsound manner, regardless of capital levels. Presumably any bank with no market value would meet this criterion.

[13] Several authors have noted the difficulties in measuring capital at banks. See, for example, GAO (1992).

[14] Regulators are not allowed to set standards that are less stringent than GAAP. Under Section 37 of the FDI Act, regulators have the authority to set standards that are more stringent than GAAP. Note, however, that taking such an action introduces new costs into the equation (including a new regulatory burden for banks and reduced comparability of bank financial reports and information from other related industries) and thus should not be undertaken lightly–particularly if alternative means of meeting the objective are available.

[15] Benston and Kaufman (1997, p. 146) argue that the closure of an institution that is solvent on a market-value basis "would not be a 'taking' by the government as any remaining capital would be returned to the shareholders." From a legal standpoint, they are probably correct. However, there are real costs, including the overhead expenses associated with administering a receivership, prepaid expenses that are rendered worthless at failure, transaction costs associated with transferring information from the seller to a buyer, and any lost asset value associated with the stigma of failure. Owners could potentially be subject to a Directors and Officers claim as well. In addition, the FDIC must pay the cost of administering insurance and preparing the resolution. From an economic standpoint, these costs should be considered when an increase in the PCA threshold is being contemplated.

the bank's customers or the local community could suffer.[16]

If the bank survives intact, then the costs to the owners may be very low.[17] If the bank reaches the 2 percent threshold and the owners sell the bank to another institution, then the costs are probably somewhere between those of the other outcomes.[18]

The dynamic effects of the PCA threshold should also be considered. For some banks, the PCA threshold for critically undercapitalized institutions increases the bank's resolve to act decisively or accelerates a search for new capital or potential acquirers. If the PCA threshold triggers a more effective response by the bank, and the improvement in the bank's response causes the bank to avoid failure, then the PCA threshold would yield a net benefit to the bank (and, most likely, to the FDIC).[19]

Under the current PCA threshold, we see little evidence that viable banks have been closed; thus to date the costs of unnecessary closure have probably been negligible or zero.[20] It is more difficult to gauge the net cost for the other two outcomes (survival or a quick merger) because they involve predicting the relationship between the threshold level and outcomes of troubled banks, estimating the associated economic effects, and balancing the economic effects against the lost freedom experienced by the bank owners.

The optimum threshold for critically undercapitalized banks may well vary across the business cycle. Because banks that breach the PCA threshold have such a short time to recapitalize, it appears likely that the costs imposed by a threshold that was set too high would be heavier during times when the market for bank franchises is weak, and lower during times when markets are strong.[21] The cost of lengthy delays can be extremely high, although the cost of brief delays (if accompanied by close supervision) may be low. In some unusual circumstances, the cost of identifying banks too early could be substantial. For example, the application of PCA thresholds on money-center banks during the less-developed-country crisis in the early 1980s might have caused serious damage to the economy.[22] Thus the GAO (1996, pgs. 56–57) states that "we see the issue as one of striking a proper balance between the need for sufficient regulatory discretion to respond to circumstances at a particular institution and the need for certainty for the banking industry about what constitutes an unsafe and unsound condition and what supervisory actions would be expected to result from those conditions." Mishkin (1997) discusses the need for discretion in unexpected situations that involve systemic risk.[23] In more normal circumstances, the cost of identifying banks too early would be much lower.

[16] Some of the bank's creditors could suffer losses if contracts are abrogated or if the receivership does not pay creditors as much as they would have received had the bank stayed open. In addition, if the bank was not located in a competitive market, the bank's customers (and others in the community) may not be able to obtain credit or make deposits at equivalent terms. These effects could, in turn, harm the local economy more broadly. This appears to be most likely for small, rural banks in situations where the FDIC closes the bank with no acquirer (a payout) or where the acquirer has less interest in the local community than the failed bank. See Gilbert and Kochin (1989) for an analysis of these effects.

[17] If crossing the 2 percent threshold did not cause any material change in strategy, the cost would probably be negligible. If there was a change in strategy that improved the allocation of capital, there could be an economic benefit; if the opposite occurred, there could be an economic loss. But these results relate to the PCA threshold to the extent that the threshold (rather than the weak condition of the bank) caused the change. In addition, for the most part, the owners would retain the freedom to control their assets.

[18] Like owners that suffer from closure, owners of a bank that was purchased would lose the freedom to control their assets, and they would have to pay the transaction costs associated with transferring information to a buyer. Because of the 90-day deadline, they might also be required to sell the franchise for a below-market price.

[19] Stronger action by the bank could also yield improvements to the bank owner's earnings.

[20] There have been some receiverships with a surplus. However, a surplus can occur for reasons other than an avoidable closure. For example, it can occur because of positive developments in the markets after failure or because the FDIC was able to reverse or mitigate problems experienced at the bank (such as excessive employee compensation or self-dealing on the part of management). Shibut and Critchfield (2000) found no evidence of wrongful closure in their review of low-cost failures.

[21] The tradeoff may also be influenced by the nature of the problems experienced by the banking industry. For example, a PCA threshold that is optimum for banks undergoing a regional recession may not work as well for stresses associated with high interest rates or subprime lending.

[22] Federal Deposit Insurance Corporation (1997, chapter 5). While it appears that the sudden application of PCA rules as the crisis mounted would have had terrible consequences, it is difficult to gauge what the results might have been if PCA triggers and the current accounting rules had been in place long enough to alter the banks' behavior well in advance of the crisis.

[23] He states that the systemic-risk exception in FDICIA allows regulators enough discretion to avoid excessive costs associated with the PCA thresholds. Thus concerns about extreme situations need not be considered unless they do not involve systemic risk. If, however, an unexpected event were to make the PCA threshold inappropriate for a large number of banks at the same time, the systemic-risk exception would become untenable.

Few studies have attempted to quantify the net cost or benefit of changing the capital thresholds for closure. The FDIC (1997, chapter 12) made an admittedly very rough estimate of the benefits if PCA had been in effect from 1980 through 1992 by assuming that a failing bank's operating losses (excluding loan-loss provisions) would have been avoided if closure had occurred according to the PCA rules. The authors of the FDIC study found that 343 failed banks would have been closed earlier, yielding a cost savings of about $825 million. They identified 143 banks that breached the 2 percent PCA threshold but did not fail, but they made no attempt to estimate the associated costs.

Barakova and Carey (2001) shed some light on these tradeoffs in their analysis of the characteristics of banks that recover from distress and the pace of their recovery.[24] Using data from FDIC-insured commercial banks from 1984 through 1999, they identified 345 banks whose equity ratios fell below 2 percent but did not fail. Only 51 percent of those banks recovered in one year, 71 percent recovered in two years, and 91 percent in four years.[25] They found that the typical sources of bank recapitalization differed depending on the recovery time frame. Equity infusions played a substantial role regardless of the recovery time frame, but for banks that recovered more slowly, the role of equity infusions was smaller and the role of income larger. They concluded that regulators should insist on the rapid issuance of sufficiently large amounts of capital if they want a rapid recovery of a seriously undercapitalized bank. This analysis indicates that if an increase in the PCA threshold causes viable banks to be classified as critically undercapitalized, it may well force some banks to merge (or possibly even fail) that would otherwise survive intact.

Barakova and Carey also found that most distressed banks did not issue new equity until *after* loan losses began to decline—both before and after FDICIA, perhaps because the cost of equity is prohibitive when significant loan losses are being reported. This indicates that viable banks that breach the threshold while their loan losses have not clearly declined may be most likely to suffer from the costs associated with a PCA threshold above the optimum level.

By analyzing groups of critically undercapitalized banks since FDICIA, we provide insight into the effects of the 2 percent threshold to date, and we highlight areas where changes in the threshold could provide a net benefit to society. Note, however, that the best regulatory change may be something other than a change in the PCA threshold—particularly if the differences between the outcome groups are unrelated to capital.

Data and Methodology

This section discusses the data and methods used for analysis.

Sample Selection

For 1994 to 2000, we analyzed the bank failures plus any bank that fell below the 2 percent capital requirement established in FDICIA. We began in 1994 because the FDICIA provisions aimed at reducing the FDIC's losses would have been fully implemented by then. For failed institutions, we segregated those with relatively low resolution costs from other failures. For each institution that fell below 2 percent tangible capital without failing, we looked to see what happened to the institution after getting into capital trouble. We found that about one-half of this group was absorbed by other organizations and one-half survived independently.

There were 48 failures from 1994 through 2000. Three notable failures were eliminated from our analysis because of massive fraud or other extraordinary circumstances.[26] We labeled 16 failed

[24] The study concentrated on the pace of recovery and the implications for selecting an appropriate time horizon for Value-at-Risk (VaR) models.
[25] Recovery was defined as reaching a leverage ratio of 5 percent.

[26] The Meriden Trust and Safe Deposit Bank, Meriden, Connecticut, was eliminated because it had no insured deposits and was part of a cross-guaranty case. The First National Bank of Keystone, Keystone, West Virginia, and BestBank in Boulder, Colorado, were eliminated because the fraud involved in these failures was large enough to seriously distort their financial reports.

institutions with a resolution cost of less than 12 percent of assets as low-cost failures. This left 29 institutions with an estimated resolution cost of over 12 percent of assets. We selected 12 percent as the cutoff for low-cost failures because it was well below the average loss rate experienced by the FDIC and also provided a reasonable sample size. We used two different reference periods to analyze the data: for the 32 institutions that became critically undercapitalized before failure, we used the date when they breached the threshold; for the remaining 13 institutions, we used the final Call Report date.[27] For the remainder of the article, the analysis date refers to the date an institution fell below the PCA capital limit (although in fact for a few institutions it refers to the failure date).[28]

We found 44 institutions that fell below 2 percent tangible capital from 1994 to 2000 and that did not fail as of the fourth quarter of 2001. Five institutions in this group were eliminated because of special circumstances.[29] The remaining 39 institutions consisted of 21 institutions that were absorbed into another organization within one year of breaching the threshold and 18 institutions that survived intact for at least one year.[30] We refer to the total group of 39 as near-failures.

[27] We use the term Call Report as shorthand for both the Call Report and the Thrift Financial Report.

[28] All but 7 of the 32 institutions that fell below the threshold failed within one year. Three institutions fell below the PCA threshold more than one year but fewer than three years before failure, and for them we decided to use the PCA date for our analysis. Four institutions fell below the PCA threshold more than three years before failure, but because they fell below the PCA threshold between 1990 and 1993 (before PCA was fully implemented), we decided to use their failure date.

[29] (1) New Meridian Trust was excluded because it was a bridge bank created by the FDIC to operate a failed institution until a buyer could be found. (2) Valley First Community Bank, Scottsdale, Arizona, reported a capital level below 2 percent on its very first regulatory report after establishing its operations. (3) Chicago-Tokyo Bank, Chicago, Illinois, was held by a foreign bank holding company and it reported virtually zero assets on its last report. (4) Suntrust Bankcard, National Association, Orlando, Florida, had one quarter during a downsizing that produced a low capital ratio because the denominator was based on average assets that did not reflect the end-of-period level of assets. (5) Continental Savings Bank, Seattle, Washington, filed a report with a missing value for capital in one quarter.

[30] Of the 21, 14 were absorbed by mergers that eliminated their charters and 7 were purchased by a holding company.

Pre-PCA Condition Data

We collected a large volume of data from Call Reports and Thrift Financial Reports (TFR) on all the institutions selected. We constructed variables from both reports that correspond to consistent measures of financial performance for the two-year period before an institution failed or fell below 2 percent tangible capital; for institutions that survived after reaching the threshold, we also collected data for the year after they fell below 2 percent tangible capital. We developed annualized performance ratios from a rolling set of the previous four quarters. This calculation allowed us to create aggregate data from any ending quarter that would contain annual ratios that covered all four seasons, and this tended to smooth the effects of sudden changes in accounting or performance.

Examination data were collected for each institution from any full examination over the three years immediately before failure or the three years before an institution fell below 2 percent tangible capital. Classified loans were taken from the last full examination before the institution fell below the PCA capital limit. These loans were measured against assets reported in the quarter after the examination was completed or, if a failed institution did not file its last report, the previous quarter.[31]

To measure local bank distress, we created a problem bank index based on CAMELS 4- and 5-rated banks in each metropolitan statistical area (MSA) or county. The index represents the percentage of deposits in each bank's location (or locations) that were held by problem banks.[32]

[31] There were 6 institutions out of the 84 institutions studied that failed to file a financial report in the quarter after their last full examination before falling below the PCA capital limit.

[32] To create a problem bank index we summarized the branch-level deposits of all FDIC-insured institutions that were rated CAMELS 4 or 5 for every market which was located in a metropolitan statistical area (MSA) or county for any county that was not in an MSA. We divided this sum by the total deposits for the MSA or county and then multiplied these percentages by the percent of each institution's deposits located in each market. Then we summed the totals for each market that an institution had a presence in for the mid-year before the institution fell below the PCA capital limit of 2 percent or before failure.

We also used branch-level data to create a geographic distribution index, similar to the Herfindahl-Hirschman Index (HHI). Instead of measuring market concentration, our geographic index measures an institution's exposure to each market in which it operates (from 0, complete diversification, to 1, no diversification).[33]

To test for understated reserve levels, we followed the technique adopted by Jones and King (1995). Jones and King calculated an adjusted reserve level based on a pooled time-series regression, where charge-offs over a two-year period were regressed against the amount of classified loans as of the beginning of the two-year period. The resulting equation is as follows:[34]

$$\text{Two-year Charge-offs} = 0.006 + 0.95*\text{Loss} + 0.57*\text{Doubtful} + 0.15*\text{Substandard} + 0.04*\text{Special Mention}$$

Jones and King estimated the appropriate reserves by applying these parameter estimates to the classified assets held by each bank in the sample (implicitly assuming that reserves should cover about two years of charge-offs).[35] We compared the total from this calculation with the reserves reported in the financial reports filed in the quarter closest to the examination date.

Resolution and Receivership Data

For each failed institution, we collected data about the resolution and the receivership. The resolution data came from FDIC Board cases and associated working papers; the data included the number of bidders, the premiums for the top two bids, and the FDIC's estimated loss at the time of failure. The receivership data came primarily from the FDIC's general ledger, the FDIC Failed Bank Cost Analysis, and pro forma financial statements prepared at bank closing. For the most part, we reported results over the life of the receivership; for receiverships that had not terminated as of year-end 2000, results through year-end 2000 were used.[36] To improve comparability across banks, we reported many items as a percentage of total assets at failure. The FDIC general ledger was the source for asset loss rates, assets sold to acquirers, balance sheet composition (including adjustments to the balance sheet made during the receivership), and receivership income and expense items. The primary source for the FDIC loss rates used in this study was the Failed Bank Cost Analysis, which relies on FDIC general ledger data. Appendix 2 includes a discussion of the method we used to calculate FDIC loss rates.

We also collected receivership data from the pro forma statements prepared during the institution closings. These provided the banks' balance sheets as of the date of failure, adjustments made to the balance sheet to switch from Generally Accepted Accounting Principles (GAAP) accounting to the cash-basis accounting used by the FDIC's receiverships, and the initial balance sheet recorded on the FDIC's general ledger.

The accounting differences between ongoing institutions and receiverships are substantial; thus any comparison of pre-failure and post-failure results must be done carefully. Appendix 2 discusses the major accounting differences, as well as certain adjustments we made to improve the comparability of the data across institutions and across time.

[33] This was calculated as of the middle of each year before the institution falls below the PCA capital limit using data from the annual Summary of Deposits. We calculated the percentage of an institution's deposit in each market that it operates and then squared these percentages. Then we summed the squared percentages for all markets in which an institution operates so that the results ranged from 0 to 1. This measure was based on the work of Katherine Samolyk.

[34] All parameter estimates were statistically significant at the 1 percent level. The R^2 was .33. The sample included commercial banks during 1984–1989.

[35] Under GAAP, the allowance for loan-and-lease losses (ALLL) should cover probable estimated credit losses in the loan portfolio, not a specified number of years of expected charge-offs.

[36] Of the 45 receiverships, 32 (71 percent) had terminated by year-end 2000. As of year-end 2000, the remaining receiverships held $79 million in assets for sale, which was 6.8 percent of the assets held by these receiverships at failure.

Statistical Analysis Methods

With the wealth of data collected for the institutions chosen for this study, we required a statistical test for finding significant differences in measures of central tendency for any two of the institution groupings. We were limited by the relatively low number of institutions in each group, since the study period was only 1994–2000. The groups ranged in size from 16 to 45. In addition, many of the financial ratios in this study tended not to be distributed normally. Although a two-sample t-test is robust against minor normality departures, this study's data contain extreme outliers and are highly skewed. Thus, the reliability of a simple parametric test is suspect.[37] In this study, a nonparametric analysis appears more appropriate since it does not involve assumptions of normality and is not sensitive to the presence of outliers.

We used the Wilcoxon rank sum test to compare the location of two given distributions with the same general shape, which is essentially a difference of medians test. Given a financial or other ratio and two groups of institutions, the Wilcoxon statistic tests the null hypothesis that the two groups have the same probability distribution versus the alternative hypothesis of a location shift (that is, a difference in medians). The test provides a *p*-value for use in determining the conclusion of the test, given a level of significance. We are particularly interested in financial ratios for the compared groups that are statistically different at the 1 percent, 5 percent, and 10 percent significance levels.

In addition to the Wilcoxon test, we applied the Kendall's tau test (test of independence) to the failed bank data. As explained above, failures were split into two groups—high-cost and low-cost—for the purpose of refining the differentiation between undercapitalized institutions. Dividing the failures into the two groups involved an educated but somewhat arbitrary selection of a loss rate threshold. Although the group-by-group analysis is valuable especially for comparing failures with near-failures and low-cost failures with near-failures, we also chose to study the correlation of failure loss rate with other variables for the entire set of institutions in the study. The Kendall's tau test involves computing a correlation statistic based on paired-sign statistics. Like the Wilcoxon test, this non-parametric test is robust to outliers and does not involve assumptions of normality. The test provides a sample correlation coefficient (ranging from –1 to 1) and a *p*-value testing the null hypothesis of independence of two variables versus the alternative hypothesis that the two variables are correlated.

[37] In fact, comparisons of simple averages for analysis were unsatisfactory because of outliers, and comparisons of weighted averages were unsatisfactory because they tended to represent only the largest banks in the sample. Thus, we relied most heavily on medians, distributions, and the Wilcoxon test for analysis.

Results

We begin with a comparison of failures and near-failures. This is followed by comparisons of low-cost and high-cost failures, low-cost failures and near-failures, near-failures by outcome (survived versus purchased), and surviving near-failures over time (PCA date versus one year later). Most of the comparisons were based on the PCA date, defined as the quarter-end date when the institution breached the 2 percent threshold; for failed institutions that never breached the threshold, the final Call Report date was treated as the PCA date.

Failures versus Near-failures

This section discusses failures compared with near-failures that breached the PCA threshold. Table 1 provides the comparison of failures and near-failures as of the quarter that the institutions breached the PCA threshold; table 2 provides the same comparison one year earlier. The 45 failures in our study held $4.1 billion in assets as of the PCA date, and the near-failures held $9.0 billion in assets at the PCA date. The average size for the failures was just $92 million, while the average size for the near-failures was more than twice as large ($230 million). However, the difference in the median size was much smaller and statistically insignificant.

Table 1

Comparison of Failures and Near-Failures

	Failures	Near-Failures	Difference
AS OF THE PCA DATE			
Number of Institutions	45	39	(6)
Median Total Assets ($MM)	64	57	(7)
Median Asset Growth	(12.61)	(8.52)	4.09*
Institutions with CAMELS Rating of 4 or 5 (%)	93.30	84.60	(8.70)
Median Balance Sheet Percentages			
Investment Securities	9.40	11.51	2.11
1-4 Family Mortgages	11.08	16.38	5.30
Commercial Real Estate	16.27	11.03	(5.24)
Multifamily Real Estate	1.40	1.04	(0.36)
Commercial & Industrial Loans	10.91	11.84	0.93
Deposits	97.00	98.00	1.00
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(5.62)	(5.76)	(0.14)
Return on Equity	(124.93)	(124.24)	0.69
Yield on Earning Assets	8.40	8.77	0.37
Cost of Funding Earning Assets	3.85	4.37	0.52
Net Interest Margin	4.62	4.69	0.07
Noninterest Income to Earning Assets	1.58	1.12	(0.46)
Noninterest Expense to Earning Assets	8.19	6.66	(1.53)*
Net Operating Income to Assets	(5.60)	(6.04)	(0.44)
Net Charge-offs to Loans	3.44	3.98	0.54
Loss Provision to Average Assets	3.37	3.58	0.21
Loss Provision to Net Charge-offs	120.18	122.95	2.77
Efficiency Ratio	135.07	123.03	(12.04)
Median Condition Ratios			
Loss Allowance to Loans	4.37	4.50	0.13
Loss Allowance to Noncurrent (Coverage Ratio)	43.00	63.98	20.98**
Noncurrent & OREO to Assets	9.93	6.69	(3.24)*
OREO to Assets	2.47	0.80	(1.67)*
Noncurrent RE Loans to RE Loans	7.97	3.54	(4.43)**
Noncurrent Loans & Leases to Loans & Leases	9.54	7.24	(2.30)
Noncurrent Loan Growth	31.20	29.44	(1.76)
Equity Capital Ratio	1.39	0.97	(0.42)
Core Capital (Leverage) Ratio	1.28	0.87	(0.41)**
Equity Capital plus Reserves to Assets	4.22	4.03	(0.19)
AS OF MID-YEAR BEFORE PCA DATE, OR MOST RECENT EXAM			
Median Economic Condition Measures			
Problem Bank Index	0.08	0.02	(0.06)
Geographic Diversification Index	1.00	1.00	0.00
Median Examiner Classification Ratios			
Reserves to Estimated Reserves	101.34	94.81	(6.52)
Classified Assets to Assets	13.00	10.47	(2.52)

Note: For failed institutions that did not file a Call Report or TFR showing that they were critically undercapitalized, the Final Call Report or TFR was used.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

As of the last examination before failure, 93 percent of the failures and 85 percent of the near-failures had a CAMELS rating of 4 or 5. None of the institutions had a CAMELS rating of 1, but six institutions were rated 2; only one of the six failed.

The median ratios calculated for condition and performance of each group revealed a few differences but for many items there was no meaningful difference. At the quarter when the failures fell below the PCA threshold, their condition was predictably worse than that of the near-failures in most respects except capital. The failures had higher median equity capital ratios than the near-failures (1.39 compared with 0.97 percent), and statistically significant higher core capital (leverage) ratios (1.28 versus 0.87 percent). The 13 failures that had capital above the PCA threshold appear to have lifted the core capital ratio for the entire group of failed institutions, which would explain the significant differences in capital ratios.[38]

For both groups, median capital declined precipitously—over 400 basis points—during the year before they breached the PCA threshold or failed.

[38] Throughout the section on results, we use the terms significant and insignificant to mean statistically significant and statistically insignificant.

Table 2

Comparison of Failures and Near-Failures

	Failures	Near-Failures	Difference
AS OF ONE YEAR BEFORE THE PCA DATE			
Number of Institutions	45	39	(6)
Median Total Assets ($MM)	71	59	(12)
Median Asset Growth	(4.21)	0.34	4.55
Institutions with CAMELS Rating of 4 or 5 (%)	77.80	64.10	(13.70)
Median Balance Sheet Percentages			
Investment Securities	8.93	10.35	1.42
1-4 Family Mortgages	12.20	15.28	3.08
Commercial Real Estate	14.38	10.76	(3.62)
Multifamily Real Estate	1.60	1.00	(0.60)
Commercial & Industrial Loans	10.07	8.85	(1.22)
Deposits	92.00	92.00	0.00
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(1.20)	(0.72)	0.48
Return on Equity	(18.01)	(12.89)	5.12
Yield on Earning Assets	8.76	8.46	(0.30)
Cost of Funding Earning Assets	3.94	4.04	0.10
Net Interest Margin	4.93	4.68	(0.25)*
Noninterest Income to Earning Assets	1.22	1.54	0.32
Noninterest Expense to Earning Assets	6.10	6.21	0.11
Net Operating Income to Assets	(1.27)	(0.75)	0.52
Net Charge-offs to Loans	1.40	1.48	0.08
Loss Provision to Average Assets	1.46	1.21	(0.25)
Loss Provision to Net Charge-offs	123.47	129.06	5.59
Efficiency Ratio	97.83	90.36	(7.47)
Median Condition Ratios			
Loss Allowance to Loans	2.62	2.07	(0.55)
Loss Allowance to Noncurrent (Coverage Ratio)	44.74	43.47	(1.27)
Noncurrent & OREO to Assets	8.56	4.62	(3.94)
OREO to Assets	2.66	1.08	(1.58)
Noncurrent RE Loans to RE Loans	4.10	3.14	(0.96)
Noncurrent Loans & Leases to Loans & Leases	5.62	4.33	(1.29)
Noncurrent Loan Growth	10.64	3.92	(6.72)
Equity Capital Ratio	5.85	6.28	0.43
Core Capital (Leverage) Ratio	5.71	5.94	0.23
Equity Capital plus Reserves to Assets	8.14	7.77	(0.37)

Note: For failed institutions that did not file a Call Report or TFR showing that they were critically undercapitalized, the Call Report or TFR one year before the Final Report was used.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

This provides evidence that a modest increase in the PCA threshold may not result in a substantial change in the timing of the associated regulatory actions for institutions that breach the threshold.

The portfolio composition measures showed median values that were generally worse for the institutions that eventually failed, but the differences in medians were statistically insignificant. On the balance sheet, the failed institutions held a median of just 9 percent of assets in securities while the near-failures held 12 percent. For the failed institutions this ratio held at 9 percent for the year before they fell below the PCA threshold, but the near-failures actually increased their median value for the percentage of assets held in securities from 10 percent in the year before falling below the threshold. The composition of the loan portfolios for the failed institutions appeared slightly more risky than for the near-failures, but again none of these differences were significant. The median value for the percentage of assets held in 1- to 4-family mortgages was 11 percent for the failed institutions while the near-failures held 16 percent of this typically less risky loan. For commercial real estate (excluding multifamily residential property), a generally riskier loan type that caused many failures in the 1980s, the median value was 16 percent for the failures while the near-failures held just 11 percent. For the failed institutions, the 16 percent actually constituted an increase in the median value for commercial real estate (from 14 percent) during the year before falling below the PCA threshold. This increase may relate to the higher median shrinkage in total assets experienced by the failures in the year preceding the PCA date (12.61 percent versus 8.52 percent), as they sold off more marketable assets to improve their capital ratios.

The patterns in troubled loans showed more pronounced dif-

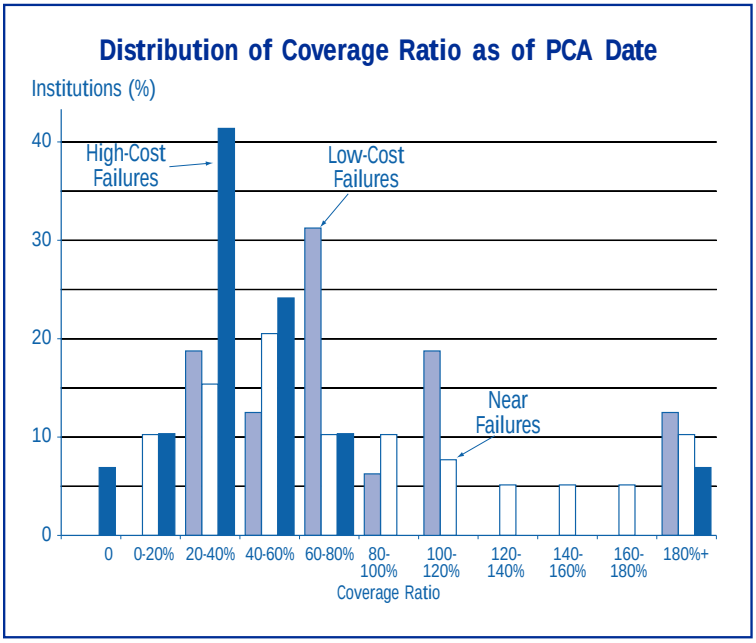
ferences between the two groups. The level of nonperforming assets was significantly higher for failed institutions than for near-failures. For failed institutions, the median value for the noncurrent loans plus other real estate owned (OREO) as a percentage of assets was 9.93 percent at the PCA date. The near-failures reported a median level of 6.69 percent of assets, which was 3.24 percent less than the failed institutions reported. One year earlier the failures registered a median of 8.56 percent while the near-failures were at 4.62 percent, but the difference was not statistically significant. The source of higher nonperforming assets was real estate loans: at the PCA date, the median ratio of noncurrent real estate loans to total real estate loans was 7.97 percent for failures—significantly higher than the 3.54 percent median value for near-failures. Moreover, the failures held significantly more OREO (2.47 percent of assets for the failures versus 0.80 percent for the near-failures, as of the PCA date). For commercial and industrial (C&I) loans the differences were not as dramatic nor were they significant, but the problems in these loans arose earlier for the failures. The failed institutions increased to a median noncurrent rate of 8.73 percent for C&I loans when they hit the PCA threshold from 5.46 percent one year earlier. The near-failures experienced a sharper change, from 1.70 percent one year before hitting the PCA threshold to a median noncurrent rate of 7.23 percent at the PCA date. However, in neither period was the median growth in noncurrent loans significantly different between the groups.

The differences in nonperforming assets across the groups were not accompanied by significant differences in loan provisions and charge-offs. The charge-off rates were very similar for the two groups, with the near-failures recording slightly higher rates than the failures in both years. In the last four quarters the median net charge-off rate on loans more than doubled from one year earlier for both groups. Loan-loss provisions (as a percentage of average assets) showed a similar increase over time. In both periods, the ratio of loss provisions to average loans was also comparable across groups. The ratio of the loss allowance to total loans was higher for the failures one year before the PCA date (2.62 percent versus 2.07 percent). As of the PCA date, the ratio had increased substantially for both groups, but the increase was larger for near-failures. Thus at the PCA date, the ratio of loss allowance to total loans was 4.37 percent for failures and 4.50 percent for near-failures.

At the PCA date, the relationship between reserves and noncurrent loans was significantly weaker for the failed institutions than for the near-failures. The coverage ratio, by measuring the dollar amount of reserves set aside for each dollar of noncurrent loans, gives a relative measure of the protection available for charge-offs before earnings and capital must suffer. The median coverage ratio was slightly higher for the failures than the near-failures one year before the PCA date (44.74 percent versus 43.47 percent). While the near-failures improved their ratios in the following year (to 63.98 percent), the coverage ratio for the median failure deteriorated to 43.00 percent as of the PCA date. Although the near-failures' capital levels were slightly lower, their reserve levels were much better than those of the institutions that eventually failed. Figure 1 shows the distribution of coverage ratios across the groups as of the PCA date: more than one-half of the high-cost failures had coverage ratios below 40 percent, but less than 30 percent of the low-cost failures and near-failures had coverage ratios below 40 percent.

The failures had a higher level of classified assets (13.00 percent versus 10.47 percent), but the difference was smaller than that of the nonperforming assets and was insignificant. Surprisingly, the Jones and King estimate of reserves was lower than actual reserves for the failures but higher than actual reserves for the near-failures; however, the difference between the groups was insignificant. Two phenomena might explain this result. First, when examiners find that a bank is insolvent, they stop identifying losses and instead shift to preparing for failure. Therefore the classified asset figures are probably incomplete (and thus understated) for some, perhaps most, of the fail-

Figure 1



ures. Second, the formula relied on examination data from the last full exam before an institution fell below the PCA threshold. Because we had to reach back in time to get the data for this approach, the formula would not have captured changes to the balance sheet during the intervening period. Since many of the institutions experienced increases in noncurrent loans during the year before they breached the PCA threshold, and the institutions may also have experienced deterioration in classification levels,[39] we think that the classified loan data were too distant from the date these institutions fell below the PCA threshold.

Comparing capital plus reserves as a percentage of assets when these institutions fell below the PCA limit, the differences between the failed institutions and the near-failures virtually disappear. The median ratio of equity capital plus reserves to assets was 4.22 percent for the failed institutions while the near-failures were not significantly different at 4.03 percent. Even one year before, the failures had a median ratio of 8.14 percent while the near-failures had a median ratio of 7.77 percent. Thus, when noncurrent loan levels are not considered, the difference between the groups was insignificant.

The performance up to the quarter when all these institutions fell below the PCA threshold was remarkably similar. The return on assets (ROA) for the four quarters leading up to the violations of the PCA threshold was poor for both groups. The failures had a median ROA of –5.62 percent, which was slightly lower than the median loss for the near-failures, at –5.76 percent. Compared with the near-failures, the failures had somewhat lower earnings the year before (–1.20 percent ROA for failures, –0.72 percent ROA for near-failures). The failures began reporting quarterly losses in their last seven quarters before falling below the PCA threshold. The near-failures showed median quarterly losses for their last five quarters before falling below the PCA threshold.[40]

Some performance ratios showed significant differences. The failed institutions generated a median ratio of noninterest expenses to earning assets of 8.19 percent in their last four quarters, up from 6.10 percent one year earlier. The near-failures generated a noninterest expense ratio of just 6.66 percent, up from 6.21 percent one year earlier. Although the two groups started at nearly the same level of noninterest expenses, the failing institutions generated more losses from noninterest expenses than the near-failures. This may relate to the higher levels of troubled assets, since asset workouts are resource intensive.

[39] Examiners use four classification levels to indicate the level of impairment. The distribution of classifications across these levels has a strong influence on the Jones and King estimate.

[40] Our results are consistent with those of Barakova and Carey (2001). They briefly compared the components of changes in equity of failed banks with the components of banks that recovered. The authors found no marked differences in performance between these two groups, although failed banks raised somewhat less equity and experienced higher cumulative losses than the banks that recovered.

The only statistically significant difference in performance between the groups in the year before these institutions fell below the PCA threshold was net interest margin. The failing institutions reported a net interest margin of 4.93 percent, while the near-failures reported 4.68 percent, a statistically significant 25 basis point difference. The yield on assets was a statistically insignificant 30 basis points higher for the failures and the cost of funding earning assets was a statistically insignificant 10 basis points lower for the failures. Although it is difficult to discern from the financial reports, the net-interest-margin advantage enjoyed by the failures may have been from interest accruals on loans that became past due as these institutions came closer to failing.

In summary, the most important differences between failures and near-failures related to reserve levels and nonperforming assets. On balance sheet composition, capital, and performance, these two groups were not very different.

Low-cost Failures versus High-cost Failures

A comparison of low-cost and high-cost failures gives insight into whether the current capital threshold provides the optimal intervention timing for banks and regulators, and whether additional items might assist regulators to reduce losses to the insurance funds.

Comparisons of Pre-failure Financial Condition and Performance

Table 3 compares low-cost and high-cost failures as of the PCA date, and table 4 makes the same comparison one year earlier. Table 5 provides Kendall's tau correlations for the FDIC loss rate for both periods.[41] There were 16 low-cost failures, holding $1.4 billion in assets as of the PCA date.[42] There were 29 high-cost failures, holding $2.7 billion in assets, as of the PCA date. There were no significant differences related to asset size.

As expected, most of the median condition ratios were worse for the high-cost failures than for the low-cost-failures. The median capital ratio of the low-cost failures was 2.09 percent, down from 6.68 percent one year before the institution fell below the PCA threshold. The median for the high-cost failures was 0.78 percent, down from 5.65 percent one year earlier. The median capital held by low-cost failures was significantly higher than for the high-cost failures when they fell below the PCA threshold, but the difference one year earlier was insignificant. Similarly, the median for the core capital (leverage) ratio was 2.03 percent for the low-cost failures and 0.98 percent for the high-cost failures (significantly different). However, the correlations between the capital measures and the FDIC loss rate were insignificant.

A related difference appeared in the level of deposits funding assets. The low-cost failures ended up with deposits that were 95 percent of assets, while the high-cost failures ended up with deposits as 97 percent of assets. This significant difference may have been caused simply by the lower level of capital backing the assets of the high-cost failures.

The low-cost failures had a higher proportion of low-risk assets than the high-cost failures. The low-cost failures had a median ratio of securities to assets of 10 percent, while the high-cost failures had 9 percent. The low-cost failures had a median 15 percent in securities one year earlier, while the high-cost failures had even less—8 percent. In both periods, there was a statistically significant correlation between securities holdings and FDIC losses (–0.27 as of the PCA date; –0.28 one year earlier). The median for single-family residential mortgages was 16 percent for the low-cost failures, and 9 percent for the high-cost failures. The year before falling below the PCA threshold both groups held just slightly more: 17 percent and 10 percent, respectively. In both periods the difference in medians and the correlations with the FDIC loss rate were significant. The two groups

[41] All correlations and tests of significance are based on the Kendall's tau test and compare the FDIC loss rate with the item being discussed.
[42] Eight low-cost failures and five high-cost failures did not breach the PCA threshold before failure. For these institutions, we treated the final Call Report date as the PCA failure date.

Table 3

Comparison of Low-Cost and High-Cost Failures

	Low-Cost	High-Cost	Difference
AS OF THE PCA DATE			
Number of Institutions	16	29	13
Median Total Assets ($MM)	66	64	(2)
Median Asset Growth	(18.04)	(11.92)	6.12
Institutions with CAMELS Rating of 4 or 5 (%)	93.80	93.10	(0.70)
Median Balance Sheet Percentages			
Investment Securities	10.14	8.74	(1.40)
1-4 Family Mortgages	15.61	9.42	(6.19)*
Commercial Real Estate	15.93	17.57	1.64
Multifamily Real Estate	1.55	1.01	(0.54)
Commercial & Industrial Loans	10.51	11.00	0.49
Deposits	95.13	97.30	2.17*
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(5.23)	(5.92)	(0.69)*
Return on Equity	(106.23)	(134.99)	(28.76)*
Yield on Earning Assets	8.11	8.42	0.31
Cost of Funding Earning Assets	3.69	4.16	0.47*
Net Interest Margin	4.41	4.80	0.39
Noninterest Income to Earning Assets	1.36	2.02	0.66
Noninterest Expense to Earning Assets	7.87	9.23	1.36
Net Operating Income to Assets	(4.85)	(5.73)	(0.88)*
Net Charge-offs to Loans	3.85	3.09	(0.76)
Loss Provision to Average Assets	2.44	3.71	1.27
Loss Provision to Net Charge-offs	129.41	119.57	(9.84)
Efficiency Ratio	117.61	138.75	21.14
Median Condition Ratios			
Loss Allowance to Loans	4.50	4.37	(0.13)
Loss Allowance to Noncurrent (Coverage Ratio)	69.03	37.85	(31.18)***
Noncurrent & OREO to Assets	6.44	12.92	6.48***
OREO to Assets	0.46	4.17	3.71**
Noncurrent RE Loans to RE Loans	4.35	9.20	4.85**
Noncurrent Loans & Leases to Loans & Leases	5.67	11.37	5.70**
Noncurrent Loan Growth	14.21	31.86	17.65
Equity Capital Ratio	2.09	0.78	(1.31)*
Core Capital (Leverage) Ratio	2.03	0.98	(1.05)**
Equity Capital plus Reserves to Assets	5.79	3.95	(1.84)
AS OF MID-YEAR BEFORE PCA DATE, OR MOST RECENT EXAM			
Median Economic Condition Measures			
Problem Bank Index	0.01	0.11	0.10*
Geographic Diversification Index	1.00	1.00	0.00
Median Examiner Classification Ratios			
Reserves to Estimated Reserves	114.13	97.02	(17.12)
Classified Assets to Assets	12.20	13.77	1.57

Note: For failed institutions that did not file a Call Report or TFR showing that they were critically undercapitalized, the Final Call Report or TFR was used.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

showed a slight insignificant difference in commercial real estate (excluding multifamily residential properties) as a percentage of assets. The low-cost failures had a median 16 percent of assets in commercial real estate, while the high-cost failures had 18 percent; both medians had increased by 2 percent from the year before. These mortgages are much more difficult to dispose of when an institution tries to shrink as capital becomes scarce.

Nonperforming assets, including noncurrent loans and OREO, were dramatically different for the two groups of failures. The median percentage of nonperforming assets to total assets for the low-cost failures was 6.44 percent, up from 4.32 percent one year earlier. The median percentage of nonperforming assets for the high-cost failures was 12.92 percent, up from 9.79 percent one year earlier. The high-cost failures started at a higher level and remained about double the median rate of the low-cost failures. There was a 0.33 correlation between nonperforming assets and the FDIC loss rate as of the PCA date, and a 0.26 correlation one year earlier. The differences in medians and the correlations were statistically significant in both periods.

A primary cause of these differences was the level of noncurrent commercial real estate, which was significantly higher

Table 4

Comparison of Low-Cost and High-Cost Failures

	Low-Cost	High-Cost	Difference
AS OF ONE YEAR BEFORE THE PCA DATE			
Number of Institutions	16	29	13
Median Total Assets ($MM)	72	71	(1)
Median Asset Growth	5.06	(5.94)	(11.00)
Institutions with CAMELS Rating of 4 or 5 (%)	75.00	79.30	4.30
Median Balance Sheet Percentages			
Investment Securities	15.00	8.39	(6.61)*
1-4 Family Mortgages	16.95	10.20	(6.75)*
Commercial Real Estate	14.35	15.85	1.50
Multifamily Real Estate	1.42	1.66	0.24
Commercial & Industrial Loans	7.43	12.93	5.50
Deposits	90.66	92.23	1.57
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(0.09)	(1.56)	(1.47)
Return on Equity	(4.43)	(23.27)	(18.84)
Yield on Earning Assets	8.66	8.86	0.20*
Cost of Funding Earning Assets	3.90	4.05	0.15
Net Interest Margin	4.70	5.32	0.62**
Noninterest Income to Earning Assets	1.16	1.42	0.26
Noninterest Expense to Earning Assets	5.57	6.96	1.39
Net Operating Income to Assets	(0.81)	(1.73)	(0.92)
Net Charge-offs to Loans	0.56	1.81	1.25
Loss Provision to Average Assets	0.99	1.73	0.74
Loss Provision to Net Charge-offs	149.17	103.65	(45.52)
Efficiency Ratio	97.91	97.91	0.00
Median Condition Ratios			
Loss Allowance to Loans	2.00	2.91	0.91
Loss Allowance to Noncurrent (Coverage Ratio)	58.67	37.83	(20.84)
Noncurrent & OREO to Assets	4.32	9.79	5.47***
OREO to Assets	0.97	3.15	2.18**
Noncurrent RE Loans to RE Loans	2.22	6.53	4.31*
Noncurrent Loans & Leases to Loans & Leases	3.63	6.93	3.30
Noncurrent Loan Growth	43.67	1.90	(41.77)*
Equity Capital Ratio	6.68	5.65	(1.03)
Core Capital (Leverage) Ratio	6.56	5.59	(0.97)
Equity Capital plus Reserves to Assets	8.19	8.14	(0.05)

Note: For failed institutions that did not file a Call Report or TFR showing that they were critically undercapitalized, the Call Report or TFR one year before the Final Report was used.

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

for the high-cost failures one year before they fell below the PCA limit. The median low-cost failure had no noncurrent commercial real estate, while the high-cost failures had a median noncurrent rate for commercial real estate of 3.93 percent. Commercial real estate probably influenced the OREO levels, which were significantly higher for the high-cost failures in both periods. As of the PCA date, the high-cost failures had a median 4.17 percent of assets in OREO, whereas the low-cost failures had only 0.46 percent. Total noncurrent loans exhibited a pattern similar to all nonperforming assets, except that in the year before the institutions fell below the PCA threshold the difference was insignificant. At the PCA date, the median level of noncurrent loans as a percentage of total loans was 5.67 percent for the low-cost failures, and 11.37 percent for the high-cost failures. The median net charge-off rate on loans during the last four quarters of operation was 3.85 percent for the low-cost failures, and 3.09 percent for the high-cost failures—not a significant different. Despite similar net charge-offs, the high-cost failures left behind higher levels of noncurrent loans.

At failure, reserves and capital serve to cover losses in the loan portfolio. In this respect, the groups looked similar. The median ratio of equity capital plus reserves to assets was 5.79 percent for the low-cost failures, and a slightly lower 3.95 percent for the high-cost failures (an insignificant difference). One year earlier these ratios were within 5 basis points, at 8.19 percent and 8.14 percent, respectively. However, the high-cost failures needed more reserves to cover their higher level of noncurrent loans. The coverage ratio, reserves to noncurrent loans, was much lower for the high-cost failures. The median coverage ratio for the low-cost failures was 69.03 percent,

Table 5

Kendall Tau Correlation Coefficients

	One Year Before	At PCA Date
PRE-FAILURE ITEMS VERSUS TOTAL LOSS RATE		
Number of Institutions	45	45
Median Total Assets ($MM)	(0.07)	(0.06)
Median Asset Growth	(0.08)	0.01
Median Balance Sheet Percentages		
Investment Securities	(0.28)***	(0.27)***
1-4 Family Mortgages	(0.24)**	(0.26)**
Commercial Real Estate	(0.07)	(0.09)
Multifamily Real Estate	0.00	(0.07)
Commercial & Industrial Loans	(0.02)	(0.02)
Deposits	0.12	0.22**
Median Rolling Four-Quarter Performance Ratios		
Return on Assets	(0.10)	(0.26)**
Return on Equity	(0.11)	(0.18)*
Yield on Earning Assets	0.24**	0.18*
Cost of Funding Earning Assets	0.06	0.20*
Net Interest Margin	0.23**	0.07
Noninterest Income to Earning Assets	0.09	0.15
Noninterest Expense to Earning Assets	0.14	0.21**
Net Operating Income to Assets	(0.04)	(0.27)***
Net Charge-offs to Loans	0.23**	0.09
Loss Provision to Average Assets	0.14	0.15
Loss Provision to Net Charge-offs	(0.07)	0.07
Efficiency Ratio	0.00	0.12
Median Condition Ratios		
Loss Allowance to Loans	0.10	0.01
Loss Allowance to Noncurrent (Coverage Ratio)	(0.19)*	(0.12)
Noncurrent & OREO to Assets	0.26**	0.33***
OREO to Assets	0.26**	0.28***
Noncurrent RE Loans to RE Loans	0.09	0.20*
Noncurrent Loans & Leases to Loans & Leases	0.07	0.16
Noncurrent Loan Growth	(0.21)*	0.08
Equity Capital Ratio	0.01	(0.15)
Core Capital (Leverage) Ratio	(0.01)	(0.15)
Equity Capital plus Reserves to Assets	(0.01)	(0.14)

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

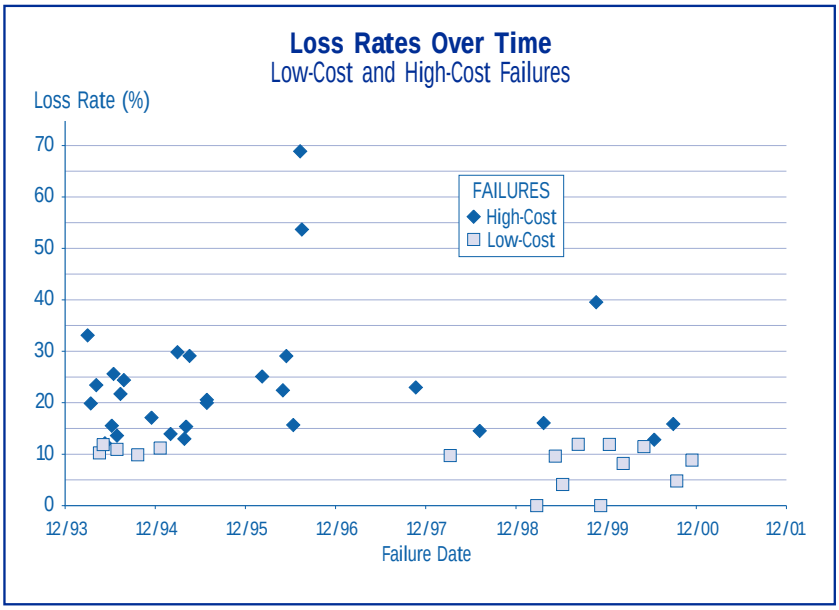
while the high-cost failures had just 37.85 percent—a statistically significant difference of 31.18 percent. One year earlier, the low-cost failures had a less favorable median of 58.67 percent, while the high-cost failures recorded virtually the same level, 37.83 percent; the difference between groups was insignificant. Surprisingly, the correlation between the coverage ratio and the FDIC loss rate was insignificant as of the PCA date. One year earlier, it was –0.19 and significant at the 10 percent level.

During the year leading up to the PCA date, the correlation between ROA and the FDIC loss rate was –0.26 (negative as expected) and significant; it was insignificant one year earlier. The low-cost failures had a median loss of 5.23 percent of assets in the year leading up to the PCA date, while the high-cost failures had a loss of 5.92 percent of assets. The difference in medians was relatively small (0.69) but significant at the 10 percent level. The net interest margin and the yield on earning assets favored the high-cost failures in both periods, and some of the differences were significant. One possible explanation for this result is that the high-cost institutions might have accrued more interest that was never subsequently collected, but this is hard to determine from the data we collected. The low-cost failures had a lower cost of funds in both periods: the difference in medians was 47 basis points (3.69 percent versus 4.16 percent) and significant in the institutions' last year of operations before falling below the PCA limit. During that period, the median ratio of noninterest income to earning assets favored the high-cost failures by 66 basis points but was statistically insignificant. The median ratio of noninterest expenses to earning assets favored the low-cost failures by 136 basis points. Although the difference in medians was insignificant, the correlation was 0.21 and significant.

The low-cost failures operated in markets with much lower levels of problem banks than the high-cost failures. We measured the level of deposits held by problem banks from each market that the failing institutions operated in during the month of June before they fell below the PCA limit. The low-cost failures registered a median index of just 0.01, while the high-cost failures showed an index of 0.11 for their markets. This difference was significant and indicates that the markets in which they operated were troubled enough to stress other

institutions as well as their own resources.[43] This relates to an important characteristic of the sample. While the near-failures and low-cost failures were more or less evenly distributed over the sample period, most of the high-cost failures occurred in 1994 and 1995. Figure 2 demonstrates this phenomenon.

Figure 2



Therefore, some of the differences between the high-cost failures and the other institutions were probably related to the economy, industry conditions, and/or regime changes rather than to the characteristics of the banks. As confirmed by the problem bank index, many of the high-cost failures occurred when a substantive number of nearby banks were experiencing difficulties and some markets (notably commercial real estate, particularly in New England) were still suffering from excess supply. When our sample period began (January 1994), over 10 percent of BIF member banks had CAMEL ratings of 3, 4, or 5 (indicating that the banks had significant problems); by year-end 1995, only 5 percent of BIF members had CAMEL ratings of 3, 4, or 5.

These results indicate that failures may well be more expensive during periods of stress—regardless of PCA.[44] Periods of stress are often characterized by large, and sometimes sudden, shifts in market values. For example, fixed-rate mortgage loan values plummeted in the late 1970s and early 1980s, farm prices fell sharply during the agricultural crisis in the mid-1980s, and commercial real estate prices plunged in Texas and New England during regional recessions. Some of the high-cost failures may have become market-value insolvent before the markets bottomed out.[45] Because markets are often thin during periods of stress, asset valuation becomes more difficult as well. Therefore, it may not be feasible or desirable to create a regulatory regime that results in near-zero losses to the insurance funds during periods of stress.[46]

We briefly looked at the relationship between coverage ratios and industry stress. Coverage ratios were not correlated with the problem bank index. As shown in figure 3, coverage ratios varied widely over the sample (both for failed banks and near-failures) throughout the sample period.

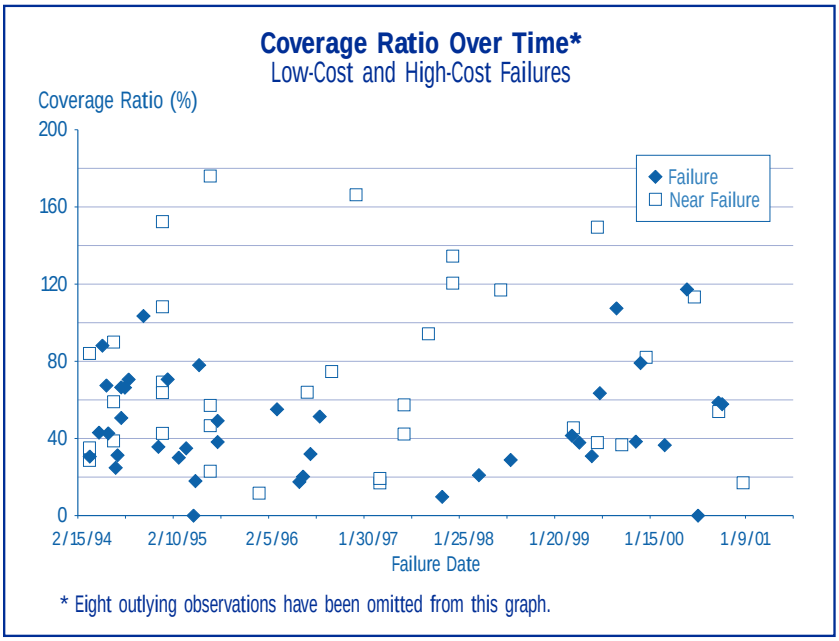
[43] The correlation was 0.16 and insignificant. This could relate to idiosyncratic differences between banks (particularly the amount of loss attributable to fraud or mismanagement) and the small sample size.

[44] McDill (2002) confirmed that a relationship exists. Using data from 1980 through 2000, she regressed the FDIC loss rates of failed banks against various business-cycle items and bank-specific characteristics. She found that loss rates were higher for institutions located in states with falling personal-income levels–particularly if the reduction occurred after a "boom." She also found that loss rates increased for institutions located in states that had concentrations of problem banks. As an example of the effects, she used the results to estimate the loss rate for a typical Texas failure in 1988 and 1999. The loss rate in 1988 was 6 percentage points higher than the loss rate in 1999.

[45] Capital is basically a measure of current condition and largely ignores the likelihood of future deterioration. Mailath and Mester (1993) developed a theoretical model on optimum bank closure policy and found that regulators should consider the future prospects and probable actions of a failing bank in order to minimize losses to the insurance funds. A more forward-looking measure of capital might mitigate losses during periods of stress, but it would introduce more subjectivity into the equation as well.

[46] If regulators imposed either extremely tight restrictions on risk (that is, narrow banking) or very high capital requirements, it might be feasible to largely eliminate insurance fund losses during periods of stress. However, there would probably be substantial costs in the form of tighter credit availability and higher credit costs for a large number of borrowers.

Figure 3



In addition, some of the costs experienced by the high-cost failures might be attributable to changes in the regulatory regime. Most banks that crossed the 2 percent PCA threshold after 1995 would have experienced their entire period of decline after FDICIA had been passed and the enabling regulations were in place. Those banks that crossed the threshold in 1994 (and perhaps also in 1995) might have had a less rigorous incentive structure in place during the early phases of their decline.

We also investigated the level of classified loans in each group based on the last full examination before falling below the PCA limit, but none of our measures showed a significant difference between the groups. The median low-cost failure had 12.20 percent of its loans classified by examiners during their last full examination, while the median high-cost failure had 13.77 percent. Based on classified loans, we estimated appropriate levels of reserves and compared these with the actual reserves reported. The median low-cost failure reported reserves that were 114 percent of the estimated level, while the median high-cost failure reported reserves of 97 percent of the estimated level. This difference was not significant, but this does support the higher level of reserves to noncurrent loans held by the low-cost failures.

As in the comparison between failures and near-failures, the coverage ratio and the level of nonperforming assets were important characteristics that distinguished between low-cost and high-cost failures. These items appear to be the most fruitful ones to consider for any policy changes that might reduce loss rates for failed banks. There were also important differences related to industry stress and the timing of the failures. We found evidence that failure costs were influenced by industry conditions. However, changes in the regulatory treatment of seriously troubled banks may not influence the level of industry stress. Some differences in asset composition and performance were also statistically significant and may prove useful.

Comparisons at Resolution

We examined the number of institutions that submitted bids at failure. The median number of bidders was four for both the low-cost and high-cost failures, and the distribution around the median was similar. Thus, it appears that the market exposure was sufficient for both groups.[47] The bid results (shown in tables 6 and 7) were somewhat different. As anticipated, low-cost failures generally had deposit franchises that were worth more than those of high-cost failures. At 2.88 percent, the median bid-to-deposit ratio for low-cost failures was 51 percent higher than the median for

[47] The market for deposits was strong throughout the period. There could be a different result during periods of lower demand.

high-cost failures. Although the differences in medians were insignificant, we found a relatively strong (–0.22) and significant correlation between this ratio and the FDIC loss rate. Even so, the differences explain only a relatively small portion of the overall cost differences.

Comparisons of Receivership Performance

Table 6 provides comparisons of receivership performance and table 7 provides correlation statistics to loss rates. As anticipated, there was a strong relationship between asset loss rates and the FDIC loss rate. The asset type with the largest losses was OREO: even the low-cost failures suffered a 21 percent median loss rate on sales of those assets. The asset types with the largest differences between the two groups were OREO (21.03 percentage points), C&I loans (13.11 percentage points), and other assets (10.14 percentage points). The asset type with the strongest correlation with the FDIC loss rate was C&I loans (0.44). The correlations were significant for most asset types. Thus it appears that asset quality at the high-cost institutions was worse across the board.

The median loss rate on total assets for high-cost institutions was more than 2 1/2 times the loss rate for low-cost institutions. The difference exceeded the differences for most asset

Table 6

Comparison of Low-Cost and High-Cost Failures At Resolution and In Receivership

	Low-Cost	High-Cost	Difference
Number of Institutions	16	29	13
Median Total Assets ($MM)	66	64	(2)
Median Resolution Data			
Total Bid/Total Deposits	3.01	2.38	(0.63)
Deposit Bid/Total Deposits	2.88	1.42	(1.46)
Median Loss Rates over Life of the Receivership			
(as % of Total Assets at Failure)			
Investment Securities Loss [a]	0.00	0.00	0.00
C&I Loan Loss	15.00	28.11	13.11***
Mortgage Loan Loss [b]	14.99	16.22	1.23
Consumer Loan Loss	9.26	13.37	4.11
Owned Real Estate (OREO) Loss	21.27	42.30	21.03**
Investment in Subsidiaries Loss	3.03	0.00	(3.03)
Other Asset Loss	5.97	16.11	10.14
Total Asset Loss	7.99	21.96	13.97***
Median Receivership Reserve Ratios			
Reserves/Total Assets	2.84	3.04	0.20
Reserves/Total Asset Losses	28.67	14.27	(14.40)**
Median Performance over Life of the Receivership			
Percentage Point Change in Cost Estimate (Original to 12/2000)	2.88	8.03	5.15***
(as % of Total Assets at Failure)			
Receivership Income	0.51	4.58	4.07***
Receivership Expenses (Excludes Holding Costs)	2.97	11.24	8.27***
Holding Costs	0.58	3.34	2.76***
Assets Passed to Acquirer	62.99	24.84	(38.15)**
(as % of Total Expenses)			
Legal Expenses	1.47	1.61	0.14
OREO Expenses (Net of OREO Income)	0.72	3.03	2.31*
Indirect Expenses	59.74	62.57	2.83

Note: The total bid includes all items that reduce the FDIC's cost; the deposit bid includes the amount that is directly tied to deposits. Receivership income and expenses exclude gains and losses from asset-sales adjustments made directly to equity.

* Significant at the 10% level.

** Significant at the 5% level.

*** Significant at the 1% level.

[a] For failures that occurred in 2000, gains/losses on investment securities that were sold to the acquirer are excluded from these figures. Also note that some acquirers may bid for investment securities at par and adjust their bid for deposits accordingly, particularly if the deposit bid is contingent on receiving the securities as well.

[b] Mortgage loss rates (and possibly the difference between low-cost and high-cost failures) may be understated because of foreclosure activity. If the FDIC forecloses on a property, the receivership reclassifies the asset to an OREO asset prior to sale. Thus the losses from selling the underlying real estate are recorded under OREO instead of mortgages. We calculated the change in the percentage of the banks' assets held in OREO over the course of the receivership, and we found that the median increase (in percentage points) was 2 percent for the both groups of banks.

Table 7

Kendall Tau Correlation Coefficients Resolution and Receivership Items versus Total Loss Rate

	All Failures
Number of Institutions	45
Median Total Assets ($MM)	(0.06)
Median Resolution Data	
Total Bid/Total Deposits	(0.15)
Deposit Bid/Total Deposits	(0.22)**
Median Loss Rates over Life of the Receivership	
(as % of Total Assets at Failure)	
Investment Securities Loss	(0.03)
C&I Loan Loss	0.44***
Mortgage Loan Loss	0.19*
Consumer Loan Loss	0.25**
Owned Real Estate (OREO) Loss	0.28***
Investment in Subsidiaries Loss	0.09
Other Asset Loss	0.09
Total Asset Loss	0.48***
Median Receivership Reserve Ratios	
Reserves/Total Assets	(0.03)
Reserves/Total Asset Losses	(0.27)**
Median Performance over Life of the Receivership	
Percentage Point Change in Cost Estimate (Original to 12/2000)	0.44***
(as % of Total Assets at Failure)	
Receivership Income	0.27***
Receivership Expenses (Excludes Holding Costs)	0.48***
Holding Costs	0.24**
Assets Passed to Acquirer	0.30***
(as % of Total Expenses)	
Legal Expenses	0.09
OREO Expenses (Net of OREO Income)	(0.18)*
Indirect Expenses	0.21**

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

types, indicating that the high-cost failures held more of their portfolios in the types of assets that experienced significant losses.[48] This comports with our comparisons of low-cost and high-cost failures before failure (presented above).[49]

[48] We investigated the amount of foreclosure activity during receivership but found that the median change in OREO (as a percentage of total assets) between closing weekend and the final receivership balance increased about the same amount (2 percentage points) for both groups.

[49] Appendix 3 provides more detail about the asset composition at failure and in receivership.

The receivership data showed that reserve ratios were about the same for the two groups (3 percent of total assets). Although the reserve ratios were much higher than industry averages (as a percentage of loans), reserves were much lower than the asset losses experienced by the receiverships. Reserves covered only 29 percent of the losses for the low-cost failures and a mere 14 percent for the high-cost failures.[50] Just as the coverage ratio was significantly higher for the low-cost failures, so were the reserves relative to actual losses. Many of these banks, and particularly the high-cost banks, may have had inadequate reserves; however, we do not have enough information to determine this with certainty.[51]

Receivership income, receivership expenses, and holding costs were all much higher for the high-cost institutions, and both the correlations and the differences in medians were highly significant.[52] There was almost no receivership income, and there were almost no holding costs, for the low-cost institutions. For the high-cost institutions, median receivership income over the life of the receivership was 4.58 percent of total assets at failure, and median holding costs over the life of the receivership were 3.34 percent of total assets at failure.[53] The difference in median receivership expenses to total assets at failure was even larger: 2.97 percent for low-cost failures versus 11.24 percent for high-cost failures. At 0.48, the correlation between receivership expenses and the FDIC loss rate was quite strong. Even with the

[50] These loss rates were calculated as the difference between the gross book value recorded by the receivership and the sales proceeds. If the costs associated with selling the assets had been included, the difference between the two groups of institutions would have been larger.

[51] There are several reasons why reserves may be sufficient under GAAP for an operating institution but still be smaller than the asset losses experienced at liquidation. Some of the reasons are changes in market conditions, changes in interest rates, and differences in the value anticipated for an asset held in a long-term portfolio versus the value if the asset is sold relatively quickly.

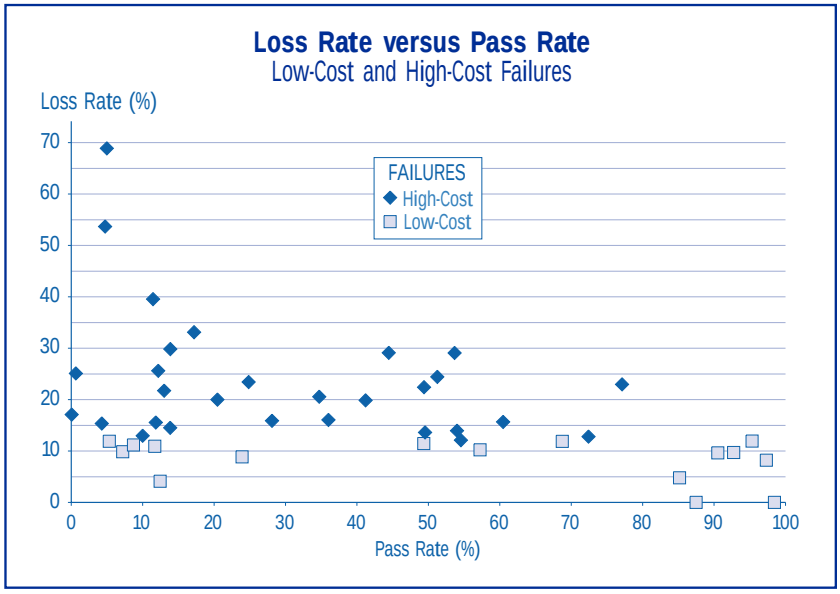
[52] Receivership income and expenses were calculated on a cash basis, and they excluded gains and losses from asset sales, asset write-offs, holding costs, income from the bid premium and other equity adjustments. Holding costs were defined as the FDIC's lost income from funding the deposits up front and waiting for recovery from the receivership. Appendix 2 provides more information on the composition of these items.

[53] Because the level of activity and the duration (in time) of receiverships vary substantially, all income and expense items are reported as the total amount over the life of the receivership divided by total assets at failure.

extra income as an offset, it is clear that the net effect of these items made up a large portion of the cost differential between these two groups of institutions.[54]

These differences were closely tied to the enormous divergence in the portion of assets passed (that is, sold) to the acquirer.[55] The FDIC passed 62.99 percent of assets to acquirers for the median low-cost institution, but only 24.84 percent for the median high-cost institution (figure 4).[56] For 75 percent of the high-cost institutions, the FDIC retained over one-half of the assets in the receivership. On the surface, the cause of these immense differences appears to be the FDIC's sales methods. The true cause is not as simple.

Figure 4



One likely reason for the difference in assets sold to the acquirer is the quality of the assets held by the banks: assets of the high-cost banks were generally riskier and of lower quality. The markets for the riskier assets are typically thinner, and it may be harder to estimate the market price. The due-diligence effort required for lower-quality assets is more extensive as well. Thus there might have been fewer interested buyers, and the odds of finding a buyer to purchase the deposits and the riskier assets simultaneously—and on a relatively tight time line—would probably have been much smaller.

The marketplace differences discussed above would almost certainly have affected the asset pass rates and the loss rates for some types of assets. As noted above, a relatively large proportion of the high-cost failures occurred when the industry was experiencing distress and the markets were still absorbing large amounts of troubled assets. Our analysis suggests that real estate loans were a large problem for the high-cost failures. Vacancy rates for office space dropped precipitously during the early years of our sample period, and the volume of sales transactions for office space increased dramatically in 1998.[57] Therefore, some of the

[54] One cannot merely subtract receivership income from receivership expenses and assume that the difference (as a percentage of total assets at failure) is the amount of loss in percentage points attributable to receivership operations. Many receiverships start with substantial amounts of positive equity (partly because reserves are reversed at failure). In addition, some losses and gains do not flow through the receivership income statement, and some receivership losses are borne by creditors other than the FDIC.

[55] An acquirer is defined as the institution (or institutions) that purchased the deposits.

[56] The simple average for the percentage of assets sold to the acquirer was 30.01 percent for the high-cost institutions and 65.73 percent for the low-cost institutions.

[57] National vacancy rates for office space were 16.8 percent at the beginning of our sample period. They dropped to 13.8 percent at year-end 1995, and 9.9 percent at year-end 1997. The changes in sales volume were larger. According to Torto-Wheaton Research, there were only 18 sales made of Class A office buildings nationwide in 1996, and 35 in 1997–but 238 were made in 1998. The results were similar for other types of office buildings.

variance in receivership performance across the groups almost certainly was related to differences in market conditions. The marketing process works best when the economy and the industry are performing well.[58]

Policy changes made at the FDIC may also have contributed to this result. The FDIC combined its Division of Resolutions and its Division of Depositor and Asset Services in 1996. The merger facilitated a more cohesive sales approach that starts before failure and continues past resolution with few disruptions from changes in staff or strategy at resolution. In 1997, the FDIC adopted a new asset sales procedure called "joint asset marketing." It emphasizes marketing homogeneous pools of assets to a large number of potential buyers quickly (preferably at resolution). The new procedures, combined with the strong economy, have considerably shortened the pace of asset sales from FDIC receiverships since the mid-1990s.

In summary, the results of the comparison of resolution and receivership results is consistent with the results from the pre-failure period. For the most part, these results merely demonstrate the way losses are realized when banks fail. However, the differences in asset pass rates and receivership performance may provide some evidence that FDIC losses are influenced by market conditions. To the extent that this is the case, it may be difficult or impossible to develop changes in regulatory treatment that yield near-zero losses to the insurance funds during times of industry stress.

Low-cost Failures versus Near-failures

A comparison between low-cost failures and near-failures allows us to search, at the margin, for differences that distinguish failing banks from banks that can survive serious problems. This comparison investigates the robustness of the earlier comparison between all failures and near-failures. Any marginal distinctions may provide useful insights when considering marginal changes in the PCA threshold, or they might be helpful to examiners of similar banks. Our comparisons, shown in tables 8 and 9, reveal only a few significant differences between the low-cost failures and the near-failures. Some of these differences, such as capital levels, may relate to the fact that whereas some failures never fell below the PCA limit, all near-failures fell below the limit.

Median capital levels of the low-cost failures were significantly higher than those of the near-failures. The median equity capital ratio for the low-cost failures was 2.09 percent at our analysis date, while the near-failures reported 0.97 percent when they fell below the PCA limit. The core capital (leverage) ratio also was significantly higher for the low-cost failures, at 2.03 percent compared with 0.87 percent for the near-failures. And deposits of the two groups were significantly different: deposits as a percentage of assets were a median 95 percent for low-cost failures but 98 percent for the near-failures. This difference was probably caused by the difference in capital.

For the performance of the two groups, the overall ROA was not significantly different, but the operating ROA was. The difference in overall ROA and operating ROA by our measures stemmed from the gains on the sales of securities and extraordinary items. The low-cost failures reported a loss on assets of 5.23 percent, but this loss was less for operating earnings—4.85 percent. The near-failures reported a median loss of 5.76 percent of assets, but a median operating loss of 6.04 percent of assets. Although we did not calculate a ratio for the level of gains on the sales of securities or extraordinary items, the result on operating earnings implies that the low-cost failures reported non-operating gains that reduced their loss, while the near-failures reported non-operating losses that increased their loss. The low-cost failures also reported significantly lower median costs of funding earning assets, at 3.69 percent, while the near-failures reported 4.37 percent.

[58] The results concerning changes in the FDIC loss estimates over time were also consistent with the concept that losses may increase when markets are weak. For high-cost failures, the FDIC loss estimates increased substantially between the original estimate and the latest estimate; for low-cost failures, they increased only a little bit. This supports the theory that markets deteriorated during the life of the receivership, or it might indicate that asset valuation at closure was more difficult for the high-cost institutions that carried riskier assets.

Table 8

Comparison of Low-Cost Failures and Near-Failures

	Low-Cost	Near-Failures	Difference
AS OF THE PCA DATE			
Number of Institutions	16	39	23
Median Total Assets ($MM)	66	57	(9)
Median Asset Growth	(18.04)	(8.52)	9.52
Institutions with CAMELS Rating of 4 or 5 (%)	93.80	84.60	(9.20)
Median Balance Sheet Percentages			
Investment Securities	10.14	11.51	1.37
1-4 Family Mortgages	15.61	16.38	0.77
Commercial Real Estate	15.93	11.03	(4.90)
Multifamily Real Estate	1.55	1.04	(0.51)
Commercial & Industrial Loans	10.51	11.84	1.33
Deposits	95.13	98.00	2.87**
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(5.23)	(5.76)	(0.53)
Return on Equity	(106.23)	(124.24)	(18.01)
Yield on Earning Assets	8.11	8.77	0.66
Cost of Funding Earning Assets	3.69	4.37	0.68**
Net Interest Margin	4.41	4.69	0.28
Noninterest Income to Earning Assets	1.36	1.12	(0.24)
Noninterest Expense to Earning Assets	7.87	6.66	(1.21)
Net Operating Income to Assets	(4.85)	(6.04)	(1.19)*
Net Charge-offs to Loans	3.85	3.98	0.13
Loss Provision to Average Assets	2.44	3.58	1.14
Loss Provision to Net Charge-offs	129.41	122.95	(6.46)
Efficiency Ratio	117.61	123.03	5.42
Median Condition Ratios			
Loss Allowance to Loans	4.50	4.50	0.00
Loss Allowance to Noncurrent (Coverage Ratio)	69.03	63.98	(5.05)
Noncurrent & OREO to Assets	6.44	6.69	0.25
OREO to Assets	0.46	0.80	0.34
Noncurrent RE Loans to RE Loans	4.35	3.54	(0.81)
Noncurrent Loans & Leases to Loans & Leases	5.67	7.24	1.57
Noncurrent Loan Growth	14.21	29.44	15.23
Equity Capital Ratio	2.09	0.97	(1.12)**
Core Capital (Leverage) Ratio	2.03	0.87	(1.16)***
Equity Capital plus Reserves to Assets	5.79	4.03	(1.76)
AS OF MID-YEAR BEFORE PCA DATE, OR MOST RECENT EXAM			
Median Economic Condition Measures			
Problem Bank Index	0.01	0.02	0.01 [a]
Geographic Diversification Index	1.00	1.00	0.00 [a]
Median Examiner Classification Ratios			
Reserves to Estimated Reserves	114.13	94.81	(19.32) [a]
Classified Assets to Assets	12.20	10.47	(1.73) [a]

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.
[a] Untested.

The levels of nonperforming assets reported by these groups did not differ very much, but the low-cost failures reported significantly lower net charge-offs on real estate loans. Their net charge-offs were just 0.05 percent of real estate loans, while the near-failures had net charge-offs that were 1.26 percent of real estate loans over the last four quarters before the institutions fell below the PCA limit. Both at the PCA date and one year earlier, the median coverage ratio was higher for the low-cost failures than for the near-failures. The differences in medians were relatively large (69.03 versus 63.98 at the PCA date; 58.67 versus 43.47 one year earlier), but not statistically significant.

Because the results for low-cost failures were remarkably similar—and in many ways superior—to the results for near-failures, one might conclude that the failed institutions could have survived, given the chance. However, only two of these failures resulted in no costs to the FDIC; our review of these two extraordinary cases indicates that failure was appropriate.[59] The remaining low-cost failures had loss rates that ranged from 3 percent to 12 percent of assets. On the other hand, without the sale to another organization or an infusion of capital, some of the near-failures could easily have joined

[59] See Shibut and Critchfield (2000) for details.

Table 9

Comparison of Low-Cost Failures and Near-Failures

	Low-Cost	Near-Failures	Difference [a]
AS OF ONE YEAR BEFORE THE PCA DATE			
Number of Institutions	16	39	23
Median Total Assets ($MM)	72	59	(13)
Median Asset Growth	5.06	0.34	(4.72)
Institutions with CAMELS Rating of 4 or 5 (%)	75.00	64.10	(10.90)
Median Balance Sheet Percentages			
Investment Securities	15.00	10.35	(4.65)
1-4 Family Mortgages	16.95	15.28	(1.67)
Commercial Real Estate	14.35	10.76	(3.59)
Multifamily Real Estate	1.42	1.00	(0.42)
Commercial & Industrial Loans	7.43	8.85	1.42
Deposits	90.66	92.00	1.34
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(0.09)	(0.72)	(0.63)
Return on Equity	(4.43)	(12.89)	(8.46)
Yield on Earning Assets	8.66	8.46	(0.20)
Cost of Funding Earning Assets	3.90	4.04	0.14
Net Interest Margin	4.70	4.68	(0.02)
Noninterest Income to Earning Assets	1.16	1.54	0.38
Noninterest Expense to Earning Assets	5.57	6.21	0.64
Net Operating Income to Assets	(0.81)	(0.75)	0.06
Net Charge-offs to Loans	0.56	1.48	0.92
Loss Provision to Average Assets	0.99	1.21	0.22
Loss Provision to Net Charge-offs	149.17	129.06	(20.11)
Efficiency Ratio	97.91	90.36	(7.55)
Median Condition Ratios			
Loss Allowance to Loans	2.00	2.07	0.07
Loss Allowance to Noncurrent (Coverage Ratio)	58.67	43.47	(15.20)
Noncurrent & OREO to Assets	4.32	4.62	0.30
OREO to Assets	0.97	1.08	0.11
Noncurrent RE Loans to RE Loans	2.22	3.14	0.92
Noncurrent Loans & Leases to Loans & Leases	3.63	4.33	0.70
Noncurrent Loan Growth	43.67	3.92	(39.75)
Equity Capital Ratio	6.68	6.28	(0.40)
Core Capital (Leverage) Ratio	6.56	5.94	(0.62)
Equity Capital plus Reserves to Assets	8.19	7.77	(0.42)

[a] None of these differences were found to be statistically significant at the 10% level.

our list of failures. All in all, this comparison highlights the difficulty of predicting failure. Given the lack of quantitative differences between these two groups, it is hard to identify changes in the PCA threshold that would consistently improve the cost tradeoffs.

Near-failures Purchased versus Near-failures That Survived

We split the near-failures into groups based on the way they survived. Twenty-one institutions were absorbed into other organizations within one year after they fell below the PCA limit, and eighteen near-failures survived their problems and remained independent for at least one year. We expected that the institutions that survived might have been in slightly better condition than the institutions absorbed by other organizations, but very few differences were significant (see tables 10 and 11).

Both the median and the average size of the survivors was much greater than the institutions purchased, but there were no statistically significant differences in asset size. As of the PCA date, the 18 survivors had a median asset size of $91 million; the 21 institutions purchased had a median asset size of $38 million.

The survivors had significantly higher noninterest income (which is common for larger institutions) in the year before they fell below the PCA limit. They reported a median 2.19 percent of earning assets in noninterest income, while the institutions that were purchased reported 0.83 percent. This difference dwindled as the survivors approached the PCA threshold, and it was less significant by the time they fell

Table 10

Comparison of Near-Failures by Outcome

	Survivors	Purchased	Difference
AS OF THE PCA DATE			
Number of Institutions	18	21	3
Median Total Assets ($MM)	91	38	(53)
Median Asset Growth	(7.24)	(12.57)	(5.33)
Institutions with CAMELS Rating of 4 or 5 (%)	77.80	90.50	12.70
Median Balance Sheet Percentages			
Investment Securities	12.46	8.83	(3.63)
1-4 Family Mortgages	18.01	16.38	(1.63)
Commercial Real Estate	6.42	12.39	5.97
Multifamily Real Estate	1.42	0.53	(0.89)
Commercial & Industrial Loans	6.44	12.60	6.16
Deposits	97.44	97.89	0.45
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(4.20)	(6.04)	(1.84)
Return on Equity	(116.31)	(125.72)	(9.41)
Yield on Earning Assets	8.55	9.12	0.57
Cost of Funding Earning Assets	4.15	4.46	0.31
Net Interest Margin	4.75	4.69	(0.06)
Noninterest Income to Earning Assets	1.49	0.83	(0.66)*
Noninterest Expense to Earning Assets	8.11	6.14	(1.97)
Net Operating Income to Assets	(4.33)	(6.07)	(1.74)
Net Charge-offs to Loans	3.17	4.56	1.39
Loss Provision to Average Assets	1.96	4.08	2.12**
Loss Provision to Net Charge-offs	118.54	124.65	6.11
Efficiency Ratio	133.11	115.98	(17.13)
Median Condition Ratios			
Loss Allowance to Loans	2.73	5.05	2.32
Loss Allowance to Noncurrent (Coverage Ratio)	61.40	74.66	13.26
Noncurrent & OREO to Assets	7.89	6.02	(1.87)
OREO to Assets	1.10	0.57	(0.53)
Noncurrent RE Loans to RE Loans	2.98	3.54	0.56
Noncurrent Loans & Leases to Loans & Leases	8.53	6.36	(2.17)
Noncurrent Loan Growth	22.71	29.44	6.73
Equity Capital Ratio	1.00	0.88	(0.12)
Core Capital (Leverage) Ratio	0.77	1.26	0.49
Equity Capital plus Reserves to Assets	3.80	4.11	0.31
AS OF MID-YEAR BEFORE PCA DATE, OR MOST RECENT EXAM			
Median Economic Condition Measures			
Problem Bank Index	0.05	0.01	(0.03)
Geographic Diversification Index	1.00	1.00	0.00
Median Examiner Classification Ratios			
Reserves to Estimated Reserves	104.05	91.97	(12.08)
Classified Assets to Assets	5.93	12.97	7.04

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

below the PCA limit. At that time they reported 1.49 percent, while the purchased institutions reported 0.83 percent.

The near-failures that were purchased held a higher median percentage of commercial real estate and C&I loans, but this difference was not significant. Capital plus reserves were higher for the purchased institutions, but again, the difference was not significant. The level of nonperforming assets was lower for the purchased institutions, but not significantly. The performance of the purchased institutions seemed worse because of higher losses, higher net charge-offs and higher provisions for loan losses, but none of these differences was significant. Buyers may have been attracted to the higher levels of capital and reserves and lower nonperforming assets of the aquired institutions, but the lower performance might make a buyer take pause.

Tracking Near-failures That Survived One Year Later

For the 18 near-failures that survived, we compared their results during the year they crossed the PCA threshold to the following year; the results are in table 12. This group showed many significant differences across the two periods, mainly related to capital and performance.

Table 11

Comparison of Near-Failures by Outcome

	Survivors	Purchased	Difference
AS OF ONE YEAR BEFORE THE PCA DATE			
Number of Institutions	18	21	3
Median Total Assets ($MM)	82	44	(38)
Median Asset Growth	(1.08)	0.34	1.42
Institutions with CAMELS Rating of 4 or 5 (%)	66.70	61.90	(4.80)
Median Balance Sheet Percentages			
Investment Securities	8.51	10.55	2.04
1-4 Family Mortgages	16.65	14.99	(1.66)
Commercial Real Estate	7.41	13.95	6.54
Multifamily Real Estate	1.91	0.69	(1.22)
Commercial & Industrial Loans	4.41	10.41	6.00
Deposits	90.64	92.09	1.45
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(0.75)	(0.72)	0.03
Return on Equity	(12.91)	(12.37)	0.54
Yield on Earning Assets	8.21	8.70	0.49
Cost of Funding Earning Assets	3.65	4.12	0.47
Net Interest Margin	4.59	4.68	0.09
Noninterest Income to Earning Assets	2.19	0.83	(1.36)**
Noninterest Expense to Earning Assets	7.30	4.52	(2.78)*
Net Operating Income to Assets	(0.78)	(0.75)	0.03
Net Charge-offs to Loans	1.74	1.46	(0.28)
Loss Provision to Average Assets	1.14	1.25	0.11
Loss Provision to Net Charge-offs	101.73	129.64	27.91
Efficiency Ratio	94.12	86.45	(7.67)
Median Condition Ratios			
Loss Allowance to Loans	1.82	2.09	0.27
Loss Allowance to Noncurrent (Coverage Ratio)	51.35	35.08	(16.27)
Noncurrent & OREO to Assets	5.96	4.50	(1.46)
OREO to Assets	1.80	0.71	(1.09)
Noncurrent RE loans to RE Loans	7.02	2.25	(4.77)
Noncurrent Loans & Leases to Loans & Leases	5.24	3.61	(1.63)
Noncurrent Loan Growth	(2.63)	20.08	22.71
Equity Captial Ratio	5.71	6.47	0.76
Core Capital (Leverage) Ratio	5.32	6.02	0.70
Equity Capital plus Reserves to Assets	7.28	8.03	0.75

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

All measures of capital were significantly higher, largely because of capital infusions. Equity capital increased from a median of 1.00 percent as of the PCA date to 5.28 percent one year later. These results provide some evidence of the importance of capital infusions that are large enough to ensure survival. Barakova and Carey (2001) found that both failed banks and near-failures had capital infusions, but the infusions were larger for the near-failures. We found that some of the failed institutions in our sample also had capital infusions, but the amounts were insufficient. Regulators might be able to use this evidence to encourage troubled banks to seek enough capital to materially improve their survival chances.

The capital position of the eighteen survivors improved much faster than nonperforming assets. Nonperforming assets as a percentage of total assets improved from a median level of 7.89 percent to 4.80 percent, but this was insignificant. Behind these numbers was a significant improvement in noncurrent C&I loans, down from 7.62 percent to 3.56 percent.

Over this one-year time span performance improved significantly, but these 18 institutions still reported a median loss on assets of 0.73 percent, down from a loss of 4.20 percent one year earlier. The lower provision expense was a driving force in reducing losses. Provision expenses fell significantly from a median of 1.96 percent of average assets to 0.60 percent. Net charge-offs declined, but not significantly. Provisions declined significantly from a median of 119 percent of net charge-offs to 54 percent one year later.

Table 12

Comparison of Survivors

	At PCA Date	One Year Later	Difference
Number of Institutions	18	18	0
Median Total Assets ($MM)	91	104	13
Median Asset Growth	(7.24)	(4.74)	2.50
Median Balance Sheet Percentages			
Investment Securities	12.46	10.26	(2.20)
1-4 Family Mortgages	18.01	20.39	2.38
Commercial Real Estate	6.42	7.59	1.17
Multifamily Real Estate	1.42	1.25	(0.17)
Commercial & Industrial Loans	6.44	10.83	4.39
Deposits	97.44	92.23	(5.21)***
Median Rolling Four-Quarter Performance Ratios			
Return on Assets	(4.20)	(0.73)	3.47***
Return on Equity	(116.31)	(19.16)	97.15***
Yield on Earning Assets	8.55	8.48	(0.07)
Cost of Funding Earning Assets	4.15	4.11	(0.04)
Net Interest Margin	4.75	4.54	(0.21)
Noninterest Income to Earning Assets	1.49	1.01	(0.48)
Noninterest Expense to Earning Assets	8.11	6.81	(1.30)
Net Operating Income to Assets	(4.33)	(0.77)	3.56***
Net Charge-offs to Loans	3.17	1.37	(1.80)
Loss Provision to Average Assets	1.96	0.60	(1.36)***
Loss Provision to Net Charge-offs	118.54	54.30	(64.24)**
Efficiency Ratio	133.11	98.59	(34.52)
Median Condition Ratios			
Loss Allowance to Loans	2.73	2.23	(0.50)
Loss Allowance to Noncurrent (Coverage Ratio)	61.40	51.27	(10.13)
Noncurrent & OREO to Assets	7.89	4.80	(3.09)
OREO to Assets	1.10	1.06	(0.04)
Noncurrent RE Loans to RE Loans	2.98	3.08	0.10
Noncurrent Loans & Leases to Loans & Leases	8.53	5.73	(2.80)
Noncurrent Loan Growth	22.71	(29.97)	(52.68)*
Equity Capital Ratio	1.00	5.28	4.28***
Core Capital (Leverage) Ratio	0.77	5.28	4.51***
Equity Capital plus Reserves to Assets	3.80	7.58	3.78***

* Significant at the 10% level.
** Significant at the 5% level.
*** Significant at the 1% level.

Concluding Remarks

Contrary to the expectations of many economists, PCA has not resulted in the FDIC's experiencing little or no loss when a depository institution fails. From 1994 to 2000, most failures imposed significant costs (as a percentage of assets) on the insurance funds. However, 55 percent of the FDIC-insured institutions that fell below the PCA threshold for critically undercapitalized institutions avoided failure, and almost 30 percent of the failed institutions never breached the PCA threshold.

We explored the tradeoffs associated with the PCA threshold for critically undercapitalized institutions. When market-value solvent institutions breach the threshold, both financial costs and nonfinancial costs (loss of freedom) are imposed on many of the bank owners and, to a lesser extent, supervisors. These costs are probably offset by savings associated with prompt closure (for failed institutions) and with higher survival rates (for troubled institutions, if the threshold successfully aids in recapitalizing some institutions that would otherwise fail). Ideally, the PCA threshold would be set at the level that balances these tradeoffs to yield the highest net benefit to society. Because the tradeoffs are difficult to measure, we do not know the optimum level. However, the decidedly mixed outcomes of the institutions

that have breached the threshold to date provide us with some assurance that the current threshold is not too wide off the mark. If almost all of the institutions that breached the threshold had survived or if almost all of them had failed, then it would be more likely that an adjustment to the threshold level would yield substantial benefits.

We investigated the differences between the critically undercapitalized institutions that did and did not fail, in hopes of finding information that could be used to improve the regulatory treatment of seriously troubled banks. The most meaningful differences across outcomes are related to nonperforming assets, coverage ratios (calculated as reserves divided by noncurrent loans), and the local economy. The failed institutions had median nonperforming ratios that were significantly higher than those of the near-failures, particularly for real estate loans. The high-cost failures had nonperforming levels that were roughly double those of the low-cost failures. The nonperforming levels of the low-cost failures and of the near-failures were roughly the same.

Of all the measures we tested, the coverage ratio appears to be the most useful indicator that serious losses may await the FDIC. At the PCA date, the median coverage ratio was 43 percent for the failures and 64 percent for the near-failures. However, the median coverage ratio was higher for the low-cost failures than for the near-failures (69 percent versus 64 percent). The median coverage ratio for high-cost failures was only 38 percent.

The high-cost failures were much more likely to be located in areas where a relatively large number of banks were experiencing problems. Unlike the low-cost failures and near-failures, they were also more likely to have occurred in 1994 and 1995—a period at the end of the banking crisis, when some markets for troubled assets (particularly commercial real estate markets) were sluggish. Thus some of the differences in outcome are probably related to the marketplace rather than to individual bank characteristics. During periods of stress, asset values sometimes experience steep declines, and slow-moving markets increase the difficulty of measuring asset values. Because of these phenomena, the FDIC may experience higher loss rates during periods of stress than during good times, even with PCA.

The differences in other items were smaller. The failed banks had somewhat riskier asset portfolios than the near-failures; likewise, the high-cost failures had riskier asset portfolios than the low-cost failures. The performance measures were similar across groups. There were few differences between the low-cost failures and near-failures, and—surprisingly—the differences tended to favor the low-cost failures. The near-failures that were purchased were also similar to those that survived, except that the surviving institutions were larger.

There are several reasons why these results may not be robust in the future. First, our sample period did not include a full business cycle, and we have found evidence, albeit limited, that the results vary across the business cycle. Second, a disproportionate number of the high-cost failures occurred in 1994–1995; thus, regime changes (which we were unable to isolate) may have influenced the results. Third, we did not test for intangible items such as the quality of bank management, which could be important. Finally, historical results do not always provide a good indicator of future performance.

Recommendations

The PCA regulations emphasize capital and not reserves. Because we found that loan-loss reserves differentiate relatively strong and weak institutions that have already fallen below the PCA threshold, we think the level of reserves should be studied more closely. Instead of trying to find a better threshold capital level for critically undercapitalized institutions, regulators may want to refine the rules governing reserves or limit the discretion of seriously troubled banks to set their own

reserve levels.[60] If troubled banks consistently adjust their reserves so they are always adequate to absorb the estimated credit losses associated with the banks' loan portfolios, then capital would become a better measure of condition.

We recommend that regulators attempt to develop a formula for minimum reserve levels that could potentially be used to improve the supervision of seriously troubled institutions.[61] Our results give us hope that such a formula would be feasible.[62] Once such a formula were developed, regulators could require that seriously troubled banks set reserve levels by using the higher of their normal reserving procedures or the formulaic approach—at least for calculating regulatory capital.[63] Alternatively, seriously troubled banks could be allowed to record reserve levels that fell below the formula only if approved by an examiner or the FDIC.[64] Because many troubled institutions are slow to adjust reserve levels for deteriorating conditions, this approach could potentially reduce insurance fund costs by hastening the closure of non-viable banks. This approach might also improve the tradeoffs associated with the 2 percent PCA threshold, since it appears that the high-cost failures would be more seriously impacted by such a change than the low-cost failures or the near-failures. Alternatively, regulators could adopt other, less prescriptive ways to use this information in the supervisory process.

[60] Regulators often use cease-and-desist orders to force troubled banks to use appropriate methods for setting reserves. Because we did not collect data on formal and informal actions, we do not know whether there was a relationship between such orders and coverage ratios. In addition, the heterogeneity of banks, coupled with the amount of subjective judgment inherent in reserve levels, may make the task of limiting bank discretion through industry-wide rules a daunting one.

[61] This idea is not original with us. See also U. S. Department of the Treasury (1991), Berger et al. (1991), and Jones and King (1995).

[62] Based on our research, the formula might use a combination of classified assets, asset types, changes in and levels of noncurrent loans and OREO, and data about local-market conditions. Given the results of the Jones and King (1995) estimate, the appropriate formula for banks approaching insolvency may differ from the optimum formula for less-troubled banks. Thus it would be important to match the regulatory use of the formula to the methods and data used in its development.

[63] A formulaic approach may not meet GAAP, in which case the regulatory burden associated with a change may increase. The regulatory burden could be mitigated if the formula were used solely for setting regulatory capital standards.

[64] If such a policy were adopted, it might be beneficial for a separate team of FDIC staff (including examiners) to be involved in such decisions. This might reduce the potential for inefficiencies stemming from the principal-agent problem, which is eloquently described by Mishkin (1997).

APPENDIX 1

Summary of the PCA Provisions in FDICIA

The PCA provisions in FDICIA require that banking regulators take prespecified actions whenever bank capital levels fall below established levels. Table A1-1 summarizes the requirements for each capital level, except for critically undercapitalized institutions (defined as institutions with a leverage ratio below 2 percent).

Table A1-1

Capital-Ratio Thresholds under PCA

	Capital Ratio		
Capital Category	**Total Risk-based**	**Tier 1 Risk-based**	**Leverage**
Well-capitalized [a]	10% or more, and	6% or more, and	5% or more
Adequately capitalized	8% or more, and	4% or more, and	4% or more
Undercapitalized [b]	Less than 8%, or	Less than 4%, or	Less than 4%
Significantly undercapitalized	Less than 6%, or	Less than 3%, or	Less than 3%

Source: GAO (1997).

[a] An institution is not considered to be well-capitalized if it is subject to a formal regulatory action that requires the institution to meet and maintain a specific capital level.

[b] The leverage ratio can be as low as 3% if the institution has a CAMELS rating of 1.

Table A1-2 provides a summary of the required actions and limits set by FDICIA. The limits are additive. For example, the restrictions for a significantly undercapitalized bank include those for an undercapitalized institution as well.

Table A1-2

Mandatory Actions under the PCA Provisions of FDICIA

Well-capitalized and adequately capitalized

- None

Undercapitalized

- May not pay dividends or management fees.
- Subject to increased monitoring.
- Must implement acceptable capital plan.
- Asset growth restricted.
- Approval needed for acquisitions, branching, and new business lines.
- May not issue brokered deposits.
- Access to discount window restricted.

Significantly undercapitalized

- Subject to provisions applicable to undercapitalized institutions.
- Compensation of senior officers restricted.
- Unless action would not further the purposes of PCA, supervisor shall
  - Require bank to raise additional capital or be merged.
  - Enforce Section 23A of Federal Reserve Act as if exemptions in act do not apply.
  - Restrict deposit interest rates to those prevailing in region.

Critically undercapitalized

- After 60 days, may not make payments on subordinated debt without approval.
- Must be placed in receivership
  - Within 90 days, unless action would not achieve the purposes of PCA.
  - Within 270 days, unless specific statutory requirements are met.
- Access to discount window restricted more than for undercapitalized.
- May not do the following without FDIC approval
  - Undertake material transactions, except in usual course of business.
  - Extend credit for any highly leveraged transaction.
  - Make any material change in accounting methods.
  - Undertake covered transactions, as defined in Section 23A of Federal Reserve Act.
  - Pay excessive compensation or bonuses.
  - Pay interest on liabilities above prevailing market rates.

Source: Primarily Jones and King (1995).

APPENDIX 2

Details on Selected Calculations

This appendix discusses selected calculations and accounting policies that influence the data sources used for this article. Some of the accounting policies inhibit the comparability of failed-bank data across time. The more material items are discussed here.

Calculation of FDIC Loss

At resolution, the FDIC generally bases its loss estimate on an Asset Valuation Review (AVR). The AVR estimate of loss is calculated as the difference between the FDIC's anticipated outlay and the net present value of the funds recovered from the receivership.[65] As the receivership progresses, the loss calculation (as published by the FDIC in the Failed Bank Cost Analysis (FBCA)) changes somewhat: it is essentially calculated as the FDIC's resolution outlays minus the funds recovered from the receivership and the estimated funds to be recovered from the receivership in the future.[66] Both cost figures exclude pre-closing expenses associated with preparing the bank for resolution and determining which deposit accounts are insured.[67] These items tend to be a relatively small component of FDIC losses.

The FDIC is required to fund the insured deposits at the time of failure; however, the receivership pays dividends to the FDIC and other creditors as assets are sold (after meeting expenses). Thus, the FDIC has working capital requirements during the interim period between the failure date and the dates when dividends are paid by the receivership.

Because funding costs are a real cost to the FDIC (in the form of lost interest income to the insurance fund) but are largely excluded from the FBCA, we estimated the funding cost for each bank where the FBCA figure was the most up-to-date published figure.[68] To make the estimate, we collected the FDIC claim and dividend payments made through year-end 2000. For open receiverships, we assumed that the remaining asset value (based on discounted cash flow, net of expenses) would be paid to the FDIC on December 31, 2000. Then, we calculated the interest that the receivership owed to the FDIC on the portion of its claim that either had been paid or that we assumed would have been paid on December 31, 2000. We used the FDIC's average yield on its investments as the interest rate. We also treated two items included in the FBCA figure as holding costs: interest earned on the receivership's cash balances (which reduced holding costs) and interest paid to other creditors by the receivership (which increased holding costs). This allows for a more accurate comparison of the economic costs across receiverships, and of the initial cost estimate and the latest available cost estimate.[69] Across the full sample of banks, the median difference between the FBCA cost and the cost used in this article was 3.75 percent of total assets as of the quarter-end date before failure.

[65] The steps of the calculations are (1) estimate the net present value of the assets; (2) estimate the volume of creditors in each creditor class; (3) estimate payments to each creditor class, given the discounted asset value estimates; and (4) estimate the FDIC loss as the difference between the FDIC's claim and its anticipated recoveries.

[66] For terminated receiverships, all cash flows are undiscounted. For ongoing receiverships, actual recoveries to date are undiscounted, and expected future recoveries are discounted to the date of the estimate. For example, assume that a failure occurred in 1995. The FDIC loss as of year-end 2000 would be calculated as the 1995 outlay minus all dividends paid through year-end 2000 minus estimated future dividends (which would be based on the anticipated future recoveries from the receivership, discounted to year-end 2000). In addition, the interest due to the FDIC is calculated and placed on the receivership books in cases in which the FDIC expects some or all of the interest to be paid in the near future. This interest is excluded from the cost reported in the Failed Bank Cost Analysis (FBCA) even in cases in which it is reported and/or paid by the receivership.

[67] Differences in the cost of insurance determination are considered when the FDIC determines the least-cost bid. The cost of preparing for resolution is a sunk cost that would not influence the selection of a winning bidder and thus is excluded from the least-cost test.

[68] Our estimates do not follow FDIC regulations and practices for the payment of interest to receivership creditors.

[69] This adjustment still does not result in a fully consistent comparison of economic costs. The initial cost estimate uses risk-adjusted discount rates based on the asset composition of the bank, whereas the adjustment to the 2000 FBCA cost estimate effectively uses the FDIC's cost of funds for discounting.

Differences between GAAP and the FDIC's Receivership Accounting Policies

Whereas open banks normally prepare financial statements and Call Reports using accounting principles that are predicated on their being ongoing concerns, receiverships use cash-basis accounting. The primary difference between bank and FDIC receivership accounting policies relates to the treatment of accrued items, reserves for troubled assets, and intangible assets. Receiverships do not typically record accrued items or intangible assets, except in cases where certain intangible assets are recorded on the books at one dollar for control purposes.[70] Receiverships record loans at gross book value, thereby reversing partial charge-offs or reserves recorded by the failed bank.[71] These differences sometimes result in large changes in the equity ratio of a bank when the basis of accounting shifts at failure, at times resulting in a receivership's initially showing more equity than the failed bank. As assets are sold, receivership equity inevitably declines, reflecting the asset recovery received.

At closing, the FDIC calculates the institution's closing balance sheet and then makes adjustments to conform to the receivership accounting policies. Although we collected both initial balances, we relied primarily on the institution's closing balance sheet for analysis because it is more comparable to the Call Report. Thus, all references to the bank's balance sheet at closing exclude the adjustments made to conform to receivership accounting policies unless an exception is cited.

The data on asset composition as of the failure date and during the receivership should be interpreted with care, partly because of differences in the accounting basis (discussed above) and partly because of different asset categories.[72] It appears likely that many—perhaps even all—of the failed banks used asset categories for their general ledgers that did not align closely with the asset categories used on the Call Report.[73] Differences in asset category may be quite small for securities and other real estate owned (OREO) but appear much larger for loans. Other differences may occur because of limits in data availability and time. Therefore, the results should be interpreted with these caveats in mind.

The financial statements of a receivership differ substantially from those of an ongoing bank or thrift in other ways as well. For example, the liabilities are grouped according to claims that have been proven (or remain unproven), and the income statement does not include interest expenses for most classes of creditors.[74]

Asset Losses, Charge-offs, and Reserves

Asset losses are a primary factor that determines the FDIC loss. There are substantial disparities in the information collected about asset losses of a failed bank over its life cycle. This section discusses certain adjustments made to the receivership loss figures to improve the comparability across the bank's life cycle and summarizes differences in policies and practices between the asset losses estimated at resolution and the asset losses recorded by the receivership.

[70] For example, assume that a bank sells a portfolio of mortgages but retains the servicing rights. The servicing rights may have real value, but they are typically recorded on the books of the receivership at one dollar.

[71] Gross book value is typically defined as the historical cost or unpaid loan balance minus any charge-offs that were recorded by the bank. If there are partial charge-offs recorded by the failed bank that are identifiable at failure, they will normally be reversed; however, this is frequently not the case. Thus, the treatment of charge-offs is not always consistent across receiverships.

[72] By asset categories, we mean types of assets grouped by loan purpose (such as single-family mortgages or C&I loans).

[73] Banks frequently categorize assets on their general ledgers on the basis of the subsystems used in servicing the assets. For example, all fixed-rate amortizing instruments may be boarded on one subsystem (regardless of loan purpose), and the general ledger may carry one set of accounts that is used for all such instruments. To prepare the Call Reports, a bank would typically use information from both the general ledger and the subsystems. At failure, the FDIC attempts to align the general ledger categories with those used internally by the FDIC receiverships (stratified by loan purpose, as in the Call Report), but time constraints and the differences in asset categories limit the FDIC's ability to succeed in this effort.

[74] For many creditors, receiverships pay post-insolvency interest only after the principal is paid in full. The FDIC's current policy is to calculate and record the interest cost due to creditors when 95 percent of the principal balance has been repaid. Such costs are treated as an adjustment to equity rather than an interest expense, because the bulk of such claims are typically accrued but not paid and receiverships use cash-accounting principles.

In preparation for resolution, the FDIC prepares an Asset Valuation Review (AVR) that estimates asset losses for the entire portfolio. These losses are based on total assets—gross of reserves—as per the Call Report.[75] To prepare the estimates, analysts review the available documentation, project all cash flows (including associated income and expenses), and discount the cash flows using a market-based discount rate. These estimates are made for various pools of assets, which are typically packaged to facilitate the marketing process. Because these packages do not always align with the asset categories recorded on the Call Report, we have largely omitted such comparisons.

Receiverships record asset losses as the difference between the gross asset balance (after reversing reserves and, to some extent, charge-offs) and the sales price. The receivership asset-loss figures are not discounted, and they exclude sales expenses and net income (loss) received prior to the sale.[76] Because both the definition of asset loss and the asset categories differ between the AVR and the receivership, we made no attempt to analyze changes in loss estimates between resolution and year-end 2000 by asset category.

Receiverships record judgments (awards made in a court) and certain deficiency balances (charged-off assets) at gross book value, whereas they are typically not recorded at all on the Call Reports. For this analysis, we exclude judgments and deficiencies (both balances and losses) recorded by the receiverships to improve the comparability of losses over the life of the failed bank.

Some of the receiverships had unsold assets as of year-end 2000. To facilitate comparisons across the full sample of failed institutions, we estimated future losses by asset type and incorporated these estimates into the asset loss rates for the receiverships. To prepare the estimates, we relied upon supporting documents for the FDIC's year-end financial statements for 2000 .

In addition to differences in practices and policies, the asset-loss data are difficult to interpret because of activity that occurs between the last Call Report and the failure date. Because no financial statements are filed during this period, we have no information about charge-offs, loss provisions, asset sales, or realized losses. If a bank sells a substantial amount of assets during the period, we have no record of the transaction. We can merely make inferences based on balance sheet changes between these dates. Comparisons also become difficult when interest rates or the health of the economy change during the course of the resolution and the receivership.

In summary, comparisons of financial data over time and across the stages of a failed bank (pre-failure, failure, receivership) are difficult to interpret because of differences in accounting policy and data collection, changes in the economy, and missing data for a brief period. For a typical failed bank, the initial equity balance of the receivership is markedly higher than the closing equity found on the Call Report. Because many receiverships begin with positive equity balances, losses recorded on the income statement of the receiverships usually exceed the FDIC's loss on its receivership claim.[77] Asset losses recorded by the receivership may be either higher or lower than the reserve levels recorded by the bank and the original AVR asset-loss estimates because of different calculation methods—even in cases where original expectations are met exactly. Therefore, one must be careful when interpreting comparisons of results over the life of a failed bank.

[75] Charge-offs are not reversed.

[76] Although accounting policy excludes all asset-sales expenses from these figures, occasionally certain asset-sales expenses incurred at the time of sale are included.

[77] This could also occur because of losses incurred by other creditors. However, most at-risk creditors flee banks before failure, so the FDIC and the bank's stockholders typically bear almost all the losses at failure.

APPENDIX 3

Comparison of Asset Composition: Call Report vs. Receivership

We collected high-level balance sheet data as recorded both by the failed bank's general ledger on the date of failure, and by the initial balance sheet of the receivership (that is, at failure), after adjustments were made over the life of the receivership.[78] We also compared these to the final Call Report data filed by the institution. The comparison is found in table A3-1. All figures are shown as a percentage of total assets.

The data on asset composition at receivership are difficult to interpret, partly because of accounting differences and partly because of different asset categories. Appendix 2 discusses these obstacles to straightforward comparison. The results should be interpreted with these caveats in mind.

Both the low-cost and high-cost failures shrank between the final Call Report date and failure. The median shrinkage was 7.10 percent for low-cost failures and 9.34 percent for high-cost failures. Between failure and receivership, both groups experienced a small increase in assets (attributable largely to the reversal of reserves).

From the final Call Report date to failure, the median level of securities increased slightly for low-cost institutions and decreased slightly for high-cost institutions. A review of the results for individual institutions indicates that a few of the low-cost institutions apparently sold a material amount of loans during the intervening period.

The mortgage results were puzzling. From the final Call Report date to failure, the median percentage of mortgages to total assets increased: from 23.00 percent to 27.53 percent for low-cost failures, and from 17.58 percent to 22.09 percent for high-cost failures. The increase continued in the receivership. The change in median levels between the failure date and the receivership is negligible for the low-cost failures but large (22.09 percent at failure; 30.25 percent in receivership) for the high-cost failures. Reviewing the results by institution, one infers that the largest factor is differences in asset category definitions.[79] Some portion of the increase between the Call Report date and failure is probably attributable to reductions in other types of assets (thereby increasing the proportion of mortgages).

Like the mortgage results, the C&I loan results were characterized by substantial swings that frequently appear to be changes in asset type definitions at failure. The median percentages dropped for the low-cost failures. For the high-cost failures, they increased between the Call Report date and failure but decreased during the receivership.

The OREO results appear to be untainted by differences in asset category definitions. Between the final Call Report and failure, there was a substantial change in the median ratio for high-cost failures (3.64 percent on the final Call Report, 5.69 percent at failure) but little change for the low-cost failures (0.69 percent on the final Call Report, 0.91 percent at failure). The median increase in OREO during the receivership, calculated in percentage points of total assets at failure, was similar (1.96 percent for low-cost failures, 2.19 percent for high-cost failures). These figures include foreclosure activity.

There were few changes in reserves between the final Call Report date and failure. Reserves are reversed in receivership.

[78] Some of the adjustments made during the receivership relate to post-closing activities rather than the institution's asset balance at closing. We dropped all adjustments that we could identify as occurring after failure.

[79] Unfortunately, we were not always able to determine which report provides the most accurate picture of the institutions. For some of these institutions, there was a change in receivership that appears to bring the institution's balance sheet into closer conformity with the Call Report. This type of change probably indicates that the asset types recorded on the institution's general ledger did not align well with the Call Report.

There were substantive changes in the median levels of other assets (including cash and fed funds). From the final Call Report date to failure, the median level of other assets increased slightly for low-cost institutions (16.21 percent to 18.92 percent) and decreased slightly for high-cost institutions (19.54 percent to 14.24 percent). Most institutions reduced their balances of other assets between the Call Report and failure, although a few institutions showed substantive increases because of apparent asset sales. We were unable to ascertain the underlying reasons for the persistent reductions shortly before failure. There were also large and persistent reductions in the receivership: the most likely cause was write-offs of intangible assets, accrued interest, and prepaid expenses.

Table A3-1

Comparison of Median Balance Sheet Composition before and at Failure

(as a percentage of total assets)

	Low-Cost Failures (%)			High-Cost Failures (%)			All Failures (%)		
	Call Report	Bank General Ledger	Receiver-ship	Call Report	Bank General Ledger	Receiver-ship	Call Report	Bank General Ledger	Receiver-ship
Securities	10.82	12.91	18.01	9.73	7.55	12.04	10.06	9.10	12.56
Mortgages	23.00	27.53	28.98	17.58	22.09	30.25	18.94	27.27	28.98
C&I Loans	31.74	26.31	23.90	33.95	44.47	36.36	33.50	32.62	33.08
Other Loans	3.07	3.58	3.54	4.00	5.18	5.31	3.92	5.01	4.97
OREO	0.69	0.91	3.80	3.64	5.69	5.33	2.47	4.15	5.14
Reserves	–2.76	–2.58	0.0	–2.68	–3.09	0.0	–2.72	–3.04	0.0
Other Assets	16.21	18.92	7.04	19.54	14.24	6.35	19.33	14.35	6.51

BIBLIOGRAPHY

Aggarwal, Raj, and Kevin Jacques. 2000. The Impact of FDICIA and Prompt Corrective Action on Bank Capital and Risk: Estimates Using a Simultaneous Equations Model. *Journal of Banking and Finance* 25:1139–60.

Barakova, Irina, and Mark Carey. 2001. How Quickly do Troubled U.S. Banks Recapitalize? With Implications for Portfolio VaR Credit Loss Horizons. Working paper presented at the 2001 Financial Management Association meetings.

Benston, George J., and George G. Kaufman. 1997. FDICIA after Five Years. *Journal of Economic Perspectives* 11, no. 3:139–58.

Barth, Mary E., Wayne R. Landsman, and James M. Wahlen. 1995. Fair Value Accounting: Effects on Banks' Earning Volatility, Regulatory Capital, and Value of Contractual Cash Flows. *Journal of Banking and Finance* 19:577–605.

Berger, Alan N., K. K. King, and J. M. O'Brien. 1991. The Limitations of Market Value Accounting and a More Realistic Alternative. *Journal of Banking and Finance* 15:753–83.

Carnell, Richard Scott. 1997a. FDICIA After Five Years: What has Worked and What has Not? in *FDICIA: Bank Reform Five Years Later and Five Years Ahead*, edited by George G. Kaufman, 11–16, JAI Press.

———. 1997b. A Partial Antidote to Perverse Incentives: The FDIC Improvement Act of 1991 in *FDICIA: Bank Reform Five Years Later and Five Years Ahead*, edited by George G. Kaufman, 199–233, JAI Press.

Dahl, Drew, John P. O'Keefe, and Gerald A. Hanweck. 1998. The Influence of Examiners and Auditors on Loan-Loss Recognition. *FDIC Banking Review* 11, no. 4:10–25.

Eisenbeis, Robert A., and Larry D. Wall. 2002. Reforming Deposit Insurance and FDICIA. Federal Reserve Bank of Atlanta *Economic Review* 87, no. 1:1–16.

Federal Deposit Insurance Corporation (FDIC). 1997. *History of the Eighties—Lessons for the Future: An Examination of the Banking Crises of the 1980s and Early 1990s.* 2 vols. FDIC.

Gilbert, R. Alton. 1992. The Effects of Legislating Prompt Corrective Action on the Bank Insurance Fund. Federal Reserve Bank of St. Louis *Review* 42, no. 4:3–22.

Gilbert, R. Alton, and Levis A. Kochin. 1989. Local Economic Effects of Bank Failures, *Journal of Financial Services Research* 3:333–45.

Gunther, Jeffrey W., and Robert R. Moore. 2000. Financial Statements and Reality: Do Troubled Banks Tell All? Federal Reserve Bank of Dallas *Economic and Financial Review* (Third Quarter), 30–35.

Jones, David S., and Kathleen Kuester King. 1995. The Implementation of Prompt Corrective Action: An Assessment. *Journal of Banking and Finance* 19:491–510.

Kaufman, George G. 1997. FDICIA After Five Years: What has Worked and What has Not?, in *FDICIA: Bank Reform Five Years Later and Five Years Ahead*, edited by George G. Kaufman, 35–43, JAI Press.

Mailath, George J., and Loretta J. Mester. 1993. When Do Regulators Close Banks? When Should They? Working Paper no. 93–10. Federal Reserve Bank of Philadelphia.

McDill, Kathleen. 2002. Federal Deposit Insurance Corporation memo on the loss rates of bank failures over the business cycle (January 28).

Mishkin, Frederick S. 1997. Evaluating FDICIA in *FDICIA: Bank Reform Five Years Later and Five Years Ahead*, edited by George G. Kaufman, 17–32, JAI Press.

Peek, Joe, and Eric S. Rosengren. 1996. The Use of Capital Ratios to Trigger Intervention in Problem Banks: Too Little, Too Late. Federal Reserve Bank of Boston *New England Economic Review* (September/October), 49–58.

———. 1997. Will Legislated Early Intervention Prevent the Next Banking Crisis? *Southern Economic Journal* (July), 268–80.

Shibut, Lynn, and Timothy Critchfield. 2000. An Analysis of Low Cost Failures. Unpublished manuscript (December 11). FDIC.

U.S. General Accounting Office (GAO). 1990. *Bank Insurance Fund: Additional Reserves and Reforms Needed to Strengthen the Fund.* GAO/AFMD-90-100.

———. 1992. *Depository Institutions: Flexible Accounting Rules Lean to Inflated Financial Reports.* GAO/AFMD-92-52.

———. 1996. *Bank and Thrift Regulation: Implementation of FDICIA's Prompt Regulatory Action Provisions.* GAO/GGD-97-18.

U.S. Department of the Treasury. 1991. *Modernizing the Financial System: Recommendations for Safer, More Competitive Banks.* Publication L, no. 101–73.

Do Local Economic Data Improve Off-Site Bank-Monitoring Models?

*by Daniel A. Nuxoll, John O'Keefe, and Katherine Samolyk**

Researchers at U.S. bank regulatory agencies have developed several types of statistical models to monitor potential problems at individual banks off-site (that is, without having to visit bank premises). These off-site monitoring models tend to be "unconditional" forecasting models that use available data on a bank's current and past condition to predict its future condition; they do not require the user to "condition" the forecast on assumptions about the future values of any of the variables in the model. Generally the models attempt to predict one of two phenomena: either that a bank will fail or that its condition has deteriorated enough that it will receive a downgrade in its supervisory rating (composite safety-and-soundness rating) during the next on-site examination. Although most models use fairly standard measures of banking conditions, variables describing conditions in the broader economy in which banks operate have not been important features of the models.[1] And whereas historical episodes of regional recessions and banking-sector difficulties have been studied, the contribution of economic data in forecasting future bank distress has received relatively little attention in empirical banking research.[2]

Improving off-site monitoring capabilities would enable regulatory agencies to allocate supervisory resources more efficiently and intervene more promptly and would reduce the costs associated with bank failures. For these reasons we investigate the extent to which state-level economic data could be used to improve the performance of standard types of statistical models that forecast a bank's condition off-site. Specifically, we focus on the linkages between economic conditions and problems of bank performance between the mid-

* Daniel A. Nuxoll is Senior Economist, John O'Keefe is Chief of the Financial Risk Measurement Section, and Katherine Samolyk is Senior Financial Economist in the Division of Insurance and Research, Federal Deposit Insurance Corporation. The views expressed here are those of the authors and not necessarily those of the Federal Deposit Insurance Corporation or its staff.

[1] For discussions of off-site monitoring models, see: Cole, Cornyn, and Gunther (1995); Gilbert, Meyer, and Vaughan (1999); and Reidhill and O'Keefe (1997).

[2] Samolyk (1994a) finds linkages between state banking conditions and state personal-income growth during the 1980s and early 1990s that are consistent with the existence of a regional credit channel. Neely and Wheelock (1997) conclude that the dispersions in state-level bank earnings can be attributed largely to disparities in state economic conditions; similarly, Samolyk (1994b) finds that state economic conditions explain significant amounts of observed differences in bank asset quality and bank profitability during the1980s and the early 1990s.

1980s and the early 1990s—a period characterized by significant regional disparities in both banking-sector and broader economic conditions. The national economic expansion that followed the recession of the early 1980s was an uneven one: agricultural and oil-producing states alike experienced local economic problems and serious banking-sector difficulties. In addition, the national recession of the early 1990s was largely concentrated along the coasts and was linked to bank failures in New England and California. Since the early 1990s the U.S. banking industry has consolidated into larger, more geographically diverse institutions, so one might argue that the industry is now less vulnerable to local economic conditions of the type experienced in the 1980s and early 1990s. Nonetheless, for thousands of small U.S. banks, linkages between local economic conditions and bank performance are likely to remain significant.

Our empirical strategy is to take variables measuring economic conditions in the state where a bank is located and add them to statistical models that attempt to identify institutions likely to experience financial difficulties. We study the contribution of state-level economic variables in three types of forecasting models—specifically, those that forecast bank failures, those that forecast changes in the quality of bank assets, and those that forecast risky bank growth (as indicated by supervisory rating downgrades). The sole criterion for success is whether these variables improve the accuracy of forecasts.

By way of preview, the addition of state-level economic variables generally does not improve upon the forecasts generated by models using only data on a bank's condition. Indeed, the models forecasting bank failures and changes in the quality of bank assets perform about the same or worse when state-level economic variables are included. The models predicting risky bank growth, however, show a more consistent, albeit modest, improvement. These findings do not imply that economic conditions are unimportant for a bank's performance. Rather, as we discuss in the conclusion, it is possible that factors not considered in our models contribute to this finding of no, or little, predictive improvement.

The next section discusses the conceptual link between state-level economic data and bank performance. The subsequent three sections present the results of incorporating state-level economic data into models forecasting the three aspects of bank performance that we focus on (failures, changes in asset quality, and risky growth). The final section presents our conclusions and discusses the implications of our findings for future research on bank off-site monitoring.

Conceptual Link between Local Economic Conditions and Bank Performance

Because the purpose of our study is to investigate whether local economic variables can improve the ability of statistical models to forecast which banks will experience difficulties, we judge the success of each model in terms of the accuracy of its forecasts relative to the forecasts of an otherwise equivalent model that does not include the economic variables. Before we turn to the models we develop, however, it will be helpful to discuss the conceptual link between local economic conditions and bank performance.

Some theories posit that the main comparative advantage of banks relative to other financial firms lies in banks' information about and expertise in lending locally. This advantage is viewed as particularly important for smaller, more-localized banking institutions. In making its lending decisions, bank management must address the risk that local economic conditions will affect the profitability of local borrowers and the subsequent performance of loans granted to those borrowers. Bank lending tends to move procyclically as borrowers seek to fund profitable business opportunities in economic expansions and to retrench during economic downturns. Once loans are issued, a bank's profitability and credit quality will depend to some extent on the economic fortunes of its borrowers. Indeed, when economic conditions change dramatically, we

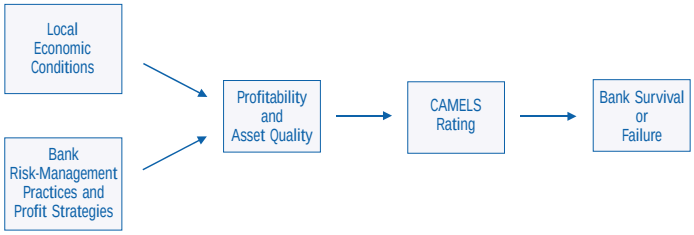
expect to find a correlation between these conditions and the likelihood that a bank will fail.[3] Thus, when local economic conditions vary substantially, we expect to find some relationship between these variations and the performance of local banks. And because profitability and asset quality are key factors affecting bank supervisory ratings, we also expect to see a link between local economic conditions and the on-site examination ratings received by institutions—all other things being equal.

But all other things may not be equal. The relationship between local economic conditions and a bank's performance also is affected by the management of the bank. Differences in credit cultures, lending strategies, underwriting standards, and asset-and-liability management will lead to differences in the exposure of institutions to local economic developments. We expect that "better-managed" banks will be able to weather local economic downturns better than poorly managed banks. Because management is so important to a bank's success, it receives particular attention during on-site safety-and-soundness examinations. The summary, or composite, safety-and-soundness rating (CAMELS rating) reflects not only the bank's current profitability, asset quality, and capital adequacy but also the soundness of the bank's current management.[4] The linkages among the local economic conditions a bank faces, its management policies, its profitability and asset quality, its on-site composite safety-and-soundness examination rating, and its survival are depicted in figure 1.

Despite the multiplicity of factors at play, banks operating in poorly performing economies are nonetheless more likely to perform worse than banks in healthier environments. This suggests that local economic data have the potential to improve the performance of the statistical models used for identifying banks that are likely to experience problems. Whether these data do improve the models' performance is ultimately an empirical question. But the fairly dramatic regional differences in U.S. economic conditions and bank performance during the 1980s and early 1990s present a good opportunity to study this question (especially given the regulatory structure of the industry at the time, and in particular the interstate banking restrictions that to a large degree delineated banking activities along state lines).

Figure 1

Using Economic Data to Monitor Bank Risk



Data Considerations

A number of considerations influenced our decision to investigate the usefulness of state-level economic data in off-site monitoring models. First, we wanted to use economic variables that were consistently reported for all regions during the study period. Second, we wanted to use variables that would have been available in a timely fashion for inclusion in off-site monitoring models. Third, we wanted to use economic data

[3] But since bank failure is an extreme event, its correlation with standard measures of local economic conditions (such as income growth or unemployment rates) may be more complex than the correlation of continuous performance measures, such as bank asset-quality ratios. In addition, external capital injections or friendly mergers can prevent bank failures from occurring.

[4] CAMEL stands for Capital, Asset quality, Management, Earnings, and Liquidity. In 1997, the ratings became CAMELS with the addition of a market Sensitivity rating. However, because most of our data are from the period before 1997, we refer to CAMEL ratings.

measured for the type of geographic region that reasonably could be expected to reflect the conditions faced by many banks. Various data series are available for counties (or parishes), states, or Census-level divisions, but given our selection criteria, state-level data seemed the best choice.[5] A fair number of data series are available for all states within a reasonable time frame.[6] In addition, interstate banking restrictions and state banking laws delineated banking markets along state lines. Therefore, for the U.S. banking industry of the 1980s and early 1990s, state-level economic data seemed to be reasonable measures of the local economic conditions affecting banks.

Predicting Bank Failures

The first part of our study examines the contribution that state-level economic variables make when added to standard models predicting bank failures.[7] Patterns in the state-level data during the 1980s and early 1990s suggest that regional economic conditions were related to the incidence of bank failure. More specifically, states experiencing economic booms followed by busts tended to have high failure rates. Figure 2 shows this by comparing state personal-income growth rates and bank-failure rates for Texas and for Massachusetts.

[5] State-level economic variables can contribute to off-site monitoring models without being perfect measures of the relevant economic conditions because they bear on all banks. What is necessary is only that the economic variables provide reasonable approximations of the relevant "local" conditions for most banks in the sample.

[6] In contrast, although employment and (annual) income data are produced at the county level, the latter are not available until 18 months after the end of the year.

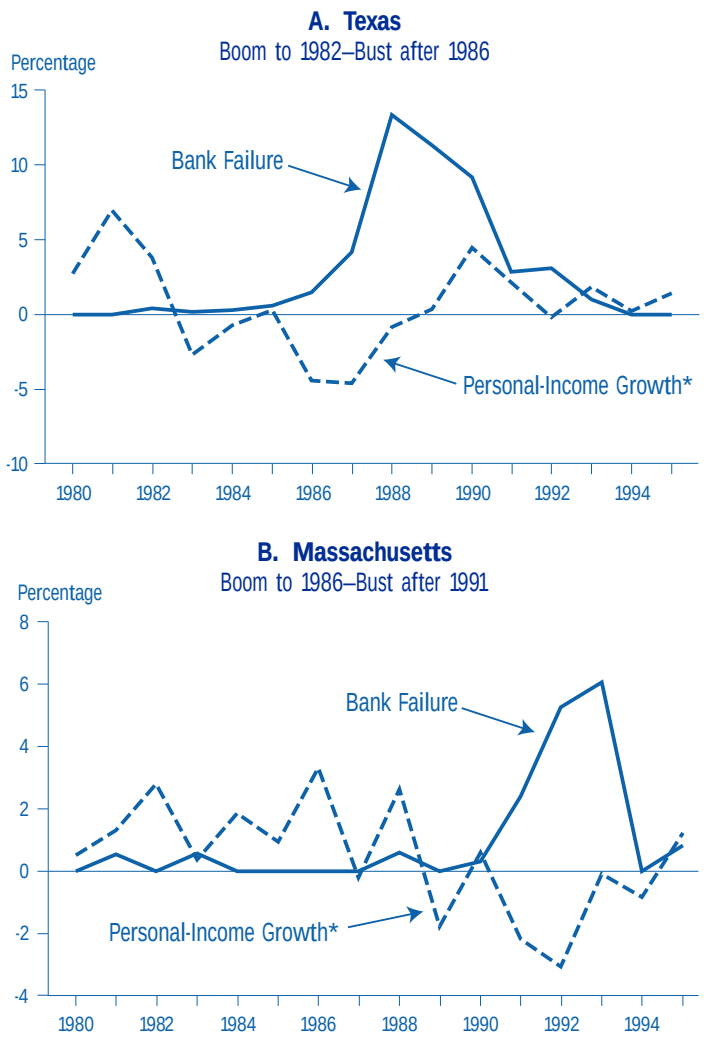
[7] For more detail, see Nuxoll (2003).

Although there were also regions where weak economic performance was not followed by high bank-failure rates, these tended to be regions where the economic weakness had not been preceded by an economic boom.

Here we look at whether measures of state-level economic conditions would have helped supervisors identify the institutions that ultimately failed during the late 1980s and early 1990s. Taking what have become fairly standard logistic regression models, we use bank financial data at the beginning

Figure 2

Relationship between State-Level Economic Conditions and Bank Failures



* Personal-income growth is defined here as the difference between the state personal-income growth rate and that for the United States.

of a period to predict the likelihood that an institution will fail sometime during a subsequent two-year interval. In these models, the precise relationships used to assign bank-failure probabilities are based on the historical relationships observed for failures during the prior two-year interval. That is, first we estimate statistical relationships about the conditions preceding failures during the previous two years, and then we use these relationships to forecast specific failures during the subsequent two years.

Because these models generate a failure probability for each bank, one must choose a critical (or cutoff) probability in order to classify banks as survivors or failures. For example, a critical probability of 50 percent indicates that all banks having estimated failure probabilities greater than 50 percent are classified as "predicted failures." Obviously, choosing a lower, more-stringent critical probability will yield a greater number of predicted bank failures than will a higher, less-stringent one. Furthermore, the accuracy of failure-model predictions is measured in terms of two types of forecast errors that the model can make: one, bank failures that are not predicted (missed failures); and two, surviving banks are erroneously identified as failures (missed survivors). Thus, in choosing a critical failure probability, a model user faces a trade-off in terms of the types of prediction errors that will be obtained from the model. By choosing a lower critical probability, a user can generally reduce the percentage of missed failures but will increase the percentage of missed survivors. A more accurate failure-prediction model is one that gives the user a better trade-off in terms of these forecast errors. In other words, given the percentage of missed failures yielded by the user's cutoff, a more accurate model will yield fewer missed survivors (and a less-accurate model will yield more).

Here we report forecast results for two periods. For the first period, we use the relationship between bank and state-level economic conditions as of year-end 1986 and actual failures in the years 1987 and 1988 to predict failures occurring in 1989 and 1990. For the second period, we use the relationship between bank and state-level economic conditions as of year-end 1988 and actual failures in the years 1989 and 1990 to predict failures occurring in 1991 and 1992.

Table 1 lists the variables in the bank failure-prediction models. As indicated in the top panel, the basic "banking" model uses fairly standard bank financial data and supervisory (CAMEL) ratings to predict failure/survival during the subsequent two years. The statistical relationships yielded by the models for the subperiods studied here are generally consistent with those reported by other researchers. All else being equal, banks with less capital, more asset-quality problems, and lower supervisory ratings for management and liquidity are assigned higher projected failure probabilities. We next examine the contribution to the basic banking model made by various proxies measuring state-level economic conditions (see the bottom panel of table 1). Model results are displayed in figure 3.

The solid line in figure 3A illustrates the prediction-error trade-off yielded by the banking model using actual failures in 1987 and 1988 to predict

Table 1

Variables Included in Bank Failure-Prediction Models

Standard Bank Financial Data
- Asset-quality measures
- CAMEL ratings
- Capital/asset ratios

Other Bank Data
- Five years of loan growth, asset growth
- Growth associated with mergers
- Mean and standard deviation of operating income
- Average salary
- Loan-to-asset ratio
- Other

Proxies for Economic Conditions
(during previous five years)
- State personal-income growth
- State employment growth
- State unemployment rate
- Growth in total loans issued by insured banks headquartered in the state
- Growth in total assets held by insured banks headquartered in the state

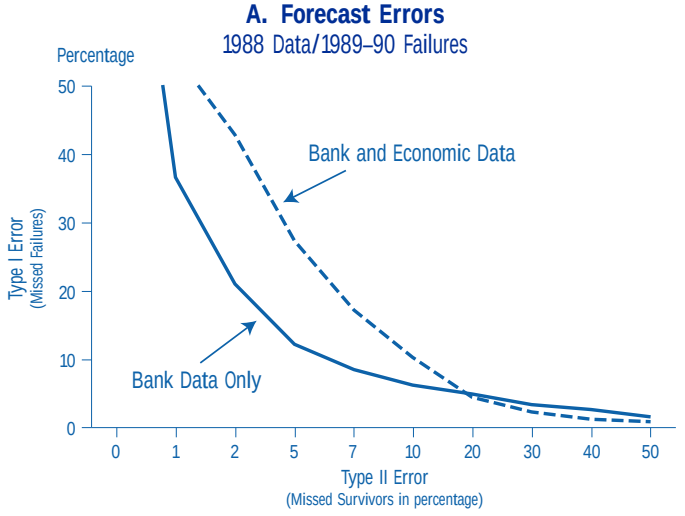
failure in 1989 and 1990. Here the prediction-error trade-off is not as good as that depicted in figure 3B. There is a greater trade-off between minimizing missed survivors and minimizing missed failures. The broken line summarizes the predictive accuracy of the model when measures of state-level personal-income growth are added to the pure banking model: the addition of the economic data materially reduces the accuracy of the bank-failure predictions for 1989 and 1990.

The solid line in figure 3B illustrates the prediction-error trade-off yielded by the banking model using actual failures in 1990 and 1991 to predict failure in 1992 and 1993. The model predicts fairly well, in the sense that one could have chosen a lower critical probability (fewer missed survivors) without dramatically increasing the proportion of missed failures. The broken line summarizes the predictive accuracy of the model when measures of state-level personal-income growth are added to the pure banking model: the economic data do not materially improve our ability at year-end 1991 to predict bank failures.

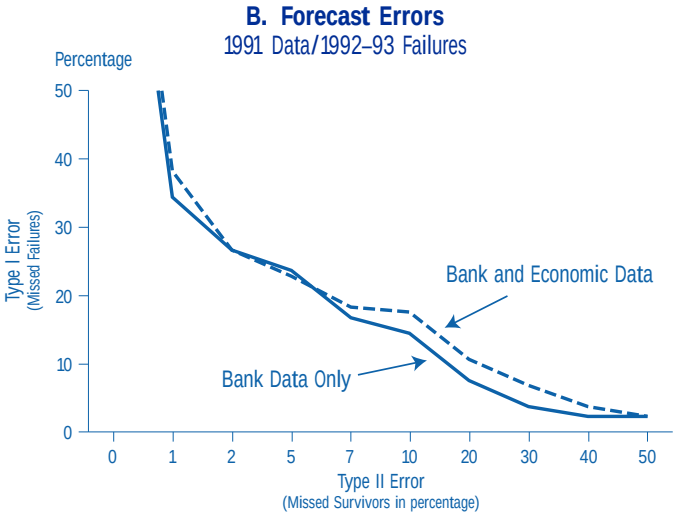
Although evidence about the contribution of state-level economic data in off-site monitoring models is sparse, our findings are consistent with what has been reported. The most relevant work in this area was conducted by researchers at the Federal Reserve System when they were developing their near-term-prediction Financial Institution Monitoring System (FIMS) in the early 1990s. These researchers' systemwide effort yielded two models that have been modified and improved over time. The developers of the FIMS model found that including state-level data on unemployment rates, personal income, and housing permits did not significantly improve upon predictions based solely on bank-examination and bank-financial data.[8]

Figure 3

Results of Bank Failure-Prediction Models with and without State-Level Economic Condition Variables



Note: Forecasts use model estimates generated from 1986 data and actual 1987-88 failures.



Note: Forecasts use model estimates generated from 1989 data and actual 1990-91 failures.

[8] Cole, Cornyn, and Gunther (1995) report on the development of the Federal Reserve System's failure-prediction and CAMEL-prediction models. Various prototypes included state-level data on unemployment rates, personal-income growth, and housing permits; however, the explanatory power of the state-level economic variables "is attenuated by the inclusion of bank-specific variables in the model" (p. 8). Other researchers have estimated bank failure-prediction models that include economic proxies, but they do not assess the contribution of the economic variables in their models.

Predicting Changes in the Credit Quality of Bank Assets

Since the goal of off-site monitoring models is to identify emerging banking problems, accurate forecasts of bank nonperforming-asset ratios are useful, insomuch as declining asset quality generally is a precursor of more serious banking problems. Thus, the second part of our study investigates whether state-level economic variables would improve the performance of reduced-form models that predict changes in bank profitability and asset quality. Here we report results for models that predict changes in nonperforming-asset ratios.[9]

As with the incidence of bank failure, one can find examples of states where poor economic conditions have been correlated with higher-than-average bank asset-quality problems. Figure 4A illustrates a situation in which the nonperforming-asset ratio of banks in a state is inversely related to the state's economic health. However, one also can find examples of states where bank asset-quality problems are not clearly related to state-level economic conditions. As figure 4B shows, the nonperforming-asset ratio of California banks was high even when the state's economy was healthy.[10]

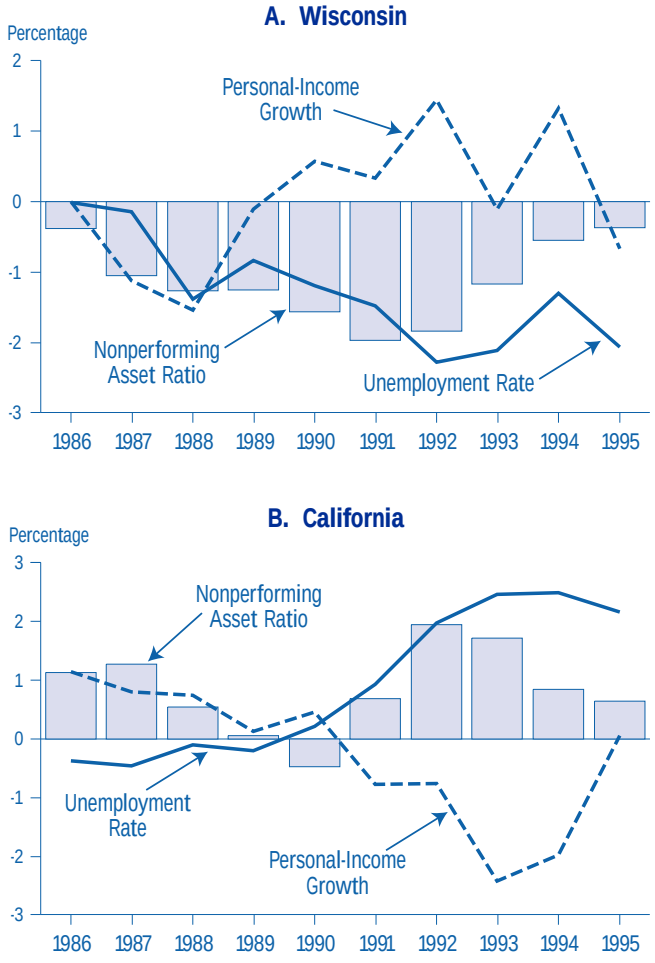
[9] The nonperforming-asset ratio equals the sum of total loans and leases more than 90 days past due plus nonaccruing loans and leases plus other real estate owned as a share of total assets.

[10] Because the nonperforming-asset ratios of very large banks reflect the national and international scale of their activities, banks with more than $20 billion (1994) in assets were excluded from the calculations illustrated in figure 4.

The nature of bank asset-quality ratios makes them an attractive candidate to study. First, as discussed above, the economic conditions affecting a bank's borrowers should be directly related to the credit quality of the bank's loan portfolio. Second, unlike bank failure (which is a discrete event occurring only when a bank's condition worsens beyond some threshold level), the quality of bank assets is measured in the same continuous fashion as economic variables; hence, it may exhibit a more systematic correlation with economic variables.

Figure 4

Relationship between Bank Asset Quality and State-Level Economic Conditions,* 1986-95



* State-level variables are measured relative to comparable variables calculated at the national level. Thus, personal-income growth equals the difference between state personal-income growth and that for the United States. The unemployment rate equals the difference between the state unemployment rate and the U.S. unemployment rate; and the nonperforming-asset ratio equals the difference between the nonperforming-asset ratio of banks headquartered in the state and the nonperforming-asset ratio of all U.S. banks.

One difference, however, between this part of the study and the first part is that bank supervisory staff do not currently use "standard" models that forecast a bank's profitability or asset quality. Thus, we begin by using bank financial data from prior periods to construct reduced-form linear models that predict the change in a bank's nonperforming-asset ratios one year forward. We then include a variety of state-level economic data to see whether they improve upon the forecasts yielded by the bank financial data.

We evaluate the forecasts of asset-quality changes by using a standard summary measure of a linear model's prediction error. The root mean-squared error (RMSE) measures the square root of the average value of a model's squared forecast errors. Forecast errors are squared before averaging so that negative errors and positive errors count equally, and larger errors are given more weight.

In the models we use here, the RMSE summarizes those differences in asset-quality changes across banks that are not explained by the model. To put the size of the RMSE in perspective, we compare each model's RMSE with the RMSE we obtain when we use only the historical mean change in nonperforming-asset ratios (no banking or economic data) to predict future changes.[11]

Because U.S. banks vary greatly in size, we want to account for the possibility that the link between state-level economic variables and nonperforming-asset ratios could vary with a bank's size. First, very large banks (those with assets of more than $20 billion in 1994 dollars) are excluded from all analyses because they operate in markets that are much larger than the state in which they are headquartered. We divide the remaining institutions into five classes based on asset size in 1994 dollars, and we estimate separate models for each size class. This allows the measured link between state-level data and the quality of bank assets to differ for each class of banks. Table 2 identifies the bank size classifications.

Table 2

Number of Banks in the Analysis Samples

Bank Asset-Size Class (1994 dollars)	Sample period			
	1986-89	1991-94	1990	1995
Very small: less than $25 million	8,382	5,514	1,752	873
Small: $25 million to $100 million	19,572	15,843	4,247	3,074
Medium: $100 million to $300 million	7,826	7,669	1,926	1,605
Medium-large: $300 million to $1 billion	2,386	2,564	675	553
Large: $1 billion to $20 billion	1,425	1,471	391	342

Here we report results for models that measure the link between lagged bank conditions and annual changes in bank nonperforming-asset ratios during two periods: 1986 through 1989 and 1991 through 1994.[12] We assess each of these models in terms of the accuracy of its out-of-sample predictions of asset-quality changes in the year following each model's estimation period—that is, in 1990 and 1995. In modeling changes in asset quality, we include lagged values of the bank's financial variables that are most likely to be related to the quality of bank assets.[13] These measures are identified in the top two panels of table 3. We then include a set of economic variables (identified in the bottom two panels of table 3) in what we refer to as "banking and economic models."[14]

[11] Thus, for each bank size class and each sample period, we estimate the following models:

(1) $Nonperf_i = \alpha_j + \Sigma\beta_{jk}\ Bank_{ki} + \varepsilon_i$ *(bank model)*

(2) $Nonperf_i = \alpha_j + \Sigma\beta_{jk}\ Bank_{ki} + \Sigma\Gamma_{jl}\ Econ_{li} + \varepsilon_i$, *(banking & economic model)*

(3) $Nonperf_i = \alpha_j + \varepsilon_i$ *(naïve model)*

where j = *jth bank size class (1-6).*
i = *ith observation in size class j.*
k = *kth right-hand-side banking variable.*
l = *lth right-hand-side economic variable.*

In sample, the RMSE of the naïve model regressions will be very close to the standard deviation of the dependant variable for each sample of banks. Out of sample, the RMSE of the naïve model forecasts can differ from the standard deviation of realized asset-quality changes because the forecasts are based on the average changes in nonperforming-asset ratios evident historically, and these average changes can differ from the realized mean.

[12] Observations for all four years in a given sample period are pooled in what is called a cross-sectional time-series analysis. The four-quarter change in a bank's asset-quality ratio is measured as the percentage change in the ratio of nonperforming assets to total assets. Nonperforming assets include loans 90 days past due and still accruing, nonaccruing loans and leases, and other real estate owned.

[13] Because we are linking bank data over time, we adjust data where necessary to reflect bank mergers so as to get a consistent historical series for each bank.

[14] To control for variations in the national economy during a given sample period, the set of economic variables also includes one lag of U.S. personal-income growth and one lag of the percentage-point change in the GDP deflator (as a proxy for inflation).

Figure 5 illustrates the amount of variation in nonperforming-assets-ratio changes that is not predicted by the models linking past conditions to asset-quality changes during the previous four years. All the results we report here include the same sets of banking and economic variables. Hence differences in results across specifications can be attributed to the inclusion of the economic variables, differences in bank size, and differences in the sample period under scrutiny.

As indicated in figure 5A, the reduced-form models using Call Report variables predict only modest change in bank asset quality during 1990, and the economic variables do not materially improve upon these forecasts. Figure 5B shows that historical relationships observed during the early 1990s do not help predict changes in bank nonperforming-asset ratios during 1995. For this period, the inclusion of state-level economic variables would have made our prediction errors larger.

In summary, this part of our study indicates that future changes in bank asset quality are hard to predict even with data on recent trends in bank asset-quality measures. And state-level economic data do not generally improve upon these predictions. These results suggest that, at least for the periods we study, a reasonable predictor of a bank's nonperforming-asset ratios one year forward is the bank's current nonperforming-asset ratios.

Table 3

Variables Used to Predict One-Year-Forward Asset-Quality Changes

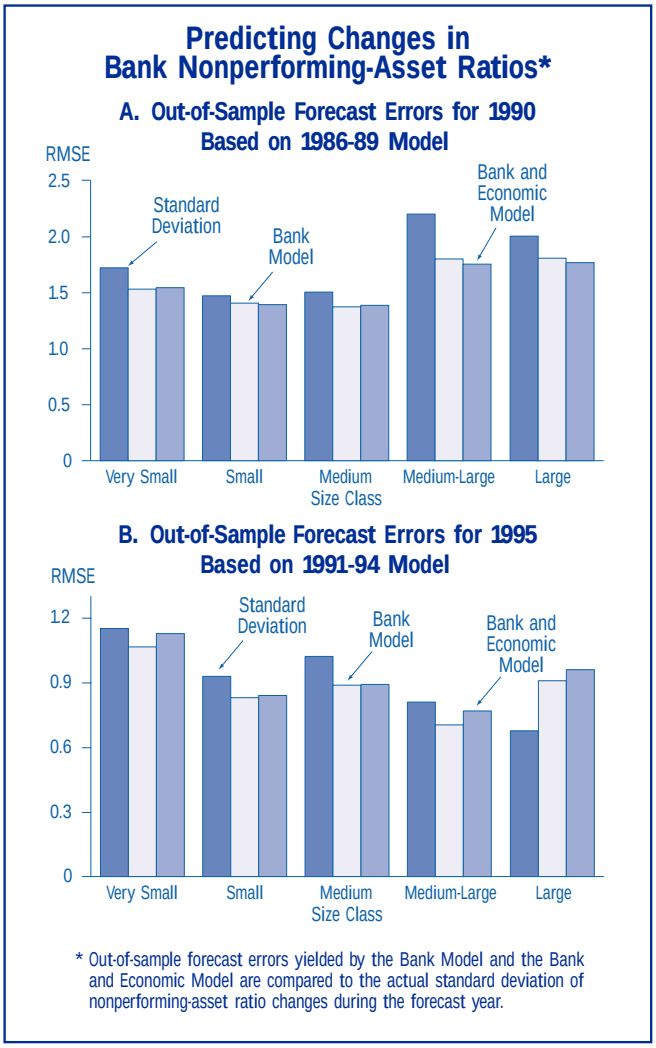
Bank Balance Sheet Variables
(current and previous four quarters)
- Ratio of equity to assets
- Ratio of total loans to assets
- Ratio of nonperforming loans to assets
- Ratio of other real estate owned to assets
- Ratio of 30-90 days past-due loans to assets

Bank Income and Growth Variables
(previous four quarters)
- Annual asset-growth rate
- Return on average assets
- Net charge-offs

State-Level Economic Variables
(current and previous four quarters)
- State-level percentage of 1-4 family mortgages 90 days past due
- State unemployment rate
- Log of state personal income per worker
- State-level personal-income growth
- Log of state failed-business liabilities per worker

Macroeconomic Variables
(rate of change during previous four quarters)
- U.S. personal-income growth
- Change in the GDP deflator

Figure 5

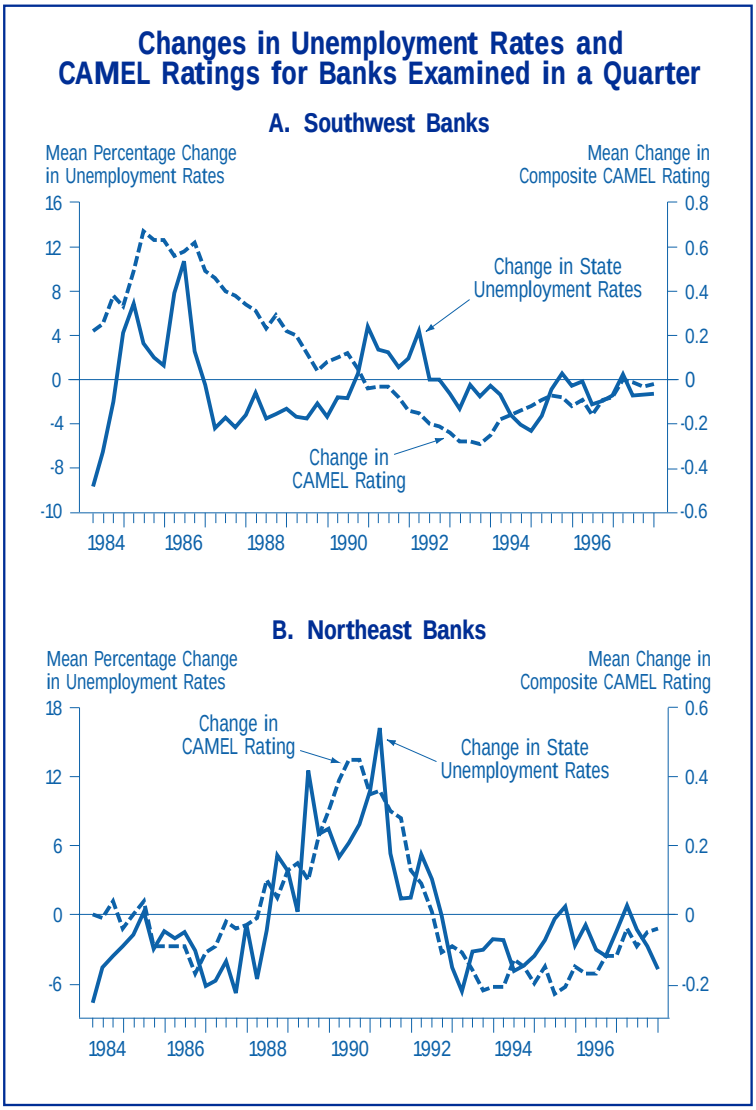


Predicting Risky Bank Growth

The manner in which a bank grows has important implications for its overall safety and soundness. Imprudent or ill-timed growth can lead to risky loan concentrations, funding problems, or other difficulties for bank management.[15] Bank regulators are aware of these possibilities and have included appropriate safeguards in the supervisory process. Most relevant to this article is the FDIC's growth-monitoring system (GMS), which seeks to identify risky bank growth ex ante.[16] We propose that economic conditions in a bank's market might provide a useful context for assessing the potential risks of bank growth and might therefore contribute to bank off-site monitoring models. To see whether our proposal is correct, we next test whether data on state economic conditions added meaningful information to GMS.[17]

Before we describe those tests, it is useful to look at the past correlation between bank safety and soundness (that is, risky bank growth) and state economic conditions. The U.S. banking experience of the 1980s and early 1990s suggests that deteriorating economic conditions were associated with declines in the condition of banks. Figure 6A illustrates that sharp increases in state unemployment rates in the southwestern United States during the mid-1980s coincided with deteriorating banking conditions, as identified through composite CAMEL ratings of banks.[18] (In the figure, positive changes in the average composite CAMEL rating for the region's banks indicate a widespread decline in banks' safety and soundness because the rating is an ordinal index that increases in value the poorer a bank's assessed safety and soundness.) As indicated in figure 6B, the correlation between adverse changes in state unem-

Figure 6



[15] A thorough analysis of the causes of the U.S. banking crises of the 1980s and early 1990s found that a "boom/bust" cycle in banking markets was a common feature; the analysis also examined the implications of these cycles for bank growth. See Federal Deposit Insurance Corporation (1997).

[16] Bank supervisors also can place restrictions on bank growth. Regulatory capital requirements are perhaps the most general restriction and limit the degree to which a bank can engage in leveraged growth. Moreover, bank management may be required to obtain supervisory approval before engaging in some types of new activities.

[17] For an extensive description of the FDIC's GMS during the late 1980s and early 1990s, see Reidhill and O'Keefe (1997).

[18] The mean percentage change in state unemployment rates for examined banks is weighted by the number of banks examined within a state each quarter. This was done to ensure that the economic conditions shown in figure 6 reflect those faced by the banks whose CAMEL rating changes also are shown in figure 6.

ployment rates and declines in CAMEL ratings was particularly pronounced in the northeastern United States.[19]

Although informative, these simple comparisons do not tell us whether data on state economic conditions add to off-site growth-monitoring models. To answer this question, we develop and compare two off-site growth-monitoring models designed to rank banks in terms of the relative riskiness of their growth (that is, we designed two risky-growth indexes). The first model ("bank model") serves as our basis of comparison and uses information on a bank's portfolio composition, changes in portfolio composition, and supervisory assessments of bank condition to construct a risky-growth index. The bank model excludes measures of state economic activity, however. The second model ("bank and economic model") includes all the information the bank model contains plus measures of state-level economic activity. The measures of economic activity we test are quarterly changes in both state unemployment rates and state personal-income growth. Because our conclusions are the same for both of these economic activity measures, for brevity we present only the results of tests that use changes in state unemployment rates.

The premise behind the bank model is that all other things being equal, the risks to a bank's future safety and soundness increase when growth (1) proceeds too quickly, (2) increases the concentration in risky activities, or (3) increases the reliance on volatile sources of funding. In addition, it is presumed that the poorer a bank's initial condition, the greater the future risks from growth. As shown in table 4 the bank model uses 11 variables to capture the factors that can lead to risky bank growth. More specifically, the bank model uses 5 measures of portfolio change: the annualized rates of growth in total assets, gross loans and leases, the ratio of loans plus securities with maturities of five years or more to assets, the ratio of volatile liabilities[20] to assets and the ratio of equity capital to assets. In addition, the bank model uses 4 portfolio ratios: the ratios of loans plus securities with maturities of five years or more to assets, volatile liabilities to assets, equity capital to assets, and a summary measure of portfolio concentration. The summary measure of loan concentration is used to capture potentially risky shifts in business activity and is based on the Herfindahl-Hirschman Index (HHI). To calculate the concentration measure we first compute the shares of total loans held in 15 well-defined cate-

Table 4

Banking and Economic Variables Included in Bank Growth Models

Portfolio Changes *(current quarter)*	**Peers for Ranking**
• Asset growth	All banks
• Gross loan growth	All banks
• Growth of loans and securities as a percentage of assets	All banks
• Growth of volatile liabilities as a percentage of assets	All banks
• Growth of equity as a percentage of assets	All banks
Portfolio Ratios *(current quarter)*	
• Loans and securities as a percentage of assets	Region & size peers
• Volatile liabilities as a percentage of assets	Region & size peers
• Equity as a percentage of assets	Region & size peers
• Portfolio concentration (a summary measure)	All banks
Supervisory Variables	
• Initial supervisory rating (composite CAMEL rating)	
• Number of days since last bank examination	
Economic Variables	
• Change in state unemployment rate: current and previous four quarters	
• Alternatively, state personal-income growth: current and previous four quarters	

[19] The Pearson's correlation coefficient (and p-values in parentheses) between the mean percentage change in unemployment rates and changes in CAMEL ratings for the period 1984 through 1997 is 0.24 (0.0734) for the Southwest and 0.73 (0.0001) for the Northeast.

[20] Volatile liabilities are defined here as the sum of time deposits over $100,000, foreign deposits, federal funds and securities sold under repurchase agreements, demand notes issued to the U.S. Treasury, and other borrowed money.

gories of loans and leases. Next we square and sum the loan shares.[21] Rather than using the raw values of these measures of portfolio change and portfolio ratios, we use a bank's percentile ranking for each measure, based on either a peer group or a national ranking, as appropriate.[22] Finally, the bank model includes 2 supervisory measures: a bank's composite CAMEL rating as of the quarter-end, and the number of days since the bank's last on-site safety-and-soundness examination as of the quarter-end.

The final step in computing the bank-model growth index is to combine the 11 variables into a summary growth index. We do this by weighting each variable in terms of its importance in explaining downgrades in composite CAMEL ratings during the prior period and then summing the weighted variables.[23] The reason we choose this approach is that a growth index is most useful to bank supervisors if it can be used to anticipate changes in bank safety and soundness (which is measured by composite CAMEL ratings).

In the banking and economic model, we study the contribution of economic data in growth monitoring by including state-level economic variables as additional explanatory variables. This article presents the results of tests based on the quarterly percentage change in state unemployment rates. To construct the bank and economic model growth index, we use the same approach as with the bank model but add percentage changes in state unemployment rates for the current quarter and four prior quarters.

[21] We use the same approach to constructing the loan concentration index that Reidhill and O'Keefe (1997) used. Specifically, certain risky loan concentrations are weighted more heavily in the HHI.

[22] National rankings are used for all measures of portfolio change as well as for the summary measure of portfolio concentration. All remaining ratios are ranked with the use of peer groups. To form peer groups, we stratified banks into eight broad U.S. geographic regions and two asset-size classes ("large" or "small" depending on whether the asset size is greater or less than $1 billion).

[23] Specifically, we used the year-end percentile rankings of the 9 financial measures and the raw values of the 2 supervisory measures in the bank model as explanatory variables in a logistic regression model to explain the incidence of composite CAMEL downgrades during the subsequent three-year period. The weights obtained from a given three-year estimation period are applied out-of-sample as weights to the 11 variables, and the weighted sum is used as the growth index.

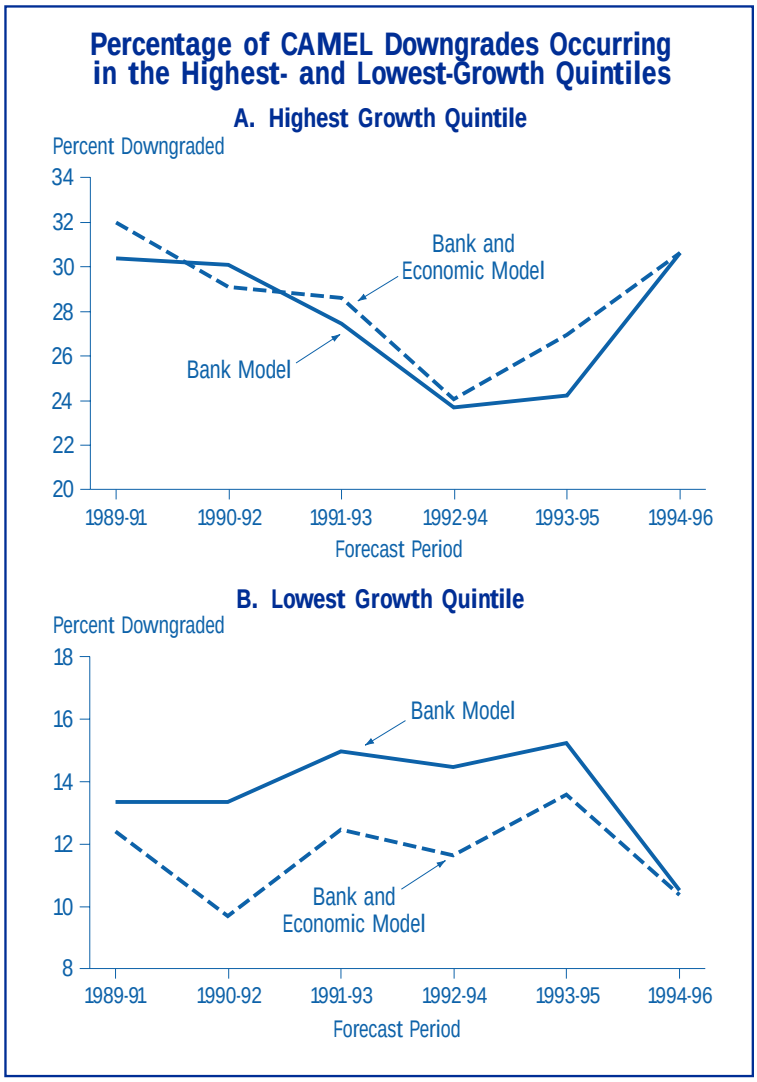
As we stated at the outset, useful risky-growth indexes should anticipate declines in bank safety and soundness. Hence, to assess each index's usefulness, we rank banks on the basis of their growth indexes and group the ranked banks into "risk" quintiles. Next we measure the proportion of banks receiving CAMEL downgrades (during the subsequent three years) in each of the quintiles.[24] For example, we construct bank-model growth indexes as of year-end 1988 and then compare the distribution of CAMEL downgrades between 1989 and 1991 across risk quintiles.

Here we report results for banks that were examined during five three-year periods. For each period, we compute risky-growth indexes (with and without the state economic data) on the basis of the methodology described above. We then compare the downgrade experiences of the risk quintiles generated by the bank model with those of the risk quintiles generated by the bank and economic model. We measure the contribution of the state economic variables by comparing the proportion of downgrades in each risk quintile across the two models. The model that performs "better" will be the one with a higher proportion of downgrades in its highest-risk quintile and a lower proportion of downgrades in its lowest-risk quintile.

Figure 7A shows the percentage of CAMEL downgrades (during the indicated three-year period) occurring in the highest-risk quintile as classified by each model. Except for the 1990 to 1992 period (which coincided with a national recession), the proportion of downgrades occurring in the highest-risk quintile identified by the bank and economic model is somewhat larger than the proportion in the same quintile for the bank model. Figure 7B shows the percentage of downgrades received by banks in the lowest-risk quintile. Here the proportion of future downgrades occurring in the lowest-risk quintile identified by the bank and economic model is generally lower than

[24] Reidhill and O'Keefe (1997) indicate that there may be a three- to five-year lag between periods of excessive growth and subsequent declines in bank safety and soundness.

Figure 7



the proportion in the same quintile for the bank model. These results suggest that state-level economic data might be useful in identifying imprudent bank growth. Although the improvement in the performance of the growth-monitoring model in anticipating future downgrades is somewhat modest, it is fairly consistent over time and is in line with evidence about historical patterns of local economic conditions, portfolio growth, and subsequent bank performance.[25]

[25] A study by Avery and Gordy (1998) examines the extent to which recent loan growth (that is, growth during the previous two years) has been associated with a bank's current profitability and asset-quality ratios. The models in their study include a broad range of economic variables constructed from economic data at the county, state, and national levels. Although their study does not attempt to predict emerging banking problems, it does indicate that loan growth should be measured relative to economic fundamentals.

Conclusion

This study investigates the usefulness of state-level economic data in statistical off-site monitoring models. Our results indicate that state-level economic data do not contribute to the models that forecast bank failures and changes in the quality of bank assets. The results for the model predicting risky bank growth are more encouraging, indicating that the inclusion of state-level economic data slightly improves the predictive power of this model.

Although these results run counter to our initial expectations, we can offer possible reasons for the findings; some of the reasons might be addressed by future research. It makes sense to expect that broad measures of economic conditions, such as state unemployment rates and personal-income growth, have varying relevance to individual banks. This variation would be partly due to wide variation not only in the services and products offered by banks but also in the composition of state economies. We are limited in investigating this possibility because banks do not publicly report business activity (for example, loans) by the geographic markets and industry sectors served. Given this limitation, it is difficult to determine which economic variables are likely to be most relevant to a bank's current condition and future performance. Our hope was that broad measures of economic conditions would have had relevance for most banks and therefore for off-site monitoring models.

We also anticipate that bank management plays a very significant role in determining how economic condi-

tions affect a bank's performance. Prior research by the FDIC and others has suggested that bank-specific attributes such as the quality of management, loan underwriting, and risk-management practices should have an important influence on a bank's performance and its susceptibility to adverse economic conditions. Although these characteristics are hard to quantify, bank supervisors do collect data in some of these areas. For example, all federal bank regulators conduct periodic surveys of bank underwriting practices. The FDIC is pursuing research on the contribution that the data in its semiannual underwriting survey might make to off-site monitoring models.

BIBLIOGRAPHY

Avery, Robert B., and Michael B. Gordy. 1998. Loan Growth, Economic Activity, and Bank Performance. Working Paper. Board of Governors of the Federal Reserve System.

Cole, Rebel A., Barbara G. Cornyn, and Jeffery W. Gunther. 1995. FIMS: A New Monitoring System for Banking Institutions. *Federal Reserve Bulletin* (January), 1–15.

Federal Deposit Insurance Corporation (FDIC). 1997. *History of the Eighties, Lessons for the Future: An Examination of the Banking Crises of the 1980s and Early 1990s*. 2 vols. FDIC.

Gilbert, R. Alton, and Sangkyun Park. 1994. Value of Early Warning Models in Bank Supervision. Unpublished mimeo. Federal Reserve Bank of St. Louis..

Gilbert, R. Alton, Andrew P. Meyer, and Mark D. Vaughan. 1999. The Role of Supervisory Screens and Econometric Models in Off-Site Surveillance. Federal Reserve Bank of St. Louis *Review* (November/December), 31–56.

Hooks, Linda M. 1995. Bank Asset Risk: Evidence from Early Warning Models. *Contemporary Economic Policy* 13, no. 4:36–50.

Neely, Michelle Clark, and David Wheelock. 1997. Why does Bank Performance Vary across States? Federal Reserve Bank of St. Louis *Review* (March/April), 27–40.

Nuxoll, Daniel A. 2003. The Contribution of Economic Data to Bank Failure Models, Working Paper. FDIC.

Reidhill, Jack, and John O'Keefe. 1997. Off-Site Surveillance Systems. In *History of the Eighties, Lessons for the Future: An Examination of the Banking Crises of the 1980s and Early 1990s*. FDIC.

Samolyk, Katherine A. 1994a. Bank Performance and Regional Economic Growth: Evidence of a Regional Credit Channel. *Journal of Monetary Economics* 34, 259–278.

———. 1994b. U.S. Banking Sector Trends: Assessing Disparities in Industry Performance. Federal Reserve Bank of Cleveland *Economic Review*, Quarter 2, 2–17.

Swamy, P.A.V.B., James R. Barth, Ray Y. Chou, and John S. Jahera, Jr. 1995. Determinants of U.S. Commercial Bank Performance: Regulatory and Econometric Issues. Finance and Economics Discussion Paper, no. 95-29. Board of Governors of the Federal Reserve System.

Recent Developments Affecting Depository Institutions

*by Lynne Montgomery**

REGULATORY AGENCY ACTIONS

Interagency Actions

Final Patriot Act Regulations on Customer Identification

On April 30, 2003, the Federal Reserve Board (FRB), the Office of the Comptroller of the Currency (OCC), the Office of Thrift Supervision (OTS), the Federal Deposit Insurance Corporation (FDIC), the National Credit Union Administration (NCUA), the Commodity Futures Trading Commission, the Securities and Exchange Commission, and the Department of the Treasury and its Financial Crimes Enforcement Network issued final regulations requiring certain financial institutions to establish procedures to verify the identity of new account holders. The regulations implement section 326 of the USA Patriot Act, which mandates that rules be issued requiring financial institutions to implement reasonable procedures to (1) verify the identity of a person opening an account, (2) maintain records of the information used to verify the person's identity, and (3) determine whether the person appears on any list of known or suspected terrorists or terrorist organizations. The rules apply to banks and trust companies, savings associations, credit unions, securities brokers and dealers, mutual funds, futures commission merchants, and introducing brokers. Institutions subject to the final rules will be required to establish a program for obtaining identifying information from customers who open new accounts. Financial institutions are also required, among other things, to set forth procedures for verifying the identity of customers within a reasonable period of time. Financial institutions must be in full compliance with the new regulations by October 1, 2003.
PR-FRB, 4/30/03.

Guidance on Managing Credit-Card Accounts

On January 8, 2003, the FRB, the OCC, the OTS, and the FDIC issued guidance on account management and loss-allowance practices for credit-card lending and called for conservative management of credit-line assignments. The guidance outlines the supervisory agencies' expecta-

*Lynne Montgomery is a senior financial analyst in the FDIC's Division of Insurance and Research.
Reference sources: *American Banker* (AB), *BNA's Banking Report* (BBR), and *Federal Register* (FR).

tions for prudent risk-management, income-recognition, and loss-allowance practices. The guidance, which applies to all banks and thrift institutions, requires that lenders justify their credit-management decisions with careful analysis of borrower repayment history, risk scores, and other relevant criteria. The guidance is intended to help financial institutions conduct credit card lending activities in a safe and sound manner while meeting the needs of their customers. The agencies developed the guidance in response to recent examinations that disclosed a number of inappropriate account-management, risk-management, and loss-allowance practices.
BBR, 1/13/03, p. 40.

Advisory on Mortgage Banking Activities

The FRB, the OCC, the OTS, and the FDIC on February 24, 2003, issued an advisory letter providing guidance on mortgage banking activities. The guidance, which applies to all banks and thrift institutions, was developed in response to recent examinations and market developments. The guidance details the agencies' expectations regarding risk-management activities, including valuation and modeling processes, hedging activities, management information systems, and internal audits. The guidance also states that the agencies may require additional capital from institutions that fail to incorporate into their risk-management programs the sound practices set forth in the advisory letter. *PR-14-2003, FDIC, 2/25/03.*

Federal Deposit Insurance Corporation

Final Rule on Limited Liability Companies

On January 31, 2003, the FDIC adopted a final rule making banks that are organized as limited liability companies (LLCs) eligible for federal deposit insurance. An LLC offers an optional business organization model that has both the limited liability benefits of a corporation and the "pass-through" taxation benefits of a partnership. Under the new rule, the regulators will retain their bank supervisory powers over banks operating as LLCs, including the power to take prompt corrective action and issue enforcement orders to LLC banks that become critically undercapitalized.
BBR, 2/3/03, pp. 195–96.

Bank Failure

On February 7, 2003, the California Commissioner of Financial Institutions closed Southern Pacific Bank, Torrance, California, and named the FDIC as receiver. Beal Bank, S.S.B., Plano, Texas, paid the FDIC a premium of $500,000 to assume approximately $834.0 million of Southern Pacific's insured deposits and to purchase approximately $201.5 million of the failed bank's assets. The FDIC estimates that the cost of the failure to the Bank Insurance Fund will be $134.5 million. This was the first failure of an FDIC-insured institution in 2003 and the first bank failure in California since 2000. *PR-11-2003, FDIC, 2/7/03.*

Federal Reserve Board

Identity Theft Booklet

On January 16, 2003, the Federal Reserve Bank of Boston released a new booklet designed to help consumers protect themselves against identity theft. The *Identity Theft* booklet describes some common sense precautions consumers should take to protect personal information, shows consumers how to monitor for signs of identity theft, and offers a guide for consumers whose identities have been stolen. The booklet also has contact information for the national credit bureaus, federal agencies, and nonprofit organizations that advise consumers and businesses. The booklet is available online at the Federal Reserve Bank of Boston's Web site: **http://www.bos.frb.org/consumer/identity/index.htm**. *PR-FRB, 1/16/03.*

Updated Check-Processing Operations

The Federal Reserve Banks on February 6, 2003, announced changes to their back-office check-processing operations intended to improve operating efficiency and reduce check-cashing costs to the government. Reflecting the ongoing shift in

consumer and business preferences from checks to electronic payments, the Reserve Banks intend to reduce their check service operating costs through a combination of streamlining their check management structure, reducing staff, and consolidating their check-processing locations. Check payments continue to be the most popular form of noncash retail payment; however, their share of all noncash retail payments has declined from 85 percent in 1979 to 60 percent today. The changes, which are projected to be completed by the end of 2004, are expected to reduce operating costs for check services by approximately $60 million in 2005 and $300 million over the subsequent five years. *PR-FRB, 2/6/03; BBR, 2/10/03, p. 242.*

Amendments to Regulation B—Equal Credit Opportunity Act

On February 19, 2003, the FRB approved a final rule amending Regulation B, which implements the Equal Credit Opportunity Act (ECOA). The ECOA prohibits discrimination on the basis of a credit applicant's national origin, marital status, religion, color, sex, race, age, receipt of public assistance benefits, or the exercise of rights under the Consumer Credit Protection Act. The FRB in 1976 adopted a general prohibition against nonmortgage lenders' inquiring about applicant characteristics. The final rule creates an exception that allows nonmortgage lenders to collect data about borrowers' personal characteristics as long as the lenders keep the data confidential and use the information to assess their own compliance with the ECOA. *PR-FRB, 2/19/03.*

Online Resource Center

The FRB announced on March 28, 2003, the launch of an online resource for researchers, educators, program directors, and others interested in advancing financial education programs. The resource—the Financial Education Research Center—was developed by the Federal Reserve Bank of Chicago to encourage research and disseminate information through its repository of studies related to financial education and its listing of major financial education programs throughout the country. The Web site for the Research Center is **www.chicagofed.org/cedric/index.cfm**. *PR-FRB, 3/28/03.*

Office of the Comptroller of the Currency

Simplified Application Process

The OCC announced on March 21, 2003, a new national bank service that simplifies the corporate application process. National banks can use the new "E-Corp" system to electronically complete and submit branch and relocation applications to the OCC. E-Corp is available on National Banknet, the OCC's secure extranet Web site available exclusively to national banks. E-Corp is one component of the agency's continuing effort to eliminate unnecessary regulatory burden, simplify administrative processes, enhance communications, reduce paperwork, and take full advantage of e-government mandates. *NR 2003-24, OCC, 3/21/03.*

Office of Thrift Supervision

Appointment of Gilleran as FFIEC Chairman

OTS Director James E. Gilleran was named Chairman of the Federal Financial Institutions Examination Council (FFIEC) for a two-year term beginning April 1, 2003. Mr. Gilleran succeeds Donald E. Powell, Chairman of the FDIC. Mr. Gilleran was sworn in as director of the OTS on December 7, 2001. Before joining the OTS, he served as chairman and chief executive officer of the Bank of San Francisco from 1994 to 2000 and as superintendent of the California State Banking Department from 1989 to 1994. He also served as chairman of the Conference of State Bank Supervisors (CSBS) from 1993 to 1994 and as a member of the CSBS's Bankers Advisory Council until 2000. From 1991 to 1992, Mr. Gilleran was chairman of the State Liaison Committee of the FFIEC. *OTS 03-14, 4/1/03.*

Guidance on Third-Party Arrangements

On March 19, 2003, the OTS issued a bulletin offering guidance to federal thrift institutions on how to monitor the operational and financial performance of third-party firms that provide key business services. The guidance, published in *Thrift Bulletin 82*, cautions institutions to exercise appropriate due diligence before entering into third-party arrangements and to maintain effective oversight and controls for the duration of the arrangement. OTS examiners will review internal controls and management of third-party arrangements when conducting safety-and-soundness examinations. Thrift institutions contract with third-party firms who provide security services, tax services, legal advice, and an array of other services. This guidance complements existing OTS guidance on third-party arrangements in two other prominent areas: information technology and internal audits.
OTS 03-10, 3/10/03; BBR, 3/24/03, p. 502.

National Credit Union Administration

Appointment of Johnson as Vice Chair

On January 15, 2003, the NCUA Board of Directors named board member JoAnn Johnson as the board's vice chair. The three-member board has been without a vice chair since 1997. Before joining the NCUA board in March 2002, Ms. Johnson was a member of the Iowa Senate, having been elected to that body in 1994. She chaired the Senate's Ways and Means Committee from 1996 to 2000 and the Commerce Committee from 2000 until resigning her seat to join the NCUA board. *NR03-0115, NCUA, 1/15/03.*

Broader Access to SBA Loan Program

A February 14, 2003, legal ruling by the Small Business Administration (SBA) allows all credit unions to seek SBA approval to participate in the SBA's guaranteed business loan program under Section 7(a) of the Small Business Act (the SBA guarantees up to 85 percent of Section 7(a) loans). When the guaranteed business loan program was first established, the SBA allowed all credit unions to participate. However, ten years ago the SBA reinterpreted its regulations to mean that only credit unions whose members had a geographic common bond were eligible because only those credit unions were considered "open to the public," as required by SBA rules. Other credit unions—such as those bound together on the basis of common occupational relationships—were not considered open to the public and were therefore ineligible. Under the new ruling, all credit unions are once again eligible to seek approval for participation in the program. *BBR, 2/24/03, p. 350.*

Updated Chartering and Membership Rules

On March 27, 2003, the NCUA adopted a regulation that revises federal credit union chartering and field-of-membership rules by expanding the choices for groups that wish to establish federally chartered credit unions. The regulation allows a proposed field of membership to include a trade, industry, or profession. Another major feature of the regulation is a provision for single-sponsor credit unions that allows a field of membership to be diversified beyond a single employer. The regulation also provides that multiple-group occupational credit unions with fewer than 3,000 members no longer need an economic analysis to determine if each group could sustain a separate credit union. In addition, the regulation assumes that any metropolitan statistical area with a population of up to 1 million can serve as the credit union's local community. *NR03-0327, NCUA, 3/27/03.*

Foreign Branching

The NCUA adopted a final rule that establishes the requirements for federally insured credit unions to branch outside the United States. The rule requires credit unions to receive approval from the host country and the NCUA. The NCUA recognizes that a host country will have some regulatory authority over a foreign branch office; however, the NCUA retains the right to

examine a foreign branch and take any necessary enforcement actions. The final rule, which becomes effective July 1, 2003, also requires that credit unions wishing to set up a foreign branch submit a business plan to the NCUA. *NCUA, 12 CFR Part 741.*

STATE LEGISLATION AND REGULATION

Georgia

On January 22, 2003, the OTS announced that federal law preempts provisions of the Georgia Fair Lending Act (GFLA) from applying to federal savings associations and their operating subsidiaries. The GFLA imposes various restrictions on loans based on the annual percentage rate and amount of points and fees charged. The preemption is based on the Home Owners' Loan Act and OTS regulations that comprehensively and exclusively regulate lending by federal savings associations. The OTS also determined that with respect to terms of credit, loan-related fees, disclosures, and the origination or refinancing of a loan, the GFLA conflicts with OTS regulations governing lending operations. *OTS 03-02, 1/22/03.*

On March 7, 2003, Georgia Governor Sonny Perdue signed legislation (SB 53) that eases burdens on lenders and others under the Georgia Fair Lending Act. The GFLA is one of the nation's most controversial and criticized anti-predatory-lending statutes. In February 2003, Standard & Poor's and Moody's Investors Service refused to rate Georgia mortgage-backed securities because of worries that loan assignees and other parties could be liable under the GFLA; after SB 53 was signed, however, both credit agencies agreed to rate the mortgage-backed securities. Under SB 53 assignee liability applies only to high-cost loans, which are defined as loans on which the interest charged is 8 percentage points above the interest rate on comparable U.S. Treasury bills. SB 53 also changed the reasonable tangible net benefit test—which required lenders to determine whether a refinanced loan presents a tangible net benefit to the borrower—so that it applies only to high-cost loans. In addition, SB 53 removed a provision in the GFLA that included mortgage insurance premiums and Veteran Administration funding fees in the cap on points and fees. The new legislation also removed a state fee from the point-and-fee cap. *BBR, 3/10/03, p. 421.*

New York

The OTS announced on January 30, 2003, that federal law preempts provisions of the New York predatory lending law from applying to federal savings associations and their operating subsidiaries. The New York law restricts loans based on the annual percentage rate and amount of points and fees charged. The preemption is based on the Home Owners' Loan Act and OTS regulations that comprehensively and exclusively regulate lending by federal savings associations. The OTS also determined that, with respect to terms of credit, loan-related fees, disclosures, advertising, and the origination, refinancing, or servicing of a loan, the New York statute conflicts with OTS regulations governing lending operations. *OTS 03-04, 1/30/03.*

New York Attorney General Eliot Spitzer announced on February 11, 2003, that ten banks had signed agreements to block customers from using their credit cards for online gambling. It is illegal in New York to promote or facilitate unauthorized betting or gambling, online or off. The agreements apply to lending activities arising in New York or affecting New York residents, but the attorney general expects that the banks will block all gambling transactions across their entire systems. The ten banks involved are: Cayuga Bank, Chemung Canal Trust Company, First Consumers National Bank, First Premier Bank, Merrick Bank, Peoples Bank, Trustco Bank, USAA Federal Savings Bank, US Bank NA, and Wells Fargo

Financial Bank. Eight months earlier Citibank signed a similar agreement. *BBR, 2/17/03, p. 300.*

On March 28, 2003, New York State Banking Superintendent Elizabeth McCaul resigned, citing personal reasons for her departure. Ms. McCaul had been the state's longest-serving superintendent, spending six years in the position. On April 2, 2003, New York Governor George Pataki named Barbara Kent the state's acting banking superintendent. Ms. Kent joined the New York Banking Department in 1988 and has been the department's deputy for consumer affairs for the past four years. *AB, 4/2/03.*

Tennessee

On April 17, 2003, Tennessee Governor Phil Bredesen signed legislation (P.A. 03-32) that makes it easier for branches of Tennessee banks to be acquired. Previous law required branches of Tennessee banks to have been opened and engaged in the banking business for at least five years before being acquired. The new legislation reduces the length of business from five years to three years. *BBR, 4/28/03, p. 687.*

RECENT ARTICLES AND STUDIES

The percentage of community banks selling mortgages into the secondary market has jumped from less than one-half in 2000 to approximately 72 percent in 2002, according to findings of the America's Community Bankers 10th annual Real Estate Lending Survey. The upward trend can be explained by an overall increase in mortgage originations, as well as a favorable environment for sales into the secondary market. The dollar volume of mortgage sales into the secondary market has increased even more dramatically, rising from 17 percent of total mortgage originations in 2000 to 41 percent in 2001 and to 45 percent in 2002. Nearly 33 percent of the survey respondents said they anticipate selling more loans into the secondary market in 2003, and 43 percent expected to sell about the same level of loans in 2003 as in 2002. The findings are based on survey responses from 320 community banks. *BBR, 2/10/03, pp. 257–58.*

BANK AND THRIFT PERFORMANCE

Fourth-Quarter 2002 Results for Commercial Banks and Savings Institutions

FDIC-insured commercial banks and savings institutions earned $25.6 billion during the fourth quarter of 2002, an increase of $3.5 billion from earnings in the fourth quarter of 2001. Key factors in the higher earnings were gains on sales of securities and other assets, an increase in service charges, a decrease in expenses for credit losses, and strong growth in interest-earning assets. The average return on assets (ROA) was 1.23 percent in the fourth quarter, up from 1.12 percent one year earlier. The number of commercial banks and savings institutions on the FDIC's "Problem List" declined from 142 in the third quarter of 2002 to 136 in the fourth quarter, and assets of "problem" banks fell from $42 billion to $39 billion. Eleven FDIC-insured institutions failed during 2002, and two of those failures occurred in the fourth quarter.

FDIC Quarterly Banking Profile, Fourth Quarter 2002.

INTERNATIONAL DEVELOPMENTS

Argentina

Under an agreement with the International Monetary Fund signed on January 24, 2003, the Argentine government pledged to pay banks $5.3 billion in compensation for major losses they sustained following the country's financial crisis in late 2001 and the devaluation of the peso in January 2002. The government also agreed to a major restructuring of Argentina's three large public banks—Banco de la Nacion Argentina, Banco de la Provincia de Buenos Aires, and Banco de le Ciudad de Buenos Aires. *BBR, 2/3/03, p. 230.*

On March 28, 2003, Argentine President Eduardo Duhalde signed a decree to lift all the restrictions on bank withdrawals that had been in place since the financial crisis of 2001. Under the decree, savers will receive approximately two-thirds of their term deposits in cash and the remainder in a ten-year government bond. *BBR, 3/31/03, p. 552.*

Basel Committee

On February 25, 2003, the Basel Committee on Banking Supervision issued guidelines for managing and supervising operational risk. The guidelines discuss what banks will be expected to do to protect themselves from operational risk and also provide a framework of ten core principles for effective management of such risk. Institutions are expected to establish and maintain systems for the "identification, assessment, monitoring, and mitigation/control" of operational risk. The guidelines also recommend public disclosure of these systems "to allow market participants to assess their approach to operational risk management." For regulators, the guidelines recommend assessing existing risk controls at supervised banks and establishing systems that allow timely communication of changes in an institution's risk position. *AB, 2/26/03.*

Canada

A final package of regulations under Canada's Bank Act eases restrictions on the ability of foreign and domestic banks to undertake information technology (IT) activities. The regulations follow the implementation of the Financial Consumer Agency of Canada Act, which is a new financial services framework that permits banks to engage in IT activities in a financial context. The regulations ease existing restrictions by reducing the "primarily financial" standard to a new "materially related" standard. The regulations also provide financial institutions with added flexibility to invest in entities that do not necessarily meet the materially related standard, provided that the size of the investments falls below a certain threshold. *BBR, 3/3/03, p. 399.*

The Office of the Superintendent of Financial Institutions issued a new guideline outlining the policies and procedures that banks operating in Canada are expected to have in place to deter and detect money laundering and terrorist financing activities. The updated Guideline B-8 on Deterring and Detecting Money Laundering incorporates legislative changes made since the release of the original guideline in September 1996. The updated guideline omits much of the material related to transaction identification and reporting and shifts the focus to identifying and mitigating risks related to money laundering. *BBR, 4/14/03, pp. 627–28.*

China

China's banking industry regulator, the People's Bank of China, issued new rules to combat money laundering. The new rules require financial institutions and their employees to participate in the fight against money laundering and cooperate with law enforcement officials in anti-money-laundering efforts. Financial institutions that fail to comply with the new rules will be subject to prosecution. The new rules, which became effective March 1, 2003, are part of a broader campaign to stop illegal capital flows and to bring the industry regulations into compliance with international standards. *BBR, 1/20/03, p. 120.*