Economic Review

Warning Lights for Bank Soundness

Special Issue on Commercial Bank Surveillance

Capital Adequacy

Asset Quality

Management

Earnings

Liquidity

Special Issue: Commercial Bank Surveillance

PREFACE:
Monitoring Banks' Financial Condition

Monitoring the financial condition of commercial banks has become an important concern of private depositors, investors and public regulators. Poor economic performance and deregulation have contributed to financial difficulties of greater or lesser degree in a few hundred banks and to more intense concern about potential future difficulties.

In September, the FDIC's list of problem banks had 597 banks. This was well above highs previously established in the 1973-75 recession. In 1982 and 1983 some large bank organizations have experienced difficulties because of concentrations of loans to one or a few borrowers, industries or countries. Commercial bank failures also are up: from 10 in 1980 and 7 in 1981 to 34 in 1982, to 40 through October 24, 1983.

Troubled banks still represent only a small proportion of the nation's approximately 15,000 commercial banks. Still, their problems have stimulated interest in monitoring the financial condition of banks. Along with this new interest have come new computing and communications technologies that give analysts more power to manipulate, exchange and publish information. This coincidence of change, interest and technology has produced advances in surveillance techniques and, at the same time, a need to constantly adjust analytical techniques and methods to the environment.

Bank Analysts Come Together

Three major groups of analysts are directly interested in both the problems and techniques of monitoring banks: bank regulators, whose interest arises from their responsibilities to maintain a working financial system and (for the FDIC) to insure the deposits of banks; private-sector security analysts, who advise investors on their investments in commercial banks, and academics, who teach and advise both of the former groups and who develop analytical methods. These three groups have different perspectives, experience, intellectual strengths and blind spots.

Feeling a responsibility to generate new insights into bank surveillance problems and methods, the Federal Reserve Bank of Atlanta invited leading members of each group to a two-day workshop in September. By assembling some of the most perceptive thinkers from a variety of disciplines, we sought to shed new light on this important but confusing subject. We hoped that participants from each group would bring ideas that would aid them all in advancing techniques of analysis and projection of bank and bank holding company financial condition.

This special issue of the *Economic Review* carries the presentations and often spirited discussions from that workshop. The session was arranged by Research Officer B. Frank King.

Identifying Problems

The program began with sessions on early warning models and general financial analysis techniques. Systematic, remote financial analysis has been the bread and butter of private-sector security analysts for many years. In the mid-1970s, bank regulators, beset by an increase in the number of troubled banks and limited resources, turned to formal statistical models to aid in identifying banks with present and possible future problems. The regulators have used these models to aid them in allocating examination resources. Some private-sector analysts have adopted similar systems for analyzing risk.

Recent problems have rekindled interest in refining both early warning models and financial analysis techniques. Presentations dealt with: analysis of bank holding companies as well as individual banks, refinements in financial ratios and peer groupings used in early warning models and general "financial" analysis, the relative importance of on-site and remote analysis, the impact of changes in the commercial banking environment on the relevancy of particular models and financial ratios, and the comparative accuracy of formal statistical models and the less formal analysis used by bank examiners and many private-sector analysts.

Capital and Its Regulation

Capital and capital regulation loom large in any discussion of banks' financial condition. Analysts see capital as a cushion that allows an organization to absorb losses without going out

of business. Regulators have made capital a crucial objective in their attempts to control banks' (and the public's) risk.

The session on capital and capital standards dealt with regulators' and investors' rationale for emphasizing capital as an index of overall bank risk. Participants sought to define meaningful capital concepts and ratios. They covered the functions of capital as seen by investors and regulators as well as possibilities for adjusting reported capital for credit losses that had not been charged off and for changes in the market value of assets and liabilities. Other important issues that arose in these discussions included the impact of capital-asset guidelines on banks' choice of methods of doing business. Several participants pointed out that if banks choose business practices that keep their assets lower but do not affect their risk, asset-based financial ratios, like the capital-asset ratio, become less meaningful both as a regulatory goal and a measure of risk.

Disclosure of Financial Information

Methods for analyzing banks' financial condition are useless without information. In the past, regulators concentrated on information they collected through examination and reports, while private-sector analysts concentrated on companies' financial reports as well as publicly available regulatory reports. Recent regulatory initiatives have moved toward adding "market discipline" to regulators' efforts to control bank risks. These initiatives, in essence, attempt to make investors surrogate regulators who punish banks for excessive risk-taking by bidding down the price of their securities. Thus, public sector concern about disclosure of financial information on commercial banks has taken on a new dimension.

The workshop session on disclosure covered the Securities and Exchange Commission's requirements and rationale for public disclosure by bank holding companies, evidence on the public's reaction to financial information about banks and private-sector analysts' disclosure needs. The group discussed what information should be disclosed and pointed out tensions between disclosure as a device for informing the public and the potential destabilizing impact of actions by an informed public.

Highlights

The workshop uncovered many issues relating to banks' health and how to monitor it. Participants emphasized the following points:

1. Statistical early warning models are a useful aid in analyzing banks.
2. However, further detailed analysis is required to diagnose and treat problems and to identify problems that arise from illegal activities.
3. Balancing remote and on-site analysis remains a challenge.
4. A rapidly changing financial environment places a premium on adapting models and of bank analysis techniques to current conditions.
5. Bank problems start with management decisions that affect asset and liability portfolios but may well first come to light on the income statement.
6. Activities not reported in financial reports confound financial ratios and models. These activities range from agency or broker functions to fraud.
7. One's view of the relevant capital concept changes with one's interest. Equity is the most interesting risk cushion to investors; equity and long-term debt to uninsured depositors and regulators.
8. The capital cushion may be less meaningful to banks, investors and depositors because banks also have a deposit insurance cushion.
9. Changing bank activities may change the significance of capital ratios as measures of risk, but the change will likely be different for each bank in the short run.
10. Deposit insurance protection limits the motivation of many bank creditors to act on this information.
11. Disclosed data requires relevant models and competent analysts to turn it into useful information.
12. Whatever information is disclosed requires relevant models and competent analysts to turn it into useful information.

—**Donald L. Koch**

I. Early Warning Systems and Financial Analysis in Bank Monitoring

Concepts of Financial Monitoring

Capital Adequacy

Asset Quality

Management

Earnings

Liquidity

Capital Adequacy

Asset Quality

Management

Earnings

Liquidity

Early warning systems for projecting troubled banks became popular with bank examiners and private analysts in the mid-1970s. Recent developments have sparked new interest in these systems, as well as in the whole area of financial analysis in bank monitoring

Capital Adequacy

Asset Quality

Management

Earnings

Liquidity

Prior to 1975, the financial condition of federally regulated financial institutions was determined solely through examinations. In the mid-1970s, the five financial regulatory agencies[1] conducted separate research that led to development of the surveillance (early warning) systems in place today. These systems augment the examination process by providing evaluations of regulated financial institutions' financial condition between examinations. The term "early warning system" does not necessarily mean the prediction of an emerging problem; the term explains the process by which the bank regulators can determine if the financial condition of a banking organization has changed since the last bank examination or bank holding company inspection.

The surveillance systems of the federal agencies are made up of three components: (1) computer screening to identify outlying financial organizations that fail certain ratio tests; (2) analytical reports (performance reports) that allow an analyst or examiner to perform a detailed financial analysis of a financial organization; (3) corrective action and follow-up of problems identified through the screening process.

Objectives and Components of Computer Monitoring Systems

The primary objective of the regulatory agencies' computer monitoring systems is to identify changes

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[1] These five agencies are the Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Federal Home Loan Bank Board, National Credit Union Administration, and Office of the Comptroller of the Currency.

in the financial condition of institutions that they regulate in order to prevent failure. Identification allows the agencies to allocate examination resources more efficiently among problem and emerging problem institutions. The monitoring systems also help to identify specific problem areas, thus aiding off-site analysis and helping to focus examinations towards major areas of concern.

A surveillance program's screening component is designed to identify institutions whose financial condition warrants special supervisory action. There are many ways to set up a screening mechanism. Generally speaking, screening techniques employ one or more of the following procedures:

○ Screening individual ratios and identifying those institutions falling in the bottom percentile of a peer group.
○ Screening individual ratios and comparing them to critical values.
○ Combining ratios into a composite score and ranking the institutions from best to worst based on the composite score.
○ Some combination of the above.

Once institutions are classified as weak or potentially weak, an analysis is performed to determine the extent of the financial problems and their possible causes. This constitutes the second component of a computer screening system. To perform this function, the three federal bank regulatory agencies have combined their resources and devised the Uniform Bank Performance Report, comprised of 15 pages of detailed data items and financial ratios. The information is arranged to facilitate a detailed financial analysis of a bank. These reports are provided quarterly to the approximately 14,000 insured commercial banks as well as to state bank regulators and the public. They are generated on a peer group basis that takes into account the size, the number of branches, and the urban or rural location of a bank. This is probably the most detailed analytical report of its kind and it is now being used extensively by the banking industry as well as the regulators.

Once the analytical effort confirms that a serious financial problem exists, corrective action is initiated. Corrective action can vary, from a telephone conversation with management to a cease and desist order by a court. Generally speaking, if an organization's financial condition is thought to have deteriorated seriously, the examination schedule is accelerated.

Research Leading to the Development of Computer Screening Systems

Research dealing with the prediction of firm failure provided both the conceptual framework and screening ratios now utilized in many of the federal financial institutions' surveillance systems. Edward Altman's 1968 article (2) was one of the earliest studies dealing with the prediction of failure.[2] Altman's most important contribution was his use of a statistical technique called discriminant analysis to derive a single measure or value of soundness based on a multivariate equation of financial variables.

Two other important studies dealing with the prediction of bank failure, which also employed discriminant analysis, were made by David Stuhr and Robert Van Wicklen in 1974 (43) and Joseph Sinkey (37). Stuhr and Van Wicklen used examiner ratings of banks to estimate a function that would discriminate between highly rated and poorly rated banks.

Sinkey also used examination ratings to estimate his discriminant function and hypothesized that two major factors explain banking problems:

"The primary objective of the ... systems is to identify changes in the financial condition of the institutions ... to prevent failure.

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the quality of management and the honesty of employees. The financial variables he tested can be divided into the following categories: (1) liquidity, (2) loan value, (3) loan quality, (4) capital, (5) efficiency and (6) sources of revenue.

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[2] The Altman study was preceded by studies by Tamari and Beaver in 1966.

Daniel Martin (24), Carol Jean Simon (36), and Leon Korobow, David P. Stuhr and Daniel Martin (19) used a model that predicted the probability of bank (credit unions in the case of Carol Jean Simon) failure. Martin pooled his data to include 58 banks that failed between 1970 and 1976 and tested 25 different ratios. He found ratios of earnings, capital adequacy, liquidity, asset quality and risk (commercial industrial loans to total loans) to be significant in predicting bank failure. Korobow, Stuhr and Martin (19), in an extension of their earlier work, used a similar model to predict whether banks would show up on the regulators' problem list. They identified variables similar to the variables discussed later in this article. Gerald Hanweck (15) and Carol Jean Simon (1980) also identified variables that could be categorized under earnings, liquidity, asset quality and capital adequacy.

Appendix A summarizes the ratios identified by these authors that best explain the identification of failing institutions. A review of these variables shows a high degree of consistency between each author's findings and supports the contention that arnings, liquidity, asset quality and capital adequacy are the main determinants of variance in financial soundness and when combined into a composite score are sufficient to rank firms according to their financial condition.

Computer Surveillance Systems of the Five Financial Regulatory Agencies

The notion that an institution's financial condition can be judged based on earnings, capital adequacy, liquidity and asset quality is used in examining banks. Bank examiners assign a numerical value (ranging from 1 to 5, where 1 is the best rating) for these four criteria and for management. This rating system, called the CAMEL rating system,[3] is employed by all three bank regulatory agencies. Basically, all five criteria receive the same weights, although examiners are free to give more weight to some variables than others. Although the three banking agencies have agreed upon a uniform rating system to be used by examiners for rating banks, they have not agreed on a uniform rating system to be used for rating bank holding companies, nor have they agreed on a uniform rating system to be used in the surveillance process.

All five financial regulatory agencies use a computer screening program to identify institutions that may have potential or existing problems. These agencies employ two distinct types of screening programs. The Federal Deposit Insurance Corporation (FDIC) and the National Credit Union Administration (NCUA) identify exception institutions using a critical value by comparing a reporting bank's financial ratio value to a benchmark value the regulator feels is acceptable. If an institution fails this test, it

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> "Another major difference among the agencies is in their use of a composite score as a measure of overall financial soundness."

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becomes a candidate for the exception list. The Federal Reserve Board (FRB) and the Office of the Comptroller of the Currency (OCC), on the other hand, screen banks using peer groups; banks falling in the bottom of the group become exception institutions. The Federal Home Loan Bank Board (FHLBB) uses both methods.

Another major difference among the agencies is in their use of a composite score (an aggregation of financial ratios) as a measure of overall financial soundness. The FHLBB, OCC and FRB use this technique, although each employs different ratios in deriving the composite score. The FDIC does not employ a composite score.

Another difference among the agencies that affects their screening programs is the frequency and detail of the reporting series from which the screening ratios are derived. Although banking agencies primarily use the reports of condition and income for screening exceptions, the degree of detail reported varies among agencies. The difference is even more pronounced because the FHLBB collects monthly data for its surveillance

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[3]The CAMEL Rating System was adopted by the three bank regulatory agencies on November 21, 1979. See Federal Financial Insitutions Examination Council (FFIEC), Uniform Financial Rating System, Press Release November 21, 1979. The acronym stands for capital, asset quality, management, earnings and liquidity.

Table 1. Screening Ratios of the Federal Financial Regulatory Institutions

Ratio	Agency Using Ratio				
	FRB	FDIC	FHLBB	NCUA	OCC
Capital					
(1) Equity Capital Decrease		X			
(2) Equity Capital/Total Assets		C	X		X
(3) Retained Earnings/Average Equity Capital					X
(4) Equity Capital/Adjusted Equity Capital	X				
(5) Gross Capital/Adjusted Risk Assets	X				
(6) Reserves to Total Loans				C	
(7) Net Scheduled Items/Net Worth			X		
Profitability					
(1) Net Operating Income/Average Total Assets		C			
(2) Net Income/Assets			X		X
(3) Interest Expense on Deposits and Federal Funds Purchased and Borrowings/Total Operating Income		C			
(4) Total Expenses-(Provision for Loan Losses + Dividends)/Gross Income				C	
(5) Adjusted Return on Assets					X
(6) Net Income/Total Assets-Cash Items	X				X
(7) Total Other Earnings/Average Assets					X
(8) Gross Operating Income/Average Assets			X		
(9) Net Income/Gross Income			X		
(10) Net Operating Income/Gross Operating Income			X		
Asset Quality					
(1) Delinquent Loans/Total Assets			X		
(2) RFO and LTF's/Total Assets			X		
(3) Delinquent Loans/All Reserves				C	
(4) Delinquent Loan Ratio				C	
(5) Gross Loan Losses/NOI + Provision	X				
(6) Provision for Possible Loan Losses/Average Assets					X
(7) Speculative Lending/Total Assets			X		
(8) Gross Charge-offs — Recoveries/Average Loans		C			
(9) Net Scheduled Items/Total Assets			X		
Liquidity					
(1) Net Borrowings-Mortgages/Cash and Due from Banks + Total Securities Maturing in One Year or Less		C			
Interest Sensitivity and Liabilities for Borrowed Money					
(1) $100,000 or more Time Deposits + Net Borrowings/Total Loans		C			
(2) Advances + Borrowed Money/Total Savings			X		
(3) Interest-Sensitive Funds/Total Sources of Funds	X				
(4) High-Rate Savings/Total Savings			X		
Efficiency Ratios					
(1) Total Operating Expenses/Total Operating Income	X				
(2) Noninterest Expense/Total Operating Income—Interest Expense	X				
(3) Cost of Savings (YTD)/Total Savings			X		
(4) Net Interest Earnings/Average Assets					X
(5) Operating Expense/Average Assets			X		
(6) Cost of Money/Average Savings and Borrowings			X		

Table 1. Screening Ratios of the Federal Financial Regulatory Institutions (continued)

Ratio	FRB	FDIC	FHLBB	NCUA	OCC
Change Ratios					
(1) Asset Growth Ratio			X		
(2) Change in Asset Mix					X
(3) Change in Liability Mix					X
(4) Change in Loan Mix					X
(5) Percent Change in Total Savings			X		
(6) Percent Change in Mortgage Loans			X		
(7) Percent Change in Shares (from Previous Period)				C	
(8) Percent Change in Time Deposits			C		
(9) Percent Change in Other Time Deposits			C		
(10) Loan Growth Exceeds Deposits Growth			C		
Change Ratios					
(11) Cash Dividends on Common + Preferred Stock/Net Income		C			
(12) Cash Dividends/Net Income	X				
Other Ratios					
(1) Commercial and Industrial Loans/Total Loans, Gross	X				
(2) Mortgage Commitments/Total Assets			X		
(3) All Other Commitments/Total Assets			X		

Source: This table was derived from information provided by the five federal financial regulatory agencies. The information is as of November 1981; since that time the ratios or screening procedures could have been changed.

system, whereas the NCUA and the three banking agencies collect their data quarterly.

Table 1 lists the ratios utilized in each agency's screening programs. The ratios are arranged by categories that represent the key operations of a financial institution. An "X" on the right hand side of this table indicates that the agency utilizes the ratio. The "C" value indicates that the agency utilizes a critical value in the screening program.

Determinants of Financial Soundness

Financial soundness is a measure of a company's financial condition at a certain time. On an accounting basis, financial soundness can be broken down into two parts: (1) earnings based on the income statement, and (2) net worth based on the balance sheet. The evolution of the examination process and review of research on bank failure indicate that the

> **"The balance sheet can be evaluated using three key classes of variables: asset quality, liquidity and capital adequacy."**

balance sheet can be evaluated using three key classes of variables: asset quality, liquidity and capital adequacy. The income statement should be represented by the bottom line figure of net income. To determine financial soundness, these

Conditional vs. Unconditional Risk Variables

The agency screening process attempts to identify risk that could cause an institution to encounter financial difficulties. The complexity of this risk is why many of the federal financial regulatory agencies' computer screens are as cumbersome as Table 1 illustrates. Based on a review of these screens, there appears to be a need for a better theoretical rationale for the mix of variables used. Understanding the difference between various kinds of risk relating to financial soundness can help in predicting problem or failing institutions. When predicting changes in financial condition, there are basically two types of risk variables to be considered: conditional and unconditional. Examples of unconditional risk variables are capital adequacy and liquidity. Generally speaking, firms that are highly leveraged or illiquid are thought to be riskier than firms with stronger capital and liquidity positions. Conditional risk takes into account positions whose outcomes will depend upon changing economic or structural conditions. For example, firms may purchase long-term securities that may be profitable if interest rates fall or remain stable but could lead to losses if interest rates rise (assuming no hedging). A large degree of market or product concentration may also be a conditional form of risk since a firm's profitability can depend on how economic conditions affect both its product and market area. In the case of the banking industry, bank examiners were quite aware of the effects that the poor economic conditions of 1982 had on smaller banks whose markets were concentrated in farming communities. They also saw similar financial problems for banks serving areas dependent on the auto and forestry industries.

Conditional risk variables (ratios) should not be used in standard screens without a specific set of assumptions. That is not to say that these financial variables (ratios) may not be useful in identifying firms likely to have problems. These types of ratios are better utilized in special screens that take into account projections of the direction and degree of change in economic conditions. When setting up such screens, one must also supplement the "conditional ratio screen" with an "unconditional ratio screen" that measures overall financial soundness. The need to do this is obvious; the effects of a wrong decision (as measured by the conditional ratio screen) by bank management are more likely to be absorbed by the financially strong firm (as measured by the unconditional ratio screen) than by a financially weak firm.

four categories of variables need to be aggregated into a composite score. Derivation of such a score will allow one to rank firms according to financial soundness. The aggregation process could be based on an equation where the parameters have been previously estimated or by using other techniques that allow normalization of the ratios so that they can be added into a composite score.

Earnings

Once a firm is established, earnings become the most obvious component of financial soundness. A firm cannot sustain itself long without a positive flow of income; it is from earnings that capital is retained for growth. The other variables affect earnings in one way or another. Poor asset quality can lead to write-off assets or reduced earnings. Increased leveraging usually can increase the return on stockholders' equity, but at a greater risk. By shifting to less liquid assets, perhaps extending the maturity of a security; earnings may be increased. Yet, the risk of possible insolvency is also increased.

Asset Quality

This attribute is particularly important for financial institutions because they assume both a credit and interest rate risk on most of their assets. Since these institutions are highly leveraged

> "Since these institutions are highly leveraged, large loan or security losses can bring insolvency."

(equity capital to asset ratios range from about 5 to 10 percent), large loan or security losses can bring insolvency. High fluctuations in interest rates can cause large appreciation or depreciation in the value of long-term fixed rate assets. For financial organizations, the quality of assets will be affected both by management's control over

its credit review function and by economic conditions. A look at current recessionary periods shows that nonperforming loans and loan charge-offs increased substantially during these periods. Because the quality of assets is to be reflected in the income stream, it should be included when identifying the financial condition of firms.

Liquidity

Financial firms that depend on deposits and purchased funds must have a reserve to meet unexpected deposit withdrawals or refunding needs. A sudden change in market conditions could cause funding problems for financially weak firms. Although liquidity does not appear

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"The lower the capital base relative to the firm's operations, the greater the risk of insolvency."

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to be the original cause of financial problems for banks, it is usually a firm's inability to meet liquidity needs that causes its ultimate demise. Measures of liquidity for financial institutions will differ from those used for industrial firms.

Capital Adequacy

A firm's equity capital plus reserves serve as a cushion to absorb losses: The lower the capital base relative to the firm's operations, the greater the risk of insolvency. We must take into consideration the earnings performance as well as the level of capital adequacy. Obviously, firms with a high return on good quality assets can assume more risk through leveraging than others with lesser return and/or asset quality having the same capital ratios. Only when earnings turn to losses does the true test of capital adequacy take place. When a firm suffers large sustained losses, capital adequacy becomes all-important.

Conclusion

To classify institutions according to their financial condition, we need a conceptual framework. Based on examination experience and previously developed early warning models, we conclude that there are four primary determinants of financial soundness: earnings, liquidity, asset quality and capital adequacy. These four determinants appear to be sufficient to rank firms according to their financial condition when they are aggregated into a composite score that takes into account the determinants' respective weights.

—Barron H. Putnam*

*Manager, Surveillance Section, Board of Governors of the Federal Reserve System.

Appendix A

Financial Ratios Identified to Predict Failing Firms

Edward Altman (2)

- Working capital/total assets
- Retained earnings/total assets
- Earnings before interest and taxes/total assets
- Market value equity/book value of total debt
- Sales/total assets

David Stuhr and Robert Van Wicklen (43)

- Asset quality (ratio of classified and special mentioned assets to bank capital)
- Capital adequacy (capital to assets)
- Management (three variable were used, the most important of which were net operating income to assets and a debt to equity ratio)
- Asset size of bank
- Net occupancy expense to net income
- Loans to total assets ratio

Joseph Sinkey (37) 1975

- Liquidity
- Loan volume
- Loan guality
- Capital adequacy
- Efficiency
- Sources of revenue

Daniel Martin (24)

- Net income to total assets (earnings variable)
- Gross charge-offs to net operating income (asset quality)
- Expenses to operating revenues
- Loans to total assets
- Commercial loans to total loans (risk variable)
- Gross capital to risk assets (capital adequacy)

Korobow, Stuhr and Martin (20)

- Loans and leases to total sources of funds (liquidity variable)
- Equity capital to adjusted risk assets (capital adequacy)
- Operating expense to operating revenues (income variable)
- Gross charge-offs to net income plus provisions for loan losses (asset quality)
- Commercial and industrial loans to total loans (risk variable)

COMMERCIAL BANK FAILURE PREDICTION MODELS

Bank failure prediction models have two major purposes. First, they can provide bank regulators with an early warning system that uses current financial data to identify future problem institutions. Such a system permits a more efficient allocation of bank examination resources, enabling regulators to save institutions that might otherwise fail. The development of an effective early warning system has been the primary objective of virtually all bank failure prediction studies.

Alternatively, bank failure prediction models can help determine what variables may be used in implementing a variable-rate deposit insurance system. The feasibility of risk-related insurance assessments depends on the extent to which bank risk can actually be measured. Implementing an equitable and justifiable variable-rate premium structure does not require exact measurements of risk. Yet there should be some empirical or actuarial support for whatever system is employed to assign banks to particular risk classes. Bank failure prediction models can establish which financial variables are significantly related to failure risk and therefore suitable as the basis for calculating risk.

The types of failure prediction models one chooses depend on the purpose for which they are intended. For example, if a model is to be used for determining commercial bank insurance assessments, then there must be valid statistical evidence of a relationship between the financial variables and bank failure risk. This is less important in an early warning system where the primary objective is classification accuracy.

Moreover, in determining what model may give the "best" results, it is important to ascertain the desired trade-off between Type I error (classifying a true failure as a nonfailure) and Type II error (classifying a nonfailure as a failure). For an early warning system some emphasis should be placed on minimizing Type I error, since the inability to recognize a failing institution could

prove costly. On the other hand, a model developed to classify banks into different risk categories for a variable-rate insurance scheme should place greater emphasis on minimizing Type II error. This would help reduce overall misclassifications and reduce the number of banks charged an insurance premium intended for riskier institutions.[1]

While the initial impetus for the work presented in this article came from the FDIC's desire to explore the feasibility of a risk-related deposit insurance premium system, we have presented our results to emphasize their use as an early warning system. We hope the results can be useful ultimately in the implementation of a variable-rate premium system as well as in the development of a more effective early warning system.

Related to these two primary objectives were several questions we sought to answer.

1. To what extent would prediction models that incorporate examination report data improve classification accuracy over that which could be obtained from models based solely on call report[2] data?

2. How quickly would a model's overall classification accuracy deteriorate as the lead time before a failure was lengthened, and do examination based models hold up over time as well as call-based models?

3. How do the failure prediction models developed in this study perform with respect to models developed in the past, and do they

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[1] The overall classification accuracy of a prediction model gives an incomplete picture of the model's usefulness. While well over 99 percent accuracy could be obtained simply by predicting all banks to be nonfailures, nothing would be gained by such an exercise since the Type I error would be 100 percent. When a model can do reasonably well with respect to both Type I and Type II error, it has its greatest value.

[2] Bank call reports contain Reports of Income and Reports of Condition (balance sheet items). The reports, filed quarterly, are available to the general public.

out-perform models based on bank examiner classifications?

4. To what extent are misclassified nonfailures institutions that were given a poor rating by bank examiners?

5. How does the sampling technique used to develop models affect the results?

Review of the Literature on Bank Early Warning Systems

A number of researchers (15, 23, 24, 33, 40) using bank examination or call report data, have attempted to determine which financial variables can be used to predict bank failure or to distinguish between solvent and failed commercial banks. The sampling techniques employed in these studies generally have involved either pairing failures with nonfailures (with certain nonfinancial characteristics such as size and location held constant), or complementing a list of failed institutions with a random sample of all solvent institutions. Alternatively, some studies have been based on the population of banks assigned to a particular federal regulatory agency. These studies have helped create reasonably good early warning systems (at least for the period of time under analysis) with lead times of up to two years. Beyond two years, however, the overall classification accuracy begins to deteriorate noticeably.

The most comprehensive of these studies was done by Daniel Martin (23). Martin developed failure prediction models for the six-year period between 1970 and 1976. His sample included all banks that were members of the Federal Reserve System (on average, about 5,600). Fifty-eight banks were included in the failed bank category (defined to include banks that had closed, had been involved in a supervisory merger or for which other emergency measures were used to resolve imminent failures). For testing purposes, 25 financial ratios were chosen, representing asset risk, liquidity, capital adequacy and earnings.

Martin's most effective failure prediction model included four variables: net income/total assets, gross chargeoffs/net operating income, commercial loans/total loans, and gross capital/risk assets. Classification accuracy based on data one to two years prior to failure was quite high for the 1973 to 1976 time period. For example, using 1974 data, Martin's model correctly classified

91.3 percent of the failures and 91.1 percent of the nonfailures that occurred in 1975 and 1976. The model is somewhat less accurate for the 1970-1972 period, and no attempt was made to identify failures more than two years in advance.

Rather than dealing exclusively with failed banks, Sinkey (37, 39, 40, 42) attempted to model the FDIC's list of "problem" banks. There are two advantages to such an approach. First, it avoids problems associated with an inadequate sample size, since there are more problem banks than failed banks. Second, if a bank is classified as a problem bank prior to its actual failure, a model to predict such classifications may provide a longer lead time for corrective action. Sinkey (39) has shown that the most effective variable in distinguishing problem from nonproblem institutions is the examiner-determined net capital ratio (capital minus adversely classified assets divided by total assets minus estimated losses). A model using only the net capital ratio (NCR) correctly classified 95.4 percent of the banks in a sample of 306. The effectiveness of the NCR (or, more generally, prediction models) in identifying problem banks, however, does not necessarily extend to the efficient identification of "high risk" commercial banks.

Other studies (38, 41) have taken a somewhat different approach by focusing on what is referred to as outlier analysis. Outlier tests generally start by dividing banks into different peer groups and then seek to locate atypical banks, those with financial characteristics well beyond peer group averages.

A conceptually appealing approach developed by Korobow, Stuhr and Martin (19, 20, 21) distinguishes banks "vulnerable" to failures from banks "resistant" to failure. Korobow and Stuhr in 1975 derive a composite ranking of banks by weighing various financial variables that they thought to be indicative of financial strength or weakness. Banks above a certain cutoff point are considered resistant to failure, while banks below the cutoff point are deemed vulnerable to failure.

Recent studies (28, 29, 35) have attempted to develop early warning systems incorporating bank stock prices. According to the "efficient-market" hypothesis, stock prices represent a firm's intrinsic value and any new information regarding its condition will be quickly and accurately reflected in the price of its common stock. If this is true, as these studies suggest, stock prices could be included with accounting

and examination data in developing an early warning system. However, since only a small percentage of banks have actively traded stock, market information is useful in few situations.

Development and Tests of a New Failure-Prediction Model

The model that we report on here is, in many ways, an extension of these earlier early-warning models. Our statistical method (discussed in Appendix A) is probit analysis. This technique yields an easily interpreted measure of the probability of failure for each bank. We use financial variables similar to those used in other studies and attempt to relate them to future bank failures. The sampling procedure used here (see Appendix B) avoids some problems introduced into other studies.

Selection of Financial Variables

In selecting variables for inclusion in failure prediction models, we specified the potentially serious risks or problems inherent in commercial banking. The factors considered included: credit risk, interest rate risk, insider abuse risk, diversification risk, liquidity risk, operational inefficiency and capital adequacy. We tested only financial ratios that could serve as proxies for one or more of the above-mentioned risks and problems for two reasons: First, a model based on financial ratios selected for sound theoretical reasons should prove, over time, to be better than a model employing whatever variables would be optimal for the time period and data covered by the study. Second, if the models or variables within those models are to be incorporated into a variable-rate insurance scheme, it is essential that those variables have some theoretical justification.[3]

Definition of Failure

All commercial banks that required outlays from the Deposit Insurance Fund were considered failures. The time of the outlay is considered to be the date of failure. These "regulatory failures" include all closed banks as well as all assistance cases. Using this definition, there were four commercial bank failures in the second half of 1980, eight in 1981, 34 in 1982, and 26 in the first half of 1983.[4]

Time Lag Between Data and Failure

This study develops models using data that are—on average—one, two and three years old (these will be referred to respectively as one-, two- and three-year-prior models). Furthermore, only year-end call data are used. For the one-year-prior model, year-end call data were matched with failures occurring between the immediately ensuing period extending from July 1 through June 30.[5] Thus, the average lead time between the call data collection point and the bank failure is one year. Examination data were taken from the exam report most closely preceding the call date. (Thus, the average lead time for exam data will be slightly greater than one year.)

This process of excluding failures for the six-month period immediately subsequent to the December call date adds an additional amount of credibility to the one-year-prior model. From the standpoint of an early warning system, predicting failures that may occur within six months has little value. Additionally, attempting to predict failures that may occur during this six-month period would be frustrated by the fact that December call data are generally not in usable form until March or April.

The data for the two- and three-year-prior models were set up in similar fashion with the exception of a longer lead time between the financial data and the failure dates. That is, for example, the two-year-prior model matched December call data with failures that occurred between July 1 one-and-one-half years hence and the subsequent

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[3]In some cases, it was necessary to redefine some of the variables tested. For example, the gross chargeoffs/net operating income ratio generally indicates a higher risk the larger it becomes. This relationship, however, is reversed if net operating income is negative. To avoid this misspecification, the variable is set to a large positive value when income is negative. Moreover, since some of the models estimated were based on the universe of banks, it became necessary to restrict the range of some variables tested. In dealing with such a large number of observations the presence of outliers may sufficiently distort the distribution of a variable and lead to biased results. Restricting the range of a variable was selected for dealing with outliers.

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[4]Two of these banks were excluded from all of the samples: one because it did not file all of its call reports, and the other because it received FDIC assistance prior to its actual failure date.
[5]In this study failures which occurred between July 1, 1980 and June 30, 1981 will be referred to as 1980-1981 failures, those which occurred between July 1, 1981 and July 30, 1982 as 1981-1982, etc.

June 30. In order to focus on the issue of time sensitivity, however, this study analyzes the probabilities of failure in the future **conditional** on survival prior to the final year. That is, December 1980 data are used to estimate the conditional probability of failure between July 1, 1982 through June 30, 1983 for a two-year early warning system.

Data Universe

For this study the universe consists of all federally insured commercial banks for which consistent call and examination report data could be obtained from the FDIC data base for the years 1979-81. Because the financial reports of new banks display variations that are not relevant to failure risk, we excluded all banks less than three years old. Moreover, among the nonfailures, those banks with composite CAMEL ratings[6] of 3 or greater were also excluded in estimations of models where the primary objective was classification accuracy.

Most of the models discussed in the results section are derived from the universe of banks. The major advantage of estimates based on the universe is the precision of the estimates.

Random Sample

A random sample of 150 nonfailures was drawn from each of the commercial bank December call reports from 1977 through 1981. The sample excluded banks less than three years old at the call date. All failures were then added to the sample. The same cohort of banks was then used for prior year data, but supplemented to assure that all banks in the prior years have roughly the same chance of being included.

The fact that the same cohort of banks is the core of the sample helps to assure that comparability for estimates of failure probabilities with one year, two year, or three year outlooks is not affected by significant changes in sample composition.

Models

Three models were developed for comparison purposes, conveniently labeled Model Call A, Exam A and Exam B. Model Call A is based solely on information currently available in bank call reports. It includes four variables: other operating expenses[7]/total assets, (market rate assets—market rate liabilities)[8]/equity capital, total loans/equity capital and gross chargeoffs/total loans.

The other operating expenses/total assets ratio is primarily an indicator of a bank's operational efficiency. It proved to be a very effective discriminator between healthy and failing banks; better than possible alternative efficiency variables such as total overhead expenses/total assets, total operating expenses/total assets, personnel expenses/total assets, net occupancy expenses/total assets and total operating expenses/total operating income.

The ratios gross chargeoffs/total loans and total loans/equity capital are both indictors of bank asset quality. As in studies (33, 37), the loans/equity capital ratio proved to be an important explanatory variable. In part, this is due to the fact that loans, in general, are riskier than other types of bank assets.

Market rate assets (MRA)—market rate liabilities (MRL)/equity capital is primarily an interest rate sensitivity variable. Although inclusion of the

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[6]The CAMEL rating system is employed by federal bank examiners. For each bank each of the five CAMEL components (capital adequacy, asset quality, management, earnings and liquidity) are rated on a scale of 1 to 5 (with a 1 being the highest possible score). Each bank also received an overall or composite CAMEL rating that can range from 1 to 5.

[7]Other operating expenses include: minority interest in income (loss) of consolidated subsidiaries; fees paid to directors and members of committees for attending board or committee meetings; cost of contracted guards; premiums on fidelity insurance; net foreign exchange losses; operating expenses (except salaries) connected with holdings of real estate other than bank premises; office supplies; cost of examinations by supervisory authorities; retainer fees; expenses related to the use of automobiles and airplanes for bank business; losses from counterfeit money, forged checks, net cash shortages, payments of checks over stop payment orders and similar recurring operating losses of this type; material charges resulting from adjustments or settlements or income taxes; charges resulting from litigation or other claims; net deposit insurance assessment expenses; losses on investment securities charged off or written down prior to sale or redemption because of a decline in value judged to be other than temporary; periodic unrealized losses on open forward and standby contracts and any recovery of most such losses; reserves for bond losses; advertising expenses; and miscellaneous expenses.

[8]Market rate assets include: federal funds sold and securities purchased; Treasury securities and obligations of other U.S. government agencies and corporations with remaining maturity of one year or less; obligations of states and political subdivisions with remaining maturity of one year or less; and all balances, other than demand deposits, cash items in the process of collection and unposted debts, with depository institutions in the U.S. and with banks in foreign countries. Market rate liabilities include: time certificates of deposit in denominations of $100,000 or more; other time deposits in amounts of $100,000 or more; money market time deposits in denominations of $10,000 but less than $100,000 with original maturities of 26 weeks; federal funds purchased and securities sold under agreements to repurchase; interest bearing demand notes issued to the Treasury; and money market time deposits with denominations of $7,500 but less than $100,000 with original maturities of 91 days.

Table 1. Selected Regression Results, Based on the Universe of Federally Insured Commercial Banks.

Variables	One Year Prior			Two Years Prior			Three Years Prior		
	Call A	Exam A	Exam B	Call A	Exam A	Exam B	Call A	Exam A	Exam B
Constant	−4.790 (−18.80)	−4.909 (−17.86)	−5.272 (−16.25)	−4.376 (−17.79)	−4.549 (−20.02)	−4.720 (−16.57)	−4.070 (−15.82)	−4.093 (−20.95)	−4.390 (−15.24)
Total Loans/ Equity Capital	0.110 (3.96)	—	0.063 (1.91)	0.053 (1.62)	—	0.042 (1.14)	0.054 (1.85)	—	0.046 (1.47)
(MRA-MRL)/ Equity Capital	−0.145 (−4.62)	−0.194 (−5.82)	−0.195 (−5.08)	−0.182 (−4.62)	−0.210 (−6.14)	−0.197 (−4.52)	−0.146 (−3.71)	−0.151 (−4.27)	−0.159 (−3.82)
Other Operating Expenses/ Total Assets	38.586 (3.97)	36.846 (3.04)	38.689 (3.51)	44.755 (4.89)	47.940 (4.90)	45.421 (4.70)	32.521 (3.00)	43.244 (4.70)	36.083 (3.20)
Gross Chargeoffs/ Total Loans	32.380 (6.01)	—	1.701 (0.20)	26.560 (4.22)	—	6.336 (0.77)	39.064 (6.10)	—	21.219 (2.62)
Total Substandard, Doubtful, and Loss Classifications/ Equity Capital	—	2.326 (9.86)	—	—	1.693 (9.42)	—	—	1.852 (8.43)	—
Overdue Loans/ Total Assets	—	—	26.144 (8.50)	—	—	18.520 (7.29)	—	—	18.599 (5.93)
Observations	12,819	12,819	12,819	13,005	13,005	13,005	12,526	12,526	12,526
−2xLog Likelihood Ratio*	147	261	230	102	177	153	80	118	115

COEFFICIENTS (t-statistics in parenthesis)

*All significant well beyond the 1 percent level.

variable improved the model's classification accuracy, its relative contribution was less than that of the efficiency and credit risk variables. While this may be due in part to the fact that commercial banks are much less susceptible to interest rate fluctuations than thrift institutions, it may also indicate that the variable is not an entirely accurate indicator of a bank's interest rate risk.

Model Exam A incorporates both examination and call report data. In addition to the same efficiency and interest rate sensitivity variables, it includes a credit risk variable based upon examiner classifications, (total substandard, doubtful and loss assets)/equity capital. Other types of examination-based variables proved insignificant. For example, we attempted to include measures of diversification risk and moral hazard risk by examining asset concentrations and the volume of loans to insiders and affiliates, respectively. These measures may have been insignificant, in the former case because the data are of poor quality, and in the latter case because loans to insiders and affiliates are probably not an accurate

indicator of the risk of failure due to fraud or embezzlement.

Model Exam B is essentially the same as model Call A except it includes an additional variable, total overdue loans/total assets. Information on overdue loans was obtained from bank examination reports but, as of December 1982, comparable past due information has been included as a standard item on bank call reports. Thus, this model provides some indication as to how well a model based solely on call report data will perform in the future.

We fitted models based on random samples and on the universe of banks. (See Table 1 for the results of the universe-based model.) The models based on the universe were estimated in a slightly different fashion than those based on a sample. With the samples, all failures occurring between July 1, 1980 and June 30, 1983 were used. For the universe-based models, only 1982-1983 failures were included.

The variables in each of these models all had the expected signs. (See Table 1.) Moreover,

Table 2. Classification Results Based on December 31, 1981 Call Report Data and Closest Preceding Examination Report Data.

Number in Universe Failing Test at Alternative Thresholds	Time Period of Failures	Failures Detected With Average Lead Time of One Year		
		Call A	Exam A	Exam B
3000 (20.9%)[a]	82-83	39 (87%)	41 (91%)	38 (84%)
2000 (14.0%)	82-83	36 (80%)	40 (89%)	34 (76%)
1000 (7.0%)	82-83	27 (60%)	30 (67%)	29 (64%)
800 (5.6%)	82-83	25 (56%)	27 (60%)	27 (60%)
600 (4.2%)	82-83	22 (49%)	26 (58%)	24 (53%)

Note: There are 14,323 banks in the universe and 45 failure observations in the 82-83 time period.
[a]Numbers in parenthesis indicate percentage of group total.

Table 3. Classification Results Based on December 31, 1980 Call Report Data and Closest Preceding Examination Report Data.

Number in Universe Failing Test at Alternative Thresholds	Time Period of Failures	Failures Detected With Average Lead Time of Two Years		
		Call A	Exam A	Exam B
3000 (21.0%)[a]	82-83	31 (70%)	32 (73%)	35 (80%)
	81-82	14 (82%)	15 (88%)	15 (88%)
2000 (14.0%)	82-83	31 (70%)	30 (68%)	30 (68%)
	81-82	12 (71%)	13 (76%)	15 (88%)
1000 (7.0%)	82-83	24 (55%)	27 (61%)	26 (59%)
	81-82	11 (65%)	13 (76%)	13 (76%)
800 (5.6%)	82-83	19 (43%)	24 (55%)	19 (43%)
	81-82	11 (65%)	12 (71%)	12 (71%)
600 (4.2%)	82-83	16 (36%)	18 (41%)	18 (41%)
	81-82	10 (59%)	9 (53%)	11 (65%)

Note: There are 14,270 banks in the universe, 44 failure observations in the 82-83 time period and 17 failure observations in the 81-82 time period. The number of banks in the universe for the 1980 data year is less than that for the 1981 data year because of the unavailability of examination data for a larger number of banks. The number of 82-83 failure observations is smaller than that reported in the one-year-prior results because of the unavailability of data for one failed bank established after December 31, 1980.
[a]Numbers in parenthesis indicate percentage of group total.

there was little variation in the variable coefficients when the one-, two- and three-year-prior models were estimated. This indicates a certain degree of stability in the models over time. The t-statistics were all significant, with two exceptions. In model Exam B, the ratios total loans/equity capital and gross chargeoffs/total loans have relatively low t-statistics. This is explained by the addition, in model Exam B, of the overdue loans/total assets ratio. This variable appears to be a much stronger measure of bank asset quality and, as a result, it dominates the other two variables.

Results

This study uses a standard for comparing early warning systems that fits directly into the context in which these systems are to be applied. Each model was applied to the universe of federally insured commercial banks to determine classification accuracy at various threshold levels. The number of actual failures that are included at each threshold level was then reported.[9] With

this method of comparison it is possible to compare the classification performance of the different models fitted.

The comparison may depend on the threshold level. For example, one model may outperform another in choosing a group of 3,000 potential failures, but not in choosing a group of 400. In other instances one model may be better than another at any threshold level. It should be kept in mind that the choice of the number of banks to be reviewed as potential failures may be relevant in choosing a model that is used to help in scheduling of examinations.

The largest number of potential failures identified, as shown in the tables, is 3,000. For the models presented in this study, detection efficiency generally declines rapidly as the potential failure group is increased above 3,000. Many more nonfailures must be reviewed in order to detect additional failures. Consequently, potential failure groups larger than 3,000 are not considered.

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[9]In a hypothesis testing framework, the procedure is similar to holding Type II error constant and comparing Type I errors.

Table 4. Classification Results Based on December 31, 1979 Call Report Data and Closest Preceding Examination Report Data.

Number in Universe Failing Test at Alternative Thresholds	Time Period of Failures	Failures Detected With Average Lead Time of Three Years		
		Call A	Exam A	Exam B
3000 (21.5%)[a]	82-83	26 (70%)	26 (70%)	26 (70%)
	81-82	14 (88%)	13 (81%)	14 (88%)
	80-81	9 (82%)	10 (91%)	10 (91%)
2000 (14.3%)	82-83	23 (62%)	21 (57%)	22 (59%)
	81-82	13 (81%)	13 (81%)	14 (88%)
	80-81	9 (82%)	9 (82%)	10 (91%)
1000 (7.2%)	82-83	18 (49%)	13 (35%)	18 (49%)
	81-82	11 (69%)	11 (69%)	11 (69%)
	80-81	9 (82%)	7 (64%)	9 (82%)
800 (5.7%)	82-83	14 (38%)	13 (35%)	16 (43%)
	81-82	11 (69%)	11 (69%)	10 (63%)
	80-81	9 (82%)	7 (64%)	9 (82%)
600 (4.3%)	82-83	12 (32%)	12 (32%)	14 (38%)
	81-82	9 (56%)	9 (56%)	9 (56%)
	80-81	9 (82%)	7 (64%)	8 (38%)

Note: There are 13,985 banks in the universe, 37 failure observations in the 82-83 time period, 17 failure observations in the 81-82 time period and 11 failure observations in the 80-81 time period. The number of banks in the universe for the 1979 data year is less than that for the 1981 and 1980 data years because of the unavailability of examination data for a larger number of banks. The number of failure observations is smaller than that reported in the one- and two-year-prior results because of the unavailability of data for failed banks established after December 31, 1979.

[a] Numbers in parenthesis indicate percentage of group total.

Relationship Between Call and Exam Models

Tables 2 through 4 show standardized comparison tests between models Call A, Exam A and Exam B using December 31, 1981; 1980; and 1979 data (one-, two-, and three-year-prior models).

Generally, including exam data improves the classification accuracy of, a model. This is particularly evident in Table 2, based on data an average of one year prior to failure. It is also evident that the usefulness of exam data diminishes relative to call data as the interval between the data and the failure year increases. This can be seen in Tables 2, 3, and 4 but is better illustrated in Table 5, which shows a comparison of Call A's and Exam A's ability to classify the 1982-1983 failures with data an average of one, two, and

three years old. With a one-year lead time Exam A is clearly a better predictor; however, with a two-year lead time it is only slightly better and with three-year-old data it is outperformed by the call model. Table 5 also illustrates that the classification ability of all of the models diminishes over time.

Classification accuracy can be increased by adding overdue loan information to the call model (model Exam B). Beginning December 31, 1982 past due loan information was included as a call report item. Since these data will be available for future study, it is interesting to examine its usefulness. The last columns of tables 2, 3 and 4 show the results of such an inclusion. Generally, Exam B classifies slightly better than Call A and, in some instances, outperforms Exam A. The availability of past due loan information on call reports, then, should add slightly to the classification accuracy of future call-based models.

Relationship Between Martin's Model and Model Call A

One way to judge a model's relative efficiency is to compare it with other models. In this study we estimated Martin's model (described in the review of the literature) with a probit specification and compared it with model Call A.[10] We assessed the classification abilities of the two models using the universe of federally insured commercial banks (about 14,100 on average) with call report data an average of one and three years prior to bank failures.

With a one-year lead'time, Martin's model generally outperformed model Call A. For example, based on 1,000 banks identified as potential failures (for the 1982-1983 period), Martin's model detected 33 of the 45 actual failures, whereas model Call A detected only 27. With a three-year lead time, however, the tables were turned. In this case, 18 of the 1,000 banks identified by Model Call A as potential failures actually failed, compared with 13 detected by Martin's model.

These results may be explained by examining the variables included in each of the models.

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[10] The logistic and normal distributions are very similar; therefore, the change in specification from logit to probit is unlikely to affect the performance of the model significantly.

Table 5. A Comparison of the Ability of Models Call A and Exam A to Classify 1982-1983 Failures Based on Data One-, Two-, and Three-Years Prior to Failure.

Number in Universe Failing Test at Alternative Thresholds	Model Type	One Year Prior	Two Years Prior	Three Years Prior
3000 (20.9%)[a]	Call A	87%	70%	70%
	Exam A	91%	73%	70%
2000 (14.0%)	Call A	80%	70%	62%
	Exam A	89%	68%	57%
1000 (7.0%)	Call A	60%	55%	49%
	Exam A	67%	61%	35%
800 (5.6%)	Call A	55%	43%	38%
	Exam A	60%	55%	35%
600 (4.2%)	Call A	49%	36%	32%
	Exam A	58%	41%	32%

Note: There are 14,323 banks in the universe and 45 failure observations in the 82-83 time period.

[a]Numbers in parenthesis indicate percentage of group total.

Martin's model emphasizes measuring bank earnings and capital adequacy, while model Call A emphasizes asset quality, operational efficiency and interest rate risk. It could be argued that deterioration in asset quality or operational efficiency precedes declines in bank earnings and capital; thus, the former variables may perform better with a relatively long lead time, while the latter variables are better predictors when the time is relatively short. The issue of what variables discriminate better between healthy and failing banks at various stages of deterioration is worthy of additional research.

Composite CAMEL Ratings of Banks Failing Test

We constructed an additional test of these models' classification accuracy by listing the distribution of composite CAMEL ratings for both the banks that pass the test and the group that fails at various threshold levels. Our models should fail a relatively low proportion of banks

rated 1 and 2 and a relatively high proportion of institutions rated 3, 4 and 5.

Our tests indicate that the models' classification abilities are highly consistent with the way examiners classify banks. In each case a significantly higher proportion of institutions rated 3, 4, and 5 are classified as failures. For example model Call A using 1981 data and set to fail 3,000 banks failed only 7 percent of banks rated 1 while failing 97 percent of banks rated 5.

Use of Composite CAMEL Ratings as a Failure Prediction Model

To gain further information on their usefulness, we compared the classification results of all these models with alternative schemes that may be used to list banks with an above-average probability of failure. One such scheme would be to designate as high-risk banks all those with composite CAMEL ratings of 3, 4 or 5. Such a list, readily available to regulators, could be a viable alternative to models based on financial ratios

Table 6. Comparison of Classification Accuracies of Call A, Exam A and Scheme Based on CAMEL Ratings

Classification Lead Time and Period During Which Failures Occurred	Number of Actual Failures Examined	Failures Detected by Model:		
		Call A	Exam A	CAMEL-test
ONE YEAR PRIOR:				
7/1/82-6/30/83	45	27 (60%)	30 (67%)	30 (67%)
7/1/81-6/30/82	17	11 (65%)	12 (71%)	12 (71%)
7/1/80-6/30/81	11	9 (82%)	7 (64%)	6 (55%)
Total	73	47 (64%)	49 (67%)	48 (66%)
TWO YEARS PRIOR:				
7/1/82-6/30/83	44	19 (43%)	24 (55%)	16 (36%)
7/1/81-6/30/82	16	11 (69%)	11 (69%)	10 (63%)
Total	60	30 (50%)	35 (58%)	26 (43%)
THREE YEARS PRIOR:				
7/1/82-7/1/83	37	18 (49%)	13 (35%)	15 (41%)

Note: Banks with composite CAMEL ratings of 3, 4 or 5 one, two and three years prior to failure "fail" the CAMEL tests. As of year-end 1981, 80 and 79 there were 1,049; 884 and 1, 153 banks with CAMEL ratings of 3, 4 or 5. For comparison purposes the total number of banks failing Call A and Exam A were set at 1,000; 800 and 1,000; respectively.

even though the CAMEL rating system was never intended to be used as an early warning model.

Table 6 compares the classification results of a scheme based on CAMEL ratings with the results of models Call A and Exam A at comparable threshold levels. The results substantiate that models based upon financial ratios can classify failures as well as or better than a scheme based solely on examiner ratings. The CAMEL-ratings test proved as useful as model Call A and model Exam A in predicting failures a year in advance. However, the effectiveness of a scheme based only on CAMEL ratings diminishes more rapidly as the time before failure increases. The three-year period results, for example, show that Call A does much better in classifying failures. This can be explained by the fact that the CAMEL rating system is generally an indicator of a bank's present condition as opposed to its expected future condition.

Comparison of Results from Alternative Sampling Approaches

Model Call A results, estimated from a random sample and from all insured commercial banks that submitted December 1981 call reports, are shown in Table 9. In both cases, banks established after December 31, 1978 were excluded, but nonfailures with CAMEL ratings of 3 or more were included, since the models are being viewed as theoretical failure probability models.[11] The model is estimated from the random sample in two ways.

[11] For an *a priori* failure prediction model, the group of banks subject to the possibility of failure must be defined by criteria that do not depend on prior knowledge of the outcome. Since it is not known in advance whether a poorly rated bank will fail, the compound criterion of first being poorly rated and subsequently not failing cannot be used to restrict the relevant universe. A more satisfying approach might be to define "poorly rated nonfailure" as a third possible outcome. This would mean using a more complicated model such as trinomial probit or logit.

Table 7. Sample Estimation of Model Call A[a].

Variables	Random Sample (Weighted Estimates)		Universe		Random Sample (Unweighted Estimates)	
	Coefficient	t-ratio	Coefficient	t-ratio	Coefficient	t-ratio
Constant	−4.82	−1.83	−4.53	−19.65	−3.75	−6.59
Total Loans/Equity Capital	0.10	0.31	0.15	6.83	.12	1.52
(MRA-MRL)/Equity Capital	−0.15	−0.37	−0.04	−3.26	−.26	−2.81
Other Operating Expenses/Total Assets	55.00	0.60	22.58	2.37	69.8	2.96
Gross Chargeoffs/Total Loans	3.62	0.08	19.29	3.90	17.2	1.37

[a]For estimation of these models, nonfailures with CAMEL ratings of 3 or worse are included. The number of failures in each model is 37; the number of nonfailures in the random sample and the universe are 150 and 13,760, respectively.

First, weighted estimation is used, with weights of 1.2433 for nonfailures and .0136 for failures (for a discussion of weighted estimation see Appendix B). Additional estimates are derived without weights, i.e., with weights of 1.0 for both failures and nonfailures.

Weighted estimates of the coefficients derived from the random sample are close to the estimates drawn from the universe. Note, however, that, for the model based on the random sample, which includes 150 nonfailures and 37 failures, none of the independent variables has a statistically significant relationship to bank failure.

A researcher with only the weighted sample estimates to interpret might conclude prematurely that there is no relationship between financial ratios and bank failure risk. Estimates based upon the universe of banks, however, indicate that there is a significant relationship. This discrepancy results from differences in the **precision** of the estimates: the larger the sample, the greater the precision. The universe of banks generates estimates precise enough to establish the significance of the financial variables, whereas the choice-based sample of 187 banks is too small.

Comparing the unweighted estimates with the weighted estimates illustrates another point that has major implications for interpreting results reported in earlier studies of bank failure risk. In many, unweighted estimates of failure probability models were derived from choice-based samples.[12] The constant term of the unweighted model is biased in a direction that overestimates failure probabilities. This could be anticipated, considering that the proportion of failures in the sample is much higher than their proportion in the universe the sample represents.

The principal problem is with the unweighted estimates of t-statistics, which are not founded on solid statistical ground. Since they are much larger than statistically consistent estimates derived from the sample, they can distort the significance of the relation of financial ratios to failure risk.

In light of this problem, studies that derived unweighted estimates of probability models must be reinterpreted. Conclusions concerning significant relationships between financial variables and bank failure risk must be regarded as unreliable but may be modified. They can be interpreted to suggest that the financial variables that were identified appear useful for comparing differences between failed banks and banks that did not fail.[13] Without further research, however, these results do not establish the **predictive** value of financial variables.

[12]The popular paired sample is an example of choice-based sample.
[13]Speaking of discriminant analysis, Sinkey (40), p. 77 makes this distinction between descriptive vs predictive results.

Although the model based on weighted estimates from the random sample shows anemic relationships between financial ratios and failure risk, its classification performance is not substantially different from that of the model based on the universe. Two considerations may contribute to this: (1) estimation of the dependent variable is a simpler objective than precise estimation of all model parameters, and (2) for classification purposes, it needs only to be determined whether the dependent variable exceeds a critical level; thus, relatively modest precision is required.

Avenues of Future Research

In many respects the results reported in this study represent research in the early stages of development. Much additional work needs to be done to increase the accuracy and reliability of failure prediction models. The following is a partial list of avenues to be explored.

For the models estimated in this study, failure prediction was based on financial ratios. This approach has limitations since different types or classes of banks may have, on average, different financial ratios for reasons unrelated to risk. This may lead to misclassifications. For example, a model including a financial variable designed to measure operational efficiency may assign a lower probability of failure to larger wholesale-oriented banks not necessarily because they may be more efficient but because their business requires that they have relatively low expenses.

These biases could be partially overcome by dividing banks into homogeneous peer groups and calculating the ranking of each bank within its group for various financial ratios.[14] The models could be estimated using peer group rankings rather than the financial ratios themselves as dependent variables. With this change, failure risk would depend on a bank's ranking relative to its peers instead of its ranking relative to the universe of banks.

In addition, alternative model specifications should be investigated. A comparison of classification results between probit and other modeling techniques such as discriminant analysis would be beneficial. Further, near failure based on CAMEL ratings or other criteria could be incorporated as a third outcome in a trinomial choice model.

Detailed investigation of failed banks that were not classified as potential failures should also produce interesting results. Are these banks essentially impossible to identify as potential failures, using call and examination data, or are there other considerations that are not captured by the failure prediction model?

Finally, comparing Model Call A with the model developed by Martin indicates it may be desirable to incorporate a different set of dependent variables in a one-year-prior model than in a model with a longer lead time. It may be possible to identify certain variables that predict more accurately with short lead times and others that belong in models based on longer lead times.

—John F. Bovenzi, James A. Marino and Frank E. McFadden*

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[14]For this purpose one could use the peer groups and the rankings developed for the Uniform Bank Performance Reports.

Appendix A
Model Specifications

Discriminant analysis, probit and logit models and linear probability models have all been used in other studies. In general, the four models mentioned differ regarding specification and fitting criteria, but they have one significant point in common. The rule for selecting potential failures can in each case (except for a quadratic discriminant model) be written in the form:

$$Z = C_0 + C_1 X_1 \ldots + C_k X_k > T$$

where the coefficients C_0 through C_k are estimated parameters, the variables X_1 through X_k are financial or structural and T is a classification threshold. The Z in equation (1) for a probit model is a normal Z-score corresponding to the estimated probability of failure, as in equation (2):

Estimated Probability of Failure (Probit) =

$$\frac{1}{\sqrt{2\pi}} \int_{-\infty}^{Z} e^{-(1/2)t^2} dt$$

For a logit model, equation (3) shows the correspondence between Z and the estimated failure probability:

Estimated Probability of Failure (Logit) = $\dfrac{1}{1 + e^{-Z}}$

The Z in a linear probability model is the directly estimated failure probability.

In each model the parameters C_0 through C_k are uniquely determined but the parameter T is not. T is chosen independently, according to a specified classification criterion, after the probability estimation formula has been derived. Conversely, in discriminant analysis the classification criterion is specified first, then all parameters are estimated simultaneously. Since the emphasis in discriminant analysis is placed on classification and the criterion for classification may vary, the Z in equation (1) does not have a standard interpretation, and the scale of the parameters C_0 through C_k and T is not uniquely determined. For example, if all parameters were multiplied by two, the classification rule would still make exactly the same assignments.

One drawback of discriminant analysis is that the assumption of multivariate normality for the independent variables may not be satisfied. For example, the ratio of gross chargeoffs to total loans has a distribution that clearly is not normal. Moreover, the normality of several other relevant variables is questionable. Since these marginal distributions are not normal, the joint distribution cannot be multivariate normal. Probit and logit do not require the assumption of multivariate normality for the independent variables.

Probit and logit models also make distributional assumptions that could be questioned, but which are more difficult to test. The probability of failure conditional on particular values of the independent variables is assumed to be normal for probit and logistic for logit.

Nevertheless, all four specifications are similar. Probit and logit analyses are alike because the normal and logistic distributions are similarly shaped. Indeed, since the two distributions differ primarily in their extreme tails, a clear choice between the two specifications would be difficult to make. Martin and others have pointed out that when the basic assumptions of linear discriminant analysis are exactly satisfied, the classification rule will be equivalent to that for a logit model. Briefly, these basic assumptions are that the independent variable X_1 through X_k are multivariate normal over both the population of nonfailures and the population of failures, with equal covariance matrices.

The sharpest distinction among the models is in the fitting criteria. Estimation of failure probabilities is the objective of the probability models, whereas classification is the ultimate objective of discriminant analysis, even though probabilities of group membership may be derived along the way. In some respects, the objective of discriminant analysis may appear more modest, but it can also be found that probability models, by attempting too much, may fail to be optimal for classification purposes.

Probit or logit models have at times been preferred over discriminant analysis because the significance of independent variables can be evaluated more easily. Typically, computer programs for discriminant analysis have not included t-statistics for the estimated coefficients. They can, however, be computed from the formulas in Rao (32).[15] In addition, the discriminatory power of individual variables can be evaluated by a variety of methods, such as those discussed in Eisenbeis, Gilbert, and Avery (12).

This study used probit analysis because it has several advantages over the alternatives. Linear probability models may produce estimated probabilities outside of the meaningful 0 to 1 range; the other three models do not have this drawback. Probit and logit do not depend on the assumption of multivariate normality for the independent variables. Finally, the normal Z scores estimated by a probit model are easier to interpret than the logit parameter.

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[15]Rao develops an F-statistic that can test the hypothesis that a single discriminant function coefficient is equal to zero. The square root of this statistic (for one coefficient only), has a t-distribution.

Appendix B
Sampling Considerations

Previous studies have used a variety of sample designs. Many have used paired samples, following Meyer and Pifer (15). Hanweck (25) incorporated a random sample of nonfailures. Martin used all Federal Reserve member banks for the 1970-1976 period. The first two studies used holdout samples, whereas the third did not.

In this study all three of the approaches were compared, with two modifications.[16] First, the universe of federally insured commercial banks was used rather than Federal Reserve member banks only. Second, estimates derived from nonrepresentative samples were weighted as suggested in Manski and Lerman (22). The first point

requires no further comment, but the second merits elaboration.

A sample that includes a higher proportion of failures relative to nonfailures is stratified by outcome. Manski and Lerman show that unweighted estimates of models derived from such "choice-based" samples are generally inconsistent, which means that even for very large samples, the estimated coefficients may fail to approach their expected values. Coslett illustrates asymptotic biases for several estimates of binary choice models over a small range of parameter values. The usual estimate of the asymptotic covariance matrix, since it depends on good estimates of the coefficients, will also be unreliable; therefore, meaningful t-statistics cannot be derived by unweighted estimation. The problem is analogous to the failure to use correct **a priori** probabilities in discriminant analysis, as analyzed by Joy and Tollefson (17).

Weighted estimation is one solution to the problem. Coefficients are estimated by maximizing a **weighted** log likelihood function, with one weight for failures and another for nonfailures. The weight is defined as the proportion of failures (nonfailures) in the relevant population, divided by the proportion of failures (nonfailures) in the sample.

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[16]Our paired sample used banks failing between July 1, 1980 and June 30, 1983 (69 altogether) and matched them with nonfailures on the basis of location, size, and age. Nonfailures were required to have a composite CAMEL rating of 1 or 2 to assure that they did not have financial weaknesses that would make it difficult to distinguish them from (known) future failures. Each pair is assigned to the period from July to June during which failure occurred and call data from the previous December are used to analyze failure risk one year prior to failure. Examination data were taken from the exam occuring most recently prior to the December call date. The analysis or risk for two or three years prior to failure uses earlier December call and exam data compiled in an identical fashion.

The Relevance of Peer Groups In Early Warning Analysis

During the past decade, many researchers have studied the possibility of developing a statistical relationship that would provide early warning of severe financial deterioration or severe weakness at a bank.[1] These efforts have relied mainly on regularly reported financial data to evaluate a bank's potential strength or weakness.

Some of this research has been conducted within the Federal Reserve System. Its results contributed to the development of an early warning screen implemented during the mid-1970s. This screen uses regularly reported financial data and thus provides continuous quarterly information on member banks to Federal Reserve supervisory personnel. In general, such information has proved to be helpful in focusing supervisory resources where they are most likely to be needed. In more recent years, experience suggests a need to improve the efficiency of screening programs. Three important sets of issues have been raised.

1. The early warning screens used by the Federal Reserve and the comptroller compare banks with their peers to arrive at an evaluation. This raises several issues. For purposes of early warning analysis, how broad and diverse can a peer group be for the banks in the group to be considered essentially in the same type of business, with comparable risks? How should differences in the scope and nature of the banking services involved be taken into account? Are size groupings an adequate method of dealing with differences in banks' operating characteristics?

2. How can potentially vulnerable banks be identified without also seeming to target a sizable number of institutions that turn out **not** to be vulnerable to future weakness?

3. Regulators need to develop additional financial variables to sharpen the focus of early warning analysis, especially in light of new data being reported by banks.

Most financial analysts have resolved such questions in a practical way, using their knowledge and experience to define peer bank groups, usually based on specific size classifications. The answer is not so clear, however, for determining a bank's potential vulnerability to future financial weakness, since serious financial problems have occurred among banks of all size classes, with no single class more or less prone to severe financial problems.

This article will report on an effort to refine peer groupings, to improve the early warning screen's efficiency and to provide a more realistic appraisal of bank vulnerability in light of each bank's business orientation and overall market exposure. This analysis relies on the same financial ratios that have been at the core of the program for a number of years, leaving for later the task of developing additional or revised financial variables.

Results

The research we will describe appears to have yielded promising results in suggesting how identifying potential problem banks could be made more efficient. The following general findings are worth pointing out:

(1) The five key financial ratios employed in early warning analysis at the Federal Reserve Bank of New York (see Exhibit 1) continue to give good results, especially when used in

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[1]Research most directly relevant can be found in the following works. See Leon Korobow, David P. Stuhr and Daniel Martin, "A Nationwide Test of Early Warning Research in Banking," Federal Reserve Bank of New York **Quarterly Review**, Autumn 1977, and references cited therein, for a discussion of the early warning concepts employed in this research and a report of the evidence underlying those concepts. See Daniel Martin, "Early Warning of Bank Failure," **Journal of Banking and Finance**, 1977, pp. 249-276 for a detailed analysis of modern early warning techniques and their applicability to the anticipation of bank failure. See also Leon Korobow "Measuring and Managing Bank Risk: Some Recent History," paper delivered to the International Symposium on Forecasting, June 5,1983, Philadelphia.

Exhibit 1. Key Surveillance Ratios

1. $\dfrac{\text{Loans \& Leases}}{\text{Total Sources of Funds}}$

2. $\dfrac{\text{Equity Capital}}{\text{Risk Assets}}$

3. $\dfrac{\text{Operating Expenses}}{\text{Operating Revenues}}$

4. $\dfrac{\text{Gross Loan Losses}}{\text{Net Operating Income \& Provision for Loan Losses}}$

5. $\dfrac{\text{Commercial \& Industrial Loans}}{\text{Total Loans}}$

conjunction with a revised system of peer groupings.

(2) Participation by banks in both domestic and foreign markets appears to be a good common-risk criterion for developing improved peer groups.

(3) Compared to earlier studies, the initial refinement in peer groups produced a considerably increased concentration of potentially vulnerable banks in the lower rankings.

(4) Further research yielded a new type of "merged" bank ranking, developed from data for a selected peer group within the broad class of banks that operate offices both domestically and abroad. An overall bank ranking was formed by integrating the early warning scores computed separately from the subgroup's financial ratio data with the scores obtained for the remaining banks in the sample.

(5) The merged ranking approach showed promise of improving efficiency. Approximately three of four banks in the weakest percentiles of the ranking developed from 1979 ratio data received low supervisory ratings in 1981. Translated into probabilities, this means the 1979 data implied a future weakness probability of 78 percent, on average, for the banks that subsequently received low supervisory ratings in 1981. That compares favorably with a range of comparable probabilities of 43 to 63 percent found in earlier studies.

(6) The subgroup scoring approach establishes a rationale for selecting peer groups. The subgroups are designed to produce bank scores that can be integrated into a single bank rating in which the scores have no significant relationship with bank size. This technique eliminates bias for or against particular size classes in the calculation of bank scores.

(7) Experiments with several large bank peer groups—for example, the top 40 banks with at least one foreign office or banks with $10 billion or more in total assets—produced scores in which size had little or no influence on the overall bank ranking formed from the subgroup scores and those obtained for all other banks having at least one foreign office.

(8) The merged rankings obtained from these subgroups, and the probabilities derived from them, showed several interesting properties:

(a) the rankings' ability to highlight exceptionally strong or exceptionally weak banks was maintained and strengthened, even as the subgroup was narrowed to the largest multinational organizations.

(b) Some banks' early warning indicators were highly sensitive to the peer group in which they were placed.

(9) These results arose because the variability of some key ratios (such as equity and loss charge-offs) declined significantly as the subgroups were narrowed, amplifying the sensitivity of the score to deviations from the means of those ratios. This suggests it is important to place banks in peer groups consistent with their respective business orientation and management skills. Moreover, this decision should not rest on size alone. One approach would be to review with special care banks whose early warning scores are highly sensitive to placement in a particular peer group.

(10) While the subgroup scoring approach promises to be a useful tool in a more objective study of peer group classifications, our research suggests that supervisory discretion remains important in placing a bank in an appropriate classification.

Early Warning Analysis: The Fed's Program

The Federal Reserve's present screening program focuses on two main categories of member banks: (1) those having total assets of $300 million or more and (2) smaller banks. The System's approach is to screen the large bank

Exhibit 2. Current Federal Reserve Surveillance Ratios

1. Loans & Leases
   Total Sources of Funds
2. Liquid Assets
   Total Sources of Funds
3. Interest-Sensitive Funds
   Total Sources of Funds
4. Primary Capital
   Risk Assets
5. Total Capital
   Risk Assets
6. Net Income
   Total Assets — Cash Items
7. Operating Expenses
   Operating Revenue
8. Dividends
   Net Income
9. Gross Loan Losses
   Net Operating Income &
   Provision for Loan Losses
10. Noninterest Expenses
    Total Operating
    Income — Interest Expense
11. Commercial & Industrial Loans
    Total Loans

Exhibit 3. Components of the Composite Score:
The Current System Program

Ratios:

1. Loans & Leases/Total Sources of Funds
3. Interest-Sensitive Funds/Total Sources of Funds
4. Equity Capital/Adjusted Risk Assets
7. Total Operating Expenses/Total
   Operating Revenue
9. Gross Loan Losses/Net Operating Income +
   Provisions for Loan Losses
10. Noninterest Expenses/Total Operating Income-
    Interest Expense
11. Commercial & Industrial Loans/Total
    Loans, Gross

group on the basis of nationwide data and the smaller banks by Reserve District.

The $300 million and over class was selected in part because these banks constitute a large, nationally representative group. For several years this was the only group submitting comprehensive quarterly condition and income reports. A related factor was a reluctance to segment banks into many size classifications that might obscure weakening trends within an entire size class. In addition, research had produced little evidence to suggest that peer groupings by size contributed to the accuracy of early warning analysis. Nonetheless, there remained a strong underlying view that significant differences among classes of banks—such as multinational, regional and community banks—require separate treatment to assess operating and risk characteristics correctly.

The System's screening program is a multistage process involving 11 financial ratios (see Exhibit 2). Seven ratios (Exhibit 3) are combined to form a "composite" bank score. A bank is treated as an exception if it falls below a predetermined cutoff level of the composite score. In addition, separate cutoff levels are established for each of the 11 financial ratios; banks below the individual ratio cutoffs are also treated as exceptions. This multistage process appears to have been successful in screening out banks that subsequently developed serious supervisory problems. However, the initial list of exceptions generated by the cutoff levels usually is far larger than the final list, leaving the challenge of attempting to isolate potential problem banks within as small an initial list of exceptions as possible.

The composite score is an important tool in the screening process. This score is developed from a combination of key financial variables designed to capture a bank's overall strength or weakness. Selection of the relevant list of financial ratios and the methodology used to combine them as an early warning indicator have drawn on research conducted at the New York Fed. That research has focused on the efficiency and accuracy with which key financial variables could identify potential problem banks years in advance of severe deterioration. The System's early warning program incorporates a somewhat larger group of financial ratios than can be supported by historical research, in part because some data for these ratios became available only in the latter part of the 1970s. The core of the composite scoring approach, however, rests on five key financial ratios identified from research over a number of years. These five ratios (see Exhibit 1) appear to provide early warning results as good or better than many other combinations tested during several years of research.

It will be helpful to review briefly how the composite score is developed and the results it has produced. The first step is to determine peer group baseline averages for each of the five ratios, using the data of an appropriate group of banks for a selected base year. To calculate a bank's score on a ratio, the bank's deviation from the baseline average is divided by the standard deviation of the peer group's average of that ratio. A score above the average is assigned a negative sign for all the ratios except the equity capital ratio. The resulting scores for each of the

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bank's ratios are added algebraically to form a composite score that captures the cumulative effects of strength or weakness in all the key characteristics. Banks with high positive scores are considered strong, banks with large negative scores are considered weak.

The use of a baseline average for a selected group of banks rests on the assumption that average behavior within an appropriately representative group constitutes a "norm" against which all banks in the group can be measured. Clearly, this concept must be used carefully, lest a pattern of weakness characterizing an entire group be adopted as an acceptable norm. Moreover, the particular group for which means and standard deviations are calculated has a significant effect on how banks of varying size are treated by the scoring system.

The research supporting this system found that: 1) Poor scores often preceded low supervisory ratings by several years. 2) The incidence of low supervisory ratings was greatest among banks with especially poor scores. 3) Banks that undertook substantially more risk than industry norms tended to have a substantially above-average chance of experiencing future weakness. These results allowed us to develop rules of thumb to isolate banks that appear particularly vulnerable—the weakest 10 percent, 20 percent or 30 percent of the ranking.

This simple approach has been the basis for a more sophisticated early warning model in our further research. A statistical early warning function can be computed with the values of each of the key ratios for each bank in the sample and a measure of the incidence among those banks of low supervisory ratings in two or three subsequent years. The form of the statistical function is shown below. The explanatory variables are the five key ratios. The dependent variable is the probability of a bank's receiving a low supervisory rating in the future.[2]

$$P = .5 + \frac{1}{\pi} \arctan (a_0 + a, LL. TS + a_2 EQ.RA$$
$$+ a_3 EXP.OP + a_4 GCO.NI + a_5 CI.LN),$$

where
P = Probability that a bank will receive a low supervisory rating;
LL.TS = Loans and leases/deposits and related sources of funds;
EQ.RA = Equity capital/risk assets;
EXP.OP = Operating expenses/operating revenues;
GCO.NI = Gross charge-offs/net operating income + provision for loan losses;
CI.LN = Commercial and industrial loans/total loans; and
a_0 = a constant term.

The function provides a measure of the estimated probability of low supervisory ratings computed from financial data for a particular current period, where the coefficients of the function are developed from a prior historical period.

The most recent test of this early warning function was in 1980 when we investigated the potential for weakness of all large member banks over the period 1976-1978. We used a function whose parameters were estimated from financial ratio data of 1972 and supervisory ratings over the period 1973-75.[3] We entered financial ratio data for 1975 for all member banks having $300 million or more in total assets into the latter function to compute each bank's liklihood of a poor supervisory rating. Of 298 member banks in the study group, 76 actually had low supervisory ratings during the period 1976-1978.

A high percentage of the low-rated banks were in the weakest percentiles of the ranking and, therefore, were accorded high probabilities of receiving a low rating. The average probability of the 76 low-rated banks for 1976-1978 was 63 percent. The average probability of the 202 member banks that did not receive low ratings in 1976-1978, was 32 percent. The function probabilities differed significantly from the average probability of 25 percent, assuming a uniform distribution of low ratings among all the banks in the ranking.

If these results appear to be reasonably good, any conclusions must be tempered by the possibility that the results may have been influenced

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[2]In fitting the function to actual data, the historical values of P, the dependent variable, must be established for each bank. This is accomplished through a computer program in which the observed values of the dependent variable are represented by a variable coded as 1 if the bank received a low rating in the estimation period and 0 if it did not. The computer program fits probabilities over the estimation period as closely as possible to these observed values while preserving the functional form indicated.

[3]To produce forecast probabilities for one or more banks, the values of the five key ratios for a base year two or three years prior to the forecast period would be entered into the function. The research evidence on the significance of the functional relationship between the five key ratings, and on the accuracy of forecasts developed from these historical relationships, is described in detail in the work cited in note 1.

by a somewhat high incidence of low supervisory ratings in 1976-1978. Further, many of the 76 low-rated banks of that period already were in a problem status by 1976.

While the results produced thus far are encouraging, they leave substantial room for improvement from the standpoint of efficient early warning analysis. For example, in the forecast just described, it would take a cut-off point that included about half of the 298 sample banks to ensure that all but 10 of the low-rated banks were captured. At least 60 banks would have to be reviewed to capture 42 low-rated banks. Clearly, it would be desirable to reduce the segment of the ranking likely to contain a high percentage of banks that are seriously vulnerable.

Peer Group Alternatives

One promising way of addressing the model's efficiency is to refine its peer grouping. The present rankings for banks having $300 million or more in total assets are influenced by bank size as well as bank soundness. Larger banks are somewhat more likely to get lower composite scores purely because they are larger. The observed relationship can be traced to the tendency of large banks to have lower equity capital ratios and higher ratios of commercial loans, expenses and loan losses than regional and local banks.

Does the ratio profile of large banks mean they tend to be riskier and, therefore, more likely to develop serious supervisory problems than smaller institutions? This is possible, but other inferences can be drawn. For example, large banks may tend to be more diversified and better managed than smaller institutions, and may not be as risky as financial ratios alone might suggest.

In any case, the present treatment of very large banks has certain practical pluses and minuses. The tendency toward an adverse score reduces the chances of missing a very large weak bank. At the same time, very large banks might look artificially weaker and regional banks relatively stronger than they otherwise would if scores were calculated from a less diverse group than the present large-bank grouping. If users of the rankings know this, early warning signals about large banks may be discounted. Just as important, the surveillance program may fail to detect emerging weakness at large regional organizations.

There are no simple or clear-cut approaches to developing more refined peer groupings. Market observers and financial analysts have long employed size groupings to separate banks into classes having common risk and operating characteristics. However, by themselves, size groupings do not indicate that institutions share common operating characteristics.

We began a revision of the large-bank group by selecting, as a possible "common risk" group among the present $300 million and over class, all member banks operating in the U.S. market that have at least one foreign office. The classification is based on an assumption that banks that operate both domestically and abroad must deal with the broadest type of market risk and perhaps the most critical form of market discipline. On this point, they could be considered significantly more homogeneous with regard to risk than the present large-bank grouping. This new grouping divides the present large-bank peer group of approximately 350 member banks having $300 million or more in total assets in 1979 into two segments of roughly equal numbers of institutions—banks that operate at least one foreign office, and banks whose offices are all in the United States.

The next step was to determine how this classification performed in isolating potential problem banks. We obtained the names of member banks of $300 million or more in assets that had weak or marginal supervisory ratings in 1981. Five of these banks had weak ratings and eight banks were on the borderline.

Interestingly, 12 of the 13 weak or marginal banks and four of the five weak banks had at least one foreign office. Thus, the group of banks that operated both domestically and abroad in 1979 contained practically all those accorded low supervisory ratings in 1981. This grouping, therefore, could be expected to produce a higher concentration of low-rated banks in the weakest segments of a 1979 ranking (based on 1979 ratio data) than that produced by a broader ranking. That turned out to be the case. The average probability of future weakness computed for the 12 banks that had both domestic and foreign offices and had actually received low ratings in 1981 was 65.5 percent, compared to 28.6 percent when these 12 were compared to the total group of 352 member banks.

While this first pass at finding a more effective peer grouping provided promising results, an analysis of the relationship of bank scores to asset size continued to show a small but significant negative relationship between composite

Exhibit 4. Comparison of Average Probabilities
of Low-Rated Banks on Early Warning
Screen Selected Peer Groups

I. 1979 Ratio Data, 1981 Supervisory Ratings

	Peer Group				
	(1)		Merged Rankings**		
Average Probability In Percent	$300 million or more in total assets +	(2) At least one foreign office*	(3) 10% or more in foreign deposits*	(4) Top 40 banks in asset size*	(5) $10 billion or more in total assets*
1. Low rated banks:	28.6%	65.5%	67.1%	70.1%	73.4%
2. All banks in the screen:***	3.4	7.7	7.7	7.7	7.7

II. 1981 Ratio Data, 1981 Supervisory Ratings

1. Low-rated banks:	—	41.8%	39.0%	46.3%	48.2%
2. All banks in the screen:***	—	7.5	7.5	7.5	7.5

+   A total of 352 member banks
*   Approximately 160 banks, all at least $300 million or larger in total assets.
**   Subgroups of banks noted above. Merged ranking produced from scores calculated separately
from each subgroup and from the respective group of remaining banks.
***   The probability of a low rating if all banks are equally likely to receive a low
supervisory rating.

Note: The probabilities in the table have been obtained by means of a cumulative interval calculation. This procedure is similar but not identical to
the procedure used in developing probability estimates in the early warning function described in the text.

scores and bank size. To eliminate this source of
bias, the 160 banks with at least one foreign
office were divided into a further subgroup of
banks deemed to be more homogeneous in
operating characteristics than the 160-bank group
as a whole. We experimented with several sub-
groups from among the multinational organi-
zations: (1) banks with at least 10 percent of
their deposits from abroad, (2) the largest 40
banks in the group, and (3) all banks having $10
billion or more in total assets.

The results are summarized in Exhibit 4, Section
I. The average frequencies of the low-rated
banks are noticeably higher in each of the three
rankings developed from subgroup scores than
the average frequencies obtained from either
the 352 bank group ranking (column (1)) or the
160-bank group ranking (column (2)). The in-
creased probability for low-rated banks moving
from column (1) to (2) may be interpreted as a

measure of the concentrating effect of the "foreign
office" classification. The average probability of
low-rated banks rose to 70.1 percent (column
(4)) for the ranking in which the top 40 banks were
a subgroup and to 73.4 percent (column (5)) for
the ranking in which banks with $10 billion or
more in total assets were a subgroup. Further, the
negative relationship between bank scores and
total assets was barely significant for the 40-bank
subgroup, and nonsignificant for the $10 billion
and over subgroup.

Section 2 of Exhibit 4 indicates that the 12
banks that had low ratings in 1981 were identified
reasonably well by the revised rankings.

The effect of the subgroup scoring procedure
is shown in more detail in Exhibit 5, which
indicates the various bank rankings' ability to
distinguish weak banks from those on the border-
line. As noted earlier, when the 160 banks with at
least one foreign office were the sample group,

Exhibit 5. Effect of Peer Grouping on Early Warning
Probabilities of Selected Member Banks*

| | Average Probabilities Based on 1979 Ratio Data, 1981 Supervisory Ratings* | | | |
| | Peer Group | | | |
	(1) 352 Member Banks: Assets $300 Million Or Greater	(2) At least One Foreign Office	(3) Top 40 Banks**	(4) $10 billion Or More In Total Assets**
I. Low-Rated Banks				
(a) Four banks, 1981 CAMEL rating of 4 or 5 :	38.8%	67.9%	77.8%	77.8%
(b) Eight banks, 1981 CAMEL rating of 3 :	23.5	65.6	66.2	71.3
II. Selected Multinational Banks				
(a) Selected strong banks	10.8%	17.4%	12.4%	9.2%
(b) Selected weak banks	37.8	80.4	73.9	66.6
(c) Selected large regionals	17.7	27.7	14.6	38.1

* Probabilities are approximated through a cumulative interval calculation. The results may not correspond exactly with
probabilities obtained from the early warning function described in the text.
** Scores and probabilities obtained from a merged ranking.

the result was a considerable increase in the probability accorded the weakest banks—to nearly 68 percent (see columns (1) and (2)). The use of the subgroup scoring procedure raised that probability to about 78 percent (column (4)). Moreover, the probabilities accorded borderline banks behaved consistently and increased in parallel with those of the weakest banks, but were lower than those of the weakest banks.

The second portion of Exhibit 5 indicates the effect of the various peer groupings and subgroup rankings on a selected number of large multinational banks grouped into three categories: strong, weak or borderline and large

regionals. Narrowing the peer group to banks with at least one foreign office raised all the banks' probabilities of future weakness, as might be expected.

Nonetheless, the probability levels for strong banks remained far below probability levels that past experience has indicated is a danger zone. In contrast, the probabilities of the weaker institutions, which were high to begin with, rose sharply to very high levels. Other interesting results arose from the refined peer group rankings and affected the early warning signals of a number of larger banks in the sample. The probabilities of weakness of the strongest institutions declined.

This increased strength emerged because several key financial ratios (the equity capital ratio and the gross chargeoff ratio) showed significantly less variability in the relatively small peer groups of the largest banks than in the more diverse groupings. Consequently, exceptional strength or weakness in key financial ratios tended to be amplified by the subgroup bank scores. At the same time, the probabilities for some of the weaker banks declined in the $10 billion and over subgroup ranking simply because they were being measured against others whose operating characteristics were more like their own. Still, these banks' probabilities of future weakness remained high.

The behavior of the respective probabilities accorded several large regional organizations points out some interesting aspects of the decision process that must be involved in peer group analysis. When grouped with the top 40 banks, which includes practically all the nation's major multinational banks, the selected regionals look relatively strong. When the scores were obtained from a $10 billion and over subgroup, these regional banks were placed in the "all other" bank group. The financial ratios of these regional banks then looked substantially weaker in relation to a group consisting of large regional, regional and community banks than they did with the top 40 banks. When the narrowest subgroup was used, the average probability of weakness for the regional banks rose sharply to 38.1 percent, a fairly high level. The selection of the appropriate peer group clearly is important in this illustration and hinges on a careful assessment of a bank's ability to handle various kinds of risks.

Conclusions

In general, these results suggest that some form of peer grouping along the lines developed in this report might be considered for use within early warning programs. This approach requires some confidence that bank scores should be calculated in such a way that bank size itself should not affect composite scores. In any case, the subgroup scoring approach permits this influence to be controlled and provides a more objective means of defining reasonably homogenous peer classes than perhaps has been available thus far.

Supervisory judgments will continue to be important, since a bank's management philosophy can't be captured easily by financial ratios. A change in management philosophy or objectives may become apparent to supervisors before it affects financial ratios. Under such circumstances, the bank's peer group classification might appropriately be reviewed and the effects of a shift in the bank's class assessed. Used in this manner, peer group classes may hold the potential for enhancing supervisory insight into future problem situations.

—Leon Korobow and
David P. Stuhr

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Tracking Banks from Afar:
A Risk Monitoring System

An "early warning" system based on remote analysis operates on the principle that management can be judged by its financial record. With few exceptions, the results of the Cates Risk Monitoring System (RMS) have proved consistent with this principle.

The objective of the RMS is to identify poorly-managed or exceptionally aggressive banks from a given population. To that end, the RMS enhances the productivity of credit analysts and bank examiners. It accomplishes this with a series of ratio tests that place a bank in one of five risk categories. Higher-risk banks (4's and 5's) warrant closer scrutiny. This could mean more frequent, more detailed analyses or more direct contact with bank management. For example, consider an analyst with 30 banks to oversee. These banks are passed through the RMS and fall into the following rating categories:

	RMS Rating				
	Low Risk				High Risk
	1	2	3	4	5
No. of Banks	3	8	9	6	4

On the basis of these results, the analyst might examine the 20 lower-risk banks (1's, 2's and 3's) just once every two years. Only 10 banks (the 4's and 5's) would receive more frequent analysis (see Chart 1).

Similarly, the analyst would allocate less time to the financial analysis of lower risk banks (see Chart 2). The end result would be a reduction in total analyst oversight time, with most monitoring of low-risk and moderate-risk banks accomplished through remote analysis.

Table 1

	Number of Banks	Percent of Total
Downgraded at least three levels:		
From 1 to 4 or 5	2	0.5%
From 2 to 5	5	1.2%

For this system to work, it must flag trouble as it begins to develop. If a large percentage of banks plunge from a '2' to a '5' (or shift from a '5' to a '2') in the space of a year, the system is not sensitive enough to developing problems or gradual improvements. However, we contend that, apart from fraud, a single event rarely cripples a bank fatally. Instead, the culprit is consistent mismanagement or risky strategies.

Steep rating changes rarely occur with the Cates RMS. For example, of the 400 largest banks in the country, less than 2 percent received dramatically lower RMS ratings in 1982, compared to 1981 (see Table 1).

Methodology

Evaluating a bank is a complex process. The analyst must have a command of many ratio measures and knowledge of industry norms and trends. In developing the Cates bank financial analysis course, we introduced the concept of "ratio trails" to approximate this thought process. Then, with the RMS, we further systematized bank financial analysis by creating a series of ratio-based tests that assess a bank's performance in five critical areas:

Chart 1. Frequency of Examination

Number of Banks		
Every Six Months	'5'-Rated Banks	
Every Year	'4'-Rated Banks	
Every Two Years	'1', '2', and '3'-Rated Banks	

Number of Banks: 0 5 10 15 20

Chart 2. Extent of Financial Analysis

Full Annual, Full Quarterly Analysis	'5'-Rated Banks
Full Annual, Full Midyear Analysis	'4' and '3'-Rated Banks
Full Annual, Cursory Midyear Analysis	'1' and '2'-Rated Banks

Number of Banks: 0 5 10 15
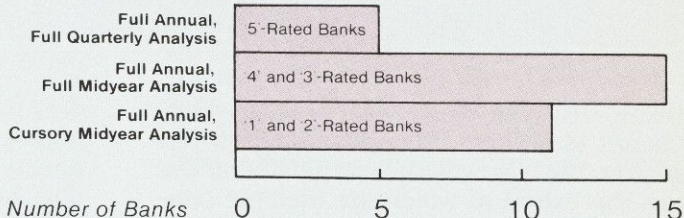
Chart 3. Distribution of Ratings-1982

'1'-Rated Banks	
'2'-Rated Banks	
'3'-Rated Banks	
'4'-Rated Banks	
'5'-Rated Banks	

Number of Banks: 0 100 200 300
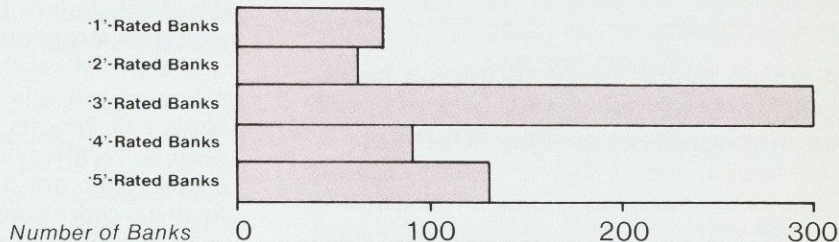
- Profitability
- Liquidity
- Asset quality
- Capitalization
- Holding company (where applicable).

There are 31 of these tests, 23 of which apply to the bank and eight that apply to the bank's holding company (if one exists and is large enough to file the Federal Reserve's Y-9 report). Some of these tests compare the bank's ratio against that of its peer group (all similarly sized banks in the nation and in the region). The return on assets is evaluated this way. Other tests use absolute standards. For example, a bank's recovery rate on loans charged off must average at least 20 percent. Still other tests examine trends, as do two tests we apply to the net interest margin.

Other qualifiers in the system take into account unusual circumstances that might affect a test result. For example, some banks are particularly active in businesses that generate fee income. Recognizing that the operating profit margins on service businesses are usually lower than for financial intermediation, the system adjusts the "overhead to adjusted operating income ratio" test to allow for higher overhead expenses at these banks.

Outcome

Determining a Cates RMS rating requires a sheet of pre-computed ratios on the bank and its peers and an RMS worksheet. A clerk completes the worksheet by responding to each test with a 'pass' or 'fail' mark. A rating is then assigned according to the number of 'fails'.

The distribution of last year's ratings (data year 1982) on the 600 banks with at least $300 million in assets, is shown in Chart 3.

Note that approximately two-thirds of the banks were rated '2', '3' or '4', with 40% of the group resting in the '3' category. However, at

Table 2

Banks	RMS Rating	Factors Causing Lower Ranking				
		Earnings	Liquidity	Asset Quality	Capital	Hold Comp
Penn Square Bank - OK	5		X	X		X
Metropolitan B&T - FL	5	X	X	X	X	X
Cedar Bluff Bank - AL	5	X		X	X	

the extremes there were twice as many high-risk banks as low-risk. This phenomenon was evident in 1981 as well. In our judgment, this mirrors the extent to which the multiple pressures of deregulation, volatile interest rates, and increased competition have taken their toll on the industry. This showing also reflects a

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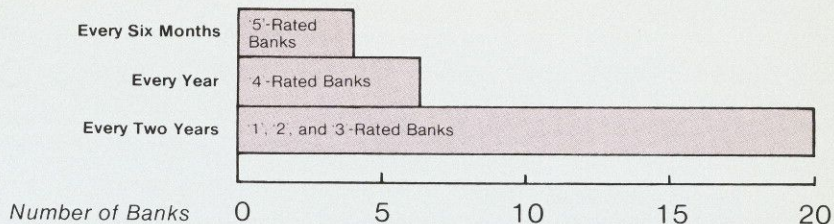> "A single event rarely cripples a bank fatally. Instead, the culprit is consistent mismanagement or risky strategies."

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built-in conservatism to accommodate the longer term perspective of bank analysts and regulators.

In addition to the summary rating, the Cates RMS also indicates what performance categories contributed to a given bank's lower rating. To illustrate, Table 2 shows our ratings on three banks that failed in 1982. The ratings are based on data year 1981. This information directs analysts to problem areas.

Strengths

The principal strength of this system is that it has proved highly effective in alerting clients to banks with emerging problems. Consider, for example, the 34 banks that failed in 1982. Setting aside the four that failed due to fraudulent activities (like check-kiting and embezzlement), plus one other young bank with incomplete financial data, the system gave these banks very poor ratings for 1981. Their 1980 ratings were also generally low (see Table 3).

A second strength of the system is that, while the "circuitry" is complex, the "keyboard" is easy to use. As noted earlier, the scoring can be done on a worksheet that demands only simple pass or fail responses. Once the Bancompare II data base is mounted on-line, we will program the Cates RMS so its ratings can be machine-generated. Input from our analysts is limited to inspecting significant rating changes, (particularly if a bank enters the '4' or '5' category), and ratings on large banks (see *Limitations* section).

A third strength is that the system relies solely on publicly available financial data from bank call reports and holding company Y-9 reports. Neither manually accumulated annual report data nor telephone calls to a bank's financial officer are required.

Another feature that distinguishes this system from other rating systems is that it takes explicit account of holding company performance. This perspective is particularly important in evaluating a bank's capitalization. For example, Penn Square's equity to assets ratio compared satisfactorily with that of its peers. However, on inspection of the holding company's double leverage ratio, it became evident that a large percentage of the bank's capital was supported by parent borrowings. Such a condition places considerable pressure on a bank because it must upstream extra dividends to service this debt.

Finally, as mentioned earlier, the Cates RMS provides not only a rating but an indication of where the bank may be unusually weak.

Limitations

The as-yet-unsolved problem of this system is that it is tougher on large banks (over $5 billion in total assets) than on smaller ones. It has underrated some of these larger banks

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Table 3			
	Percent of 1982 Failed Banks That Were Rated		
	3	4	5
Data Year: 1981	—	3%	97%
1980	17%	17%	66%

because it gives too little weight to the advantages of size and market accessibility. For example, it is not unusual for large banks to fail the test that requires a reasonable balance between asset growth and core deposit growth. (Core deposits refer to savings, small denomination time and demand deposits.)

The system has also overrated one large bank—Seattle First National. Conventional analysis applied to the bank's financial records failed to spot trouble brewing in the loan portfolio.

We are in the process of devising qualifiers to address both of these situations. In the case of the funding ratio, we might focus more on the bank's overall dependence on purchased funds. With regard to a Seattle First situation, we're considering a test that would monitor the growth of commercial loans relative to total loans. At Seattle First, C&I loan growth was 2½ times that of total loans in 1981.

Usage

We stated earlier that the RMS enables credit analysts and examiners to be more productive and effective. It is especially valuable to those with a long list of banks to review each year. Other beneficiaries are corporate cash managers who invest in bank CDs and correspondent calling officers who want to direct their efforts toward the stronger institutions in a market.

In each case, the system is meant to be an important step in the evaluation of a bank: it is not a substitute for the process. After all, a simple rating cannot capture the essence of a multidimensional business.

Some critics say a simple rating is valid if supported by qualitative input, such as discussions with bank management. We object to that approach for two reasons. First, it is difficult to cost-justify this activity for every bank rated. Presumably, a user would expend this much time only on higher-risk banks to which there was significant exposure.

More important, an analyst initiating such a discussion with management can end up listening to a banker's wishful thinking, if the talk is not disciplined by objective, ratio-based questions. Consider a bank whose asset quality has deteriorated during the past year. The analyst should be as interested in the way the banker

> "It is not unusual for large banks to fail the test that requires a reasonable balance between asset growth and core deposit growth."

responds to this observation as in the content of the answer. Is the banker aware of the aberration? If so, is he conscious of the variance from his peer banks? Does he have a substantive response that reflects prior recognition and some well-reasoned plan of action?

In short, remote analysis can identify key strengths and deficiencies, and it can raise questions for further investigation. For most healthy banks, a review of the annual report or a call to the chief financial officer can usually answer these questions with no further analysis required. More frequent contact with the bank or regular visitation is neither necessary nor justifiable in an "early warning" system.

—**Irene O. Booker***

*Cates Consulting Analysts, Inc. New York, New York

APPENDIX A
RATIOS USED IN THE
CATES RISK MINITORING SYSTEM

Earnings

Return on Assets
Net Operatng Income Growth
Net Interest Margin
Overhead to Adjusted Operating Income
Non-Interest Income to Adjusted Operating Income
Loss Provision to Adjusted Operating Income
Tax-Exempt Income to Pretax Net Operating Income

Liquidity

Large Liability Dependence
Core Deposit Growth
Asset Growth
Investment Securities Due Over 5 Years as a
    Percent of Earning Assets

Asset Quality

Net Charge Offs to Loans
Recoveries to Gross Charge Offs
Loan Yield
Loan Growth
Other Real Estate Owned to Loans + OREO
Loss Allowance to Loans

Capital

Equity to Assets
Capital Formation Rate

Parent

Cash Flow Match
Double Leverage
Double Leverage Payback
Consolidated Return on Assets
Consolidated Equity to Assets
Equity Investment in Nonbank Subs as Percent of
    Parent Assets
Combined Banks to Consolidated: Net
    Operating Income
Combined Banks Dividend Payout

Note: Some ratios are used in more than one test. For example, the Cates RMS evaluates both the level and trend of Return on Assets. Other ratios are examined in tandem. The bank's ability to generate equity internally is measured by comparing the Capital Formation rate with Asset Growth. Finally, some ratios are used as qualifiers. A weak Cash Flow Match result, for instance, is accepted if the bank affiliates have paid out less than 25% of their earnings to the parent.

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Sensitivity, Art, and the Shifting Ground of Bank Monitoring

There are three main points to be made about using financial ratios in monitoring commercial banks. First, there isn't, or shouldn't be, a great deal of difference between the approaches of the equity analyst and the credit analyst. Both should be focusing, although by no means exclusively, on bank profitability—and, in particular, on return on assets. Second, given accelerating change in the banking industry, the need for flexible and sophisticated financial analysis has never been greater. Finally, despite ever-increasing disclosure, there will always be a lack of the concrete data sought by analysts, who are insatiable; therefore, face-to-face management contact remains an important supplement to cold financial information to provide a qualitative feel for banking companies under scrutiny.

The Analyst's Tools

Among the many statistics and ratios available for a bank or banking company, the equity analyst has a special bias toward those relating to profitability rather than those that are more defensive, measuring asset quality or balance-sheet strength. The latter ratios are more immediately the province of the credit analyst, for whom ability to pay is the overriding consideration. Still, the equity analyst also must be satisfied with the staying power of the banks he follows; if a sudden surge in loan losses undermines the strength, or even the existence, of previously glowing profits, any associated investment recommendation will quickly be invalidated.

Conversely, the credit analyst can hardly underestimate the importance of basic profitability to a bank's continuing health. The danger of failure can arise abruptly, even at a bank whose loss reserves and capital base seem reasonably sound. Problems may result from fraud or policy shifts unperceived from the outside, at least at first, such as a deliberate mismatching of assets and supporting liabilities against an inaccurate forecast of rate movements. If it begins to seem that profits will slide or disappear, and that the trend will be difficult to reverse, confidence can evaporate rapidly among the bank's lenders and depositors, precipitating a liquidity crisis. Despite reassurance provided by relatively abundant capital and reserves, the bank unable to raise funds at affordable rates will soon be moribund.

Thus profitability is of crucial importance to equity and credit analysts alike. The question of which profitability ratio is paramount, however, will depend on the analyst's particular orientation. When concentrating on a bank's survival rather than its growth, our focus tends to shift away from return on equity (ROE), the more immediate measure of profitability for the stockholder, toward return on assets (ROA). If a relatively mediocre or weak asset return has been transformed into a high return on equity by abnormal leveraging, there is little room for error. A decline of relatively few basis points will have a much greater proportional impact, of course, on the ROA that is low to begin with; that impact will in turn be transmitted to ROE, bringing it rudely back to earth. The possible fragility of return on equity is important from any point of view; but the credit analyst, especially, cannot give a highly-leveraged bank the benefit of the doubt. Because profitability originates with return on assets, it is the key profitability index in monitoring the soundness of commercial banks. (Its usefulness can be enhanced, by modification or adjustment.)

Once the significance of profitability is recognized, almost any of the other ratios generally invoked in credit analysis—including the purely defensive ones—can be seen as relevant to preservation or enhancement of profitability levels. For example, the size of the loss reserve in relation to total loans outstanding is of immediate importance as an indication of the reserve's capacity to absorb charge-offs; but it ultimately

affects the continuing size of loss provisions required to replenish that reserve, which in turn affects return on assets. In general, the usual measures of asset quality and asset protection can be linked to ROA in the same manner.

Capital ratios, on the other hand, can be tied more directly to return on equity; a strong capital base provides flexibility to increase leverage without discomfiting the conservative investor, thereby increasing the equity return. Or, if ROA is eroded, strong capital ratios permit a bank to tolerate such erosion by leveraging more heavily (within limits) to offset it, preserving return on equity and dollars of profit.

The Art of Bank-Watching

The changing nature of banking makes any analyst's job both more difficult and more challenging. Financial ratios formerly relied upon as basic can lose their relevance, requiring development of new ones to replace them. Even within an established banking framework, the analyst needs to refine his techniques continually as experience accumulates. Finally, any ratio or measurement needs to be handled with care; that is, its application should vary according to the question to which it is applied. In short, monitoring commercial banks, like practicing medicine, is in many ways an art rather than a science, allowing considerable latitude for the exercise of individual judgment. Such monitoring should not involve cut-and-dried procedures, but rather flexible methods subject to continual re-evaluation—or, as John Foster Dulles would have said, agonizing reappraisal.

To illustrate changing vogues for analytical tools, consider the measurement of rate-sensitivity imbalances, or "gaps". Only within the past five years, as interest-rate volatility increased to previously undreamed-of levels, have sensitivity gaps become widely published and discussed. Their original time horizon tended to be one year: a bank's earning assets subject to repricing within the year, because of maturity or contractual arrangement, were measured against the amount of comparably sensitive liabilities. If the gap between those two numbers was "positive" (an excess of rate-sensitive assets), then rising rates would help a bank's income (and falling rates would hurt it); if negative, then falling rates would be favorable.

It soon became evident that a one-year horizon was too long, as rates changed direction at much more frequent intervals. Six-month horizons grew more common; then separate breakdowns of the gaps for 30 days, 90 days, six months, and one year were calculated by banks and snapped up eagerly by analysts. Even the need for these more sophisticated and detailed measurements has been declining in urgency; however, banks, observing or experiencing the damage inflicted in the past by wrong-way sensitivity gaps, have striven with considerable success to avoid any significant imbalance. More and more, bank net interest margins are affected primarily by differing response times among short-term rates that in theory are equally responsive, or sensitive—for example, when prime-rate changes lag behind shifts in the cost of Fed funds.

Thus, within the span of a few years, sensitivity-gap measurements moved from obscurity to the forefront of analytical attention—just in time to begin being treated with reservations.

An example of the differing implications of a given measurement is provided by the "overhead ratio," or net non-interest expense divided by net interest income. Ordinarily, that ratio measures

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"Monitoring commercial banks, like practicing medicine, is in many ways an art rather than a science."

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efficiency and expense control: the lower the ratio in comparison with those of "peer group" banks of comparable size, the more efficient the bank. In making such a judgement, however, the analyst must be careful not to oversimplify. Obviously, the size of the overhead ratio depends on both of its components; an unusually high net interest margin, producing considerable net interest income, can help offset excessive net expense, bringing the ratio down to a level in line with or even lower than peer-group averages. That apparent flaw in the overhead ratio's relevance for measuring efficiency is mitigated, however, by the fact that high net interest margins tend to be found among banks with extensive branching and ATM systems to gather relatively low-cost consumer deposits. (Such deposits are rapidly losing much of their cost advantage, with the advent of deregulation and the lifting of rate ceilings; but they probably will remain at least moderately less expensive than funds purchased

in the money markets.) On the other hand, those same banks have higher cost structures, due to the relatively large staffs and marketing and processing expenses required to solicit and administer consumer balances. A bank's relative degree of "retail" (consumer) orientation, therefore, tends to influence the overhead ratio's numerator and denominator in the same direction, helping to justify its use in comparing efficiency among banks of differing deposit and branching structures.

Another qualification should be considered. Even for any one bank, net interest margins can vary from year to year according to the level of interest rates and spreads, or changes in its own asset-liability structure. Thus, fluctuations in margin or in loan demand affecting net interest income can cause variation in the overhead ratio independent of the bank's achievements in

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"What looks great today may have more sobering implications for the future…and the analyst who properly showers praise on a bank's management for its cost control…may need to be skeptical about its latitude for improving profitability."

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controlling expenses or generating fee income. Still, such fluctuations have tended to even out over a period of years, allowing the ratio to serve as a reasonable indication of progress in reducing the impact of net non-interest cost.

Perhaps we can continue to assert that a low overhead ratio generally reflects well on its possessor. Therefore, it should be viewed favorably—right? Not necessarily, when we look at profitability and the prospect for its improvement.

A much more hopeful case can be made for the bank with a depressed return on assets if its overhead ratio has been falling—steadily but still has some distance to go toward the far reaches of efficiency. Conventional wisdom also insists that expense control and fee generation are the wave of the future, by which banks can combat inevitable pressure on margins and maintain profitability. I would not quarrel with the basic thrust of that statement; so, if a bank has already squeezed the maximum benefit from limitation of net non-interest expense (and from careful supervision of asset quality) without achieving strong profitability, what is left for it? Only the

uncertain and elusive possibility of more sophisticated asset-liability management, to reverse a likely future decline in net interest margin.

In brief, what looks great today may have more sobering implications for the future; and the analyst who properly showers praise on a bank's management for its record of cost control may also need to be skeptical about its latitude for improving profitability.

The need for refining analytical techniques is evident from another example. In assessing asset quality and balance-sheet strength, both equity and credit analysts seem to concentrate on two ratios: the loan-loss reserve measured against total loans outstanding, and nonperforming assets related to that same total. If the reserve is a high percentage of loans, that is good; if nonperforming assets are also a high percentage, that's bad. Yet aren't both ratios, to some extent, intermediate steps on the way to a more directly meaningful comparison?

That comparison involves the ratio of the reserve to the total nonperforming loans, or—similarly—the combined reserve (including what has been set aside against foreclosed properties) versus all nonperforming assets (including such properties). The most likely and obvious source of future loss is those assets already classified as nonperforming, and thereby singled out as questionable in some respect; if so, shouldn't a significant portion of the loss reserve be earmarked specifically to cover potential losses from that source? As always, more subtle considerations are involved. Those include the possibility that many non performing loans have arisen from real estate lending, are theoretically well collateralized, and ultimately should be salvaged or recovered, precluding much of the need for reserving against them. Still, it seems that loss reserve compared against non performing loans, which can be designated as the "coverage ratio" or a ratio of asset protection, is more immediately helpful than either reserve to loans or nonperformings to loans, regarded in isolation. In fact, the coverage ratio is merely a combination of the latter two.

Why do so many analysts and other observers persist in focusing separately on ratios that are in themselves less informative, or even potentially misleading, when more direct comparisons could be much more useful? I think the answer is that some less individually significant indicators, emphasized for a long time, have acquired prominence merely through inertia. Analysts should continually re-examine what they stress, and

what is most relevant to the bank-monitoring process.

A more basic indicator subject to misinterpretation is the conventional net interest margin: tax-equivalent net interest income divided by total average earning assets. To illustrate this point, after last December's introduction of the money-market account, banks achieved considerable success in attracting funds. Attention was focused on the potential for margin erosion resulting from internal transfer out of lower-cost, fixed-rate accounts such as passbook savings; and erosion from that source did occur, although the transfer was much less than generally expected. But there was also apparent erosion of a different kind, which is central to my argument.

Receiving large amounts of new money in a time of slack loan demand, some banks laid much of it off in short-term investments at narrow or minimal spreads (often at temporarily negative spreads when premium rates were initially offered). That caused earning assets to balloon and net interest margins to contract—in many cases, quite perceptibly. Other banks used the new money primarily to pay off short-term borrowings, often gaining roughly the same interest differential and benefit to income. These banks suffered no apparent margin deterioration from this source, because their increased net interest income was measured against unchanged earning assets. Thus, in theory, two banks could start with the same net interest margin and asset-liability mix and receive the same amount of new funds in the money-market account yet the one using those funds to pay off purchased liabilities would improve its conventional margin while the one investing the funds at narrow spreads—other things being equal—would experience inevitable margin erosion.

The money-market account is merely one prominent example of a more general objection to the conventional net interest margin: its fluctuations can be misleading when they are caused primarily by significant change in the proportion of earning assets devoted to low-spread liquid investments. To answer that objection, the analyst can use an "adjusted" or basic margin, which is simply net interest income divided by core earning assets, or loans and investment securities only. Its outstanding merit is the elimination of margin fluctuation due to the factor just mentioned, since short-term investments are not included among core earning assets. Of course it is a "hybrid" ratio, since net interest income still includes

the amount earned on short-term investments excluded from the asset base, but fluctuations in that amount, which is small in relation to total net interest income, exert relatively little influence on the margin.

As an example, Table 1 shows actual net interest income, earning assets, and margins for Florida National Banks' four quarters ending last June 30. The conventional margin on total earnings assets and the "adjusted" margin show remarkably different quarter-to-quarter progressions, because of sharp variation in the relative amount of "other" earning assets. To demonstrate that the apparent inconsistency between numerator and denominator does not seriously impair the adjusted figure's appropriateness, I have refined it to remove that inconsistency. Assuming somewhat arbitrarily that "other" earning assets are carried at an average spread of 1/2 per cent, I calculated the

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"The adjusted margin is much more representative of trends in basic or underlying income from interest differentials, and thus of trends in basic profitability."

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net interest income on such assets for each of the four quarters, subtracted that from total net interest income, and divided the remaining amount by average loans and securities. The resulting "adjusted margin, refined" is shown in the last line of Table 1. It is similar in size to the simple adjusted margin above it; more importantly, its quarter-to-quarter progression follows the very same pattern.

The adjusted margin, whether simple or refined, is much more representative of trends in basic or underlying income from interest differentials, and thus of trends in basic profitability. Following that same approach, the analyst can look at overall return on core earning assets—loans and investment securities—rather than the conventional return on total assets. The former measure once again compensates for differences in the relative importance of low-spread short-term earning assets among banking companies, or differences at the same company from one time period to the next. After-tax income is measured against core earning assets only, again removing the misleading and volatile effect of

Table 1. Conventional Net Interest Margin vs
Adjusted Net Interest Margin
Florida National Banks

	III Q '82	IV Q '82	I Q '83	II Q '83
Net Interest Income	$ 35.70mm	$ 37.49mm	$ 38.19mm	$ 39.07mm
Avg. Investment Securities	709 mm	689 mm	722 mm	741 mm
Avg. Loans	1387	1475	1703	1811 mm
Avg. Core Earning Assets	$2096	$2164	$2425	$2552
Avg. Other Earning Assets	316	407	464	151
Avg. Total Earning Assets	$2412	$2571	$2889	$2703
Net Interest Margin (on total earning assets)	5.87%	5.79%	5.36%	5.80%
Adjusted Net Interest Margin* (on core earning assets)	6.76%	6.87%	6.39%	6.14%
*Adjusted Margin, Refined	6.68%	6.78%	6.29%	6.11%

large short-term liquid assets on apparent profitability.

Table 2 shows five North Carolina banking companies ranked by both measures; their rankings, and relative profitability change considerably when we use the adjusted return on assets. Table 2 provides two sets of capital ratios for the North Carolina companies. The first is the conventional equity-to-assets ratio, the second is equity to core earning assets. That second ratio seems more meaningful, since equity capital is measured specifically against a base that except for U.S government securities, concentrates on the main risk assets: loans and municipal securities. Of course, the frequently used equity-to-loan ratio accomplishes much the same purpose; the point is that the standard equity-to-assets benchmark, like the standard ROA, can be misleading. Note the rearrangement of North Carolina rankings when the adjusted capital ratio is used.

Other financial indicators have been largely outmoded by banking change, yet hang on—seemingly with lives of their own. One is the ratio of loans to deposits, once universally popular as a measure of liquidity and still cited often. Measuring liquidity is both difficult and important. Its difficulty is indicated by a continuing lack of consensus on how best to accomplish it; its

importance is evident, as suggested earlier, from banking history. Many failures have tended to stem not so much from insufficient capital as from an inability to attract and retain funds, the lifeblood of daily operations.

The loan-deposit ratio originally was appropriate, because of funds other than capital, and investment securites were both the primary asset alternative to loans and the main source of liquidity. Therefore, the lower the ratio of loans to deposits, the greater the relative amount of securities supported by those deposits, and the greater the bank's liquidity.

Then, however, larger banks began to rely more heavily on fund sources not classified as deposits, such as Fed funds, repos, and (in the case of holding companies) commercial paper. Those additional funds diminished the relevance of the loan-deposit ratio, not only because the ratio did not take them into account as part of the total invested, but also because they increasingly embodied liquidity available on the liability side, as opposed to banks' earlier primary reliance on liquid assets. At the same time, the banking industry was pursuing other investment alternatives to securities, especially to provide asset liquidity. Short-term Eurodollar deposits with other banks, and Fed funds sold, were

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Table 2. Return on Assets and Equity/Assets, Conventional and Adjusted— North Carolina Banking Companies

	1982 Return on Assets
Branch Corp.	1.21%
Wachovia Corp.	1.20
First Union Corp.	.99
NCNB Corp.	.91
Northwestern Financial Corp.	.91

	1982 Return on Core Earning Assets*
Wachovia Corp.	1.86%
First Union Corp.	1.54
Branch Corp.	1.38
NCNB Corp.	1.33
Northwestern Financial Corp.	1.22

	1982 Equity/Assets
Branch Corp.	7.78%
Wachovia Corp.	6.35
Northwestern Financial Corp.	5.86
NCNB Corp.	5.69
First Union Corp.	5.15

	1982 Equity/Core Earning Assets*
Wachovia Corp.	9.85%
Branch Corp.	8.90
NCNB Corp.	8.30
First Union Corp.	7.98
Northwestern Financial Corp.	7.88

* Loans and Securities Only.

Source: Keefe, Bruyette and Woods, Inc.

convenient and accessible temporary repositories for money. Investment securities, meanwhile, came much closer to deserving the "investment" designation, being held primarily for that reason. As interest rates turned more volatile, it became less and less feasible to use longer-term securities for storing up liquidity. Even certain loans, made for short periods at low spreads, represented a liquidity source.

Ironically, some of these trends have been reversed temporarily by the advent of the money-market account. With deposits flooding into the account during a period of slack loan demand, banks have been paying off outstanding short-term borrowings, and investing not only in liquid assets like Eurodollar placements but also in short-term securities. To the extent that banks pay off their nondeposit borrowings and stay invested short in most earning assets outside the loan portfolio, the loan-deposit ratio will reassume more significance in measuring liquidity.

That phenomenon presumably is temporary, however, until loan demand increases enough to absorb excess funds generated by the money-market account. For the longer run, how can liquidity be measured more appropriately? Our answer has been to use the percentage of basic earning assets supported by net purchased funds. Basic or "core" earning assets are defined as before as loans and investment securities, while "net purchased funds" are the total

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"Other financial indicators have been largely outmoded by banking change, yet hang on—seemingly with lives of their own."

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amount of nonconsumer interest-bearing liabilities (except long-term debt), after subtracting the non-core, liquid short-term earning assets usually funded by such liabilities. The lower the remaining, or net, amount of purchased funds required to support core earning assets, the greater the latitude for buying more such funds, and the greater the liquidity.

This particular ratio, with the assumptions inherent in it, serves well to illustrate the shifting ground upon which bank monitoring must be based. Importantly, it assumes that net (or investable) demand deposits, and all interest-bearing consumer deposits, fall into the "core" category of relatively stable and permanent funds. That is less true today than ever before. It is hardly necessary to enumerate all the forces being generated by deregulation and otherwise to change retail depositors' orientation from convenience toward rate-sensitivity. These trends have implications not only for the cost of bank funds, but also for their stability.

Thus, the value of this newer liquidity ratio is more and more questionable. Ideally, it should be replaced by an index encompassing the relative maturities of assets and liabilities; but compiling and interpreting such a measure is difficult even for a bank's own staff, with access internally to the required information. For those on the outside, trying to get that kind of handle on liquidity is impossible.

The Personal Touch

Even when an analyst is working with ratios whose interpretation is less complex or uncertain, variation among banks makes comparison difficult. Take the coverage ratio mentioned earlier, loss reserve versus nonperforming assets; the greater the coverage, the stronger the bank's position should be. But, even here, such a statement must be hedged. Different banks apply differing degrees of stringency in assigning nonperforming status; often a subjective or qualitative judgement is involved.

A vivid recent example is the differing treatment of loans to Mexico's private sector. Some banks took the simplest and most conservative approach, stopping interest accrual on all such loans because of the borrowers' difficulty in obtaining foreign exchange for debt service. Other banks put on nonaccrual only loans whose borrowers failed to deposit interest payments in pesos with the Mexican government, under its special program to cope with the foreign-exchange shortage. Still other approaches also were taken. In this case the differences in classification were manifest, as most banks disclosed both the total amount of private-sector Mexican loans and the amount placed on a cash basis, along with the rationale for selecting the latter. Here, at least, the analyst can segregate the Mexican loans included among nonperforming assets, and make a judgement on the extent of Mexican coverage by the reserve.

In general, however, an analyst cannot measure or determine the degree of conservatism brought to bear on classifying loans except in a subjective manner. Monitoring commercial banks, again, is more an art than a science.

Any financial ratio is only as good as the care with which it is used. That is why we stress so strongly the importance of management visits. Given the imprecision of ratio analysis and comparisons, in part because of diverse management policies, it is helpful for the analyst to have as firm an idea as possible of each management's philosophy and quality. That kind of insight can be gained only by repeatedly spending time with bank managements and interviewing a range of top executives. Evaluating management quality is an elusive goal, involving a much greater element of subjectivity than interpretating ratios. Nevertheless, in trying to do the best possible job of monitoring commercial banks, analysts need all the help they can get.

One might conclude that bank monitoring, with its imprecise aspects, is a well-nigh impossible task. The point of this exposition is not to present a bleak picture but rather to emphasize the pitfalls of unquestioning reliance on financial ratios. It is easy to become so absorbed in these indicators that seasons may turn and nations may fall with no recognition by the ratio-obsessed analyst. The analyst should instead try to maintain a balance between science and art, stepping back from pure numbers to see banks in a broader perspective.

—**Richard Stillinger**[*]

*Vice President, Keefe, Bruyette & Woods, Inc.

A Summary of Discussion at the Early Warning and Financial Analysis Sessions

Discussion of the early warning and financial analysis presentations followed six major themes: (1) the analytical and functional purposes of early warning models; (2) the performance of early warning models compared with other means of bank surveillance; (3) the contribution of uncontrollable outside factors to bank problems and ways of evaluating a bank's vulnerability to them; (4) the importance of fraud and insider dealings in bank problems and ways of predicting these factors; (5) refined measures of financial soundness and (6) the separateness of banks, their holding company affiliates and their holding companies.

Those presenting early warning models dealt with the models primarily as tools that would identify banking organizations for further detailed analysis. Two other potential functions were considered in the discussion: (1) early warning models as diagnostic devices to indicate areas that deserve more study and (2) as substitutes for on-site examination.

This latter possibility provoked debate between those who contended that the majority of banks' problems resulted from fraud, insider dealing and asset quality, all of which require detailed analysis, and those who argued that reported data provides sufficient information for rating a bank. Part of the discussion turned on the purposes of the models. Models used to predict examiners' ratings are confined to the first-pass role. Those used to predict failure might go a step further to assign risk rankings on which deposit insurance rates might be based.

This discussion made it clear that federal regulators are attempting to use remote financial surveillance—whether by early warning models or ratio analysis—to avoid some of the costly activity of on-site examination. Remote surveillance appears to be a useful substitute for on-site examination but not a perfect substitute. In this regard, several participants noted that profitability measures, which play an important part in surveillance models, change because of earlier changes in management practices that impact asset quality or fraud. The surveillance screens thus give important weight to a lagging measure of problems that might better be found by more careful analysis of asset quality measures, by on-site examination or by detailed analysis of a bank's financial condition. Most financial analysts and regulators indicated that on-site examinations are useful in assessing management. Disagreement on this issue arose when the question of management's ability to lead on-site analysts "down the primrose path" was discussed.

Further discussion of the functions of early warning models in particular dealt with their analytic functions. Robert Eisenbeis commented that three analytic functions

appeared in one form or another in the papers on early warning models: to model examiners' ratings, to predict failure and to find an independent risk measure. Participants tended to agree that most models had merely flirted with formal risk measurement. John Bovenzi's presentation was more clearly aimed at a risk measure, as his model deals with failure probabilities and has as one purpose establishing risk rankings for a risk-related deposit insurance scheme. Discussants pointed out that models that modeled examiners' ratings assumed that examiners' assessment of risk was correct; they indicated that that assumption had not seriously been tested.

Discussion of the relative performance of early warning models and examiners' ratings was closely related to other questions of validation of financial analytic systems for banks. Robert Eisenbeis questioned the attempts by builders of early warning models to reduce the number of banks identified as weak by the models but rated strong by examiners, questioning which analytic system was superior, the examiners' or the early warning models. Several participants suggested testing both accuracy and timing of all types of surveillance models—the implicit ones of examiners and financial analysts and the formal ones against one another to determine which worked better in which situation. Joseph Sinkey pointed out that important variables in early warning models differed depending on how many years before problems the models were computed.

A further validation question came up in the discussion of financial analysis of bank holding companies. Mark Biderman pointed out that financial markets are one particularly sensitive information system that monitors the condition of banking organizations. He suggested that movements in bank stock prices might be useful indicators of problems. Joseph Sinkey identified some research that confirmed that supposition. Barron Putnam indicated that the Federal Reserve monitored stock prices of actively traded bank holding companies and gained useful information by doing so.

The contribution of outside factors to banks' problems also received attention. Economic conditions and government policy changes often receive blame for banks' troubles, yet surveillance screens and early warning models have not successfully used these factors. Examiners and, particularly, private-sector financial analysts consider such factors in their ratings and recommendations. Participants approached outside factors in several ways. The most elaborate suggestion for considering these factors contemplated building early warning models with conditional variables related to such outside factors as interest rates, economic conditions of the nation, the location of the bank and industries crucial to its market area and running simulations of this model to identify banks that might be hurt by particular outside changes.

Several participants complained that insider dealings and fraud had not been successfully integrated into models aimed at predicting bank problems. John Bovenzi pointed out that he had tried variables measuring insider dealing in his models but without success. He opined that his measures were poor. Further discussion brought out the observation that management participating in nefarious dealings has incentive to confound analysis by hiding these dealings in its reports. Barron Putnam indicated that the process of editing and examiner replications of reports often led to identification of management manipulation.

Many refinements of financial analysis data were discussed. Thomas Zemke set the tone of this discussion by pointing out that banks' environment was changing radically and that changes brought on new problems to analyze and made some earlier analytic methods obsolete. He pointed to the change in the significance of core deposits over a period of interest rate deregulation.

In a discussion of profitability measures, Jon Burke commented that measures such as return on assets did not allow for risk of assets and could thus be misleading. He and David Kidwell also felt that earnings measures gave symptoms of other problems that originated before earnings declines. James Ehlen pointed out that analysis of the source of earnings was vital in projections of future earnings capacity and volatility.

Participants agreed that liquidity had been hard to measure satisfactorily in the past and had become more difficult to measure as deposit interest ceilings had been removed and as deep, worldwide financial markets had developed. Several pointed out that the liability side of the balance sheet is more important as more deposits have become "subject to bid." This factor has allowed banks to both lose and gain funds more quickly but not without potential effects on costs. Private sector financial analysts also pointed out that while very large banks fared poorly according to traditional liquidity measures, these banks had access to and could quickly raise large amounts of funds in world financial markets.

Loan quality—a crucial determinant of bank soundness—appeared from the discussion to be an elusive variable for all. Private sector financial analysts envied regulators' exam-based information on loan quality, but the regulators were sufficiently stymied by problems of timeliness in this data to have added interim data on past due loans to their screens and models. Irene Booker and Harold Levine suggested that beyond past due and classified loans, loan quality indicators should include rapid loan growth and rapid portfolio shifts. Thomas Zemke also opined that concentrations of loans to particular industries or (in case of foreign loans) countries should be taken as signs of high risk.

Measuring efficiency received little discussion, possibly because operating efficiency seems to play a small part in soundness. Jon Burke did point out, however, that analytical use of efficiency measures requires careful selection of peer groups. Individual banks' operations differ in various ways that affect operating and overhead expenses. Differences in services provided can cause differences that can easily be mistaken for differences in efficiency.

A further measurement problem that impacts both efficiency and profitability measures arises from attempts by banks to earn fee income through service activities that do not show up directly on their balance sheets. Some of these activities, e.g., providing back-up lines-of-credit, may involve the banks in risks that are not shown by financial ratios. All are undertaken with risks of operating loss. Discussants believed that these off-balance-sheet activities had grown but that analytic models of banking had not fully integrated them. George Benston and James Ehlen pointed out that undertaking these activities did not necessarily increase a bank's risk or decrease its soundness and suggested that the manner in which management put together activities was crucial in that determination.

There were various opinions about whether a bank could be usefully analyzed separately from its parent company and that company's other subsidiaries. There was general, though not total, agreement that subsidiaries of a bank holding company could not be separated in analysis of bank or company risk. John Noonan argued that the parent would feel pressure to use strong subsidiaries to prop up weak ones. James Ehlen argued that risk was conceptually a unitary factor. A company might counter variability of income in one part of its operation with variability on a different cycle in another.

II. THE ROLE OF CAPITAL AND CAPITAL STANDARDS

Private sector and regulatory views often differ on the role of capital and capital standards in bank surveillance. Basic questions of definition, relevance, and relation to bank earnings remain controversial.

Capital and Capital Standards

The question of what a given regulator will view as adequate capital on a given day has been cause for debate for many years. In fact, many bankers may agree that the regulators' reasoning on what is adequate capital may not be too far afield from that of Justice Potter Stewart who, in a Supreme Court decision on pornography, said:" I cannot define it, but I know it when I see it."

While bankers may hold this perception concerning regulators' capital adequacy views, we believe the Comptroller's office now has a more consistent and reasonable approach.

Perhaps the most important function bank capital plays is maintaining confidence. Uninsured depositors must be confident that their money is safe, and borrowers must be confident that the bank will be in a position to give genuine consideration to their credit needs in bad times

as well as good. Because banks operate in a protected environment, maintaining the confidence of the bank supervisor is essential to the bank's continued existence. Let us not forget the bank's stockholders; they need to be confident that they are protected from bank failure.

Capital has additional functions that warrant mentioning. The bank, like any business, must have capital to supply the working tools of the enterprise—the premises and equipment necessary to keep the bank open and functioning. Another important function is the representation of private ownership of banks. A fair proportion of risk taken by bank management should be shared by the owners.

How do we expect capital to maintain that confidence? We expect that bank capital will be available to absorb temporary and unexpected

losses resulting from one or a combination of the following:

(1) Credit risk—possible deterioration in the quality of the loan portfolio as evidenced by borrowers defaulting and the resulting increased collection costs.

(2) Investment risk—result of rising interest rates and disintermediation. Includes the possibility of default on securities.

(3) Liquidity risk—poor match in the term structure of assets and liabilities and the possibility of massive deposit withdrawals.

(4) Operating risk—operating inefficiencies and management errors.

(5) Fraud risk—embezzlement and other fraudulent activities that could produce uninsured losses.

(6) Other risks—exchange, transaction, trust department, and the like.

These losses are either charged to an appropriate reserve account or deducted from net earnings and, if earnings are inadequate, from retained earnings. This role of absorbing losses is instrumental in avoiding failure, adding to the confidence in a bank's continuing viability. But "temporary" and "unexpected" losses are just what their names imply. No reasonable amount of capital will sustain a bank that incurs losses for an extended period of time.

If we agree that capital should be able to absorb "temporary" and "unexpected" losses, which by definition are immeasureable, how do we define capital adequacy? Some method is necessary to assess adequacy. This method must acknowledge and make provisions for the factors that affect adequacy. Probably the first factor we all think about is asset quality. Remember our "temporary" and "unexpected" losses and the cushion that capital provides for these losses. We must consider the diversification in a loan portfolio, the volume of marginal and inferior quality assets, liquidity and the nature and volume of off-balance sheet risk.

We are also concerned with the composition of the bank's liabilities. How volatile is the deposit structure? Could massive withdrawals force liquidation of assets at an inopportune time? Is there a mismatch in the maturities and rate sensitivity of assets as compared to liabilities?

Quality of management is important when discussing operating efficiency as well as financial efficiency in conjunction with capital adequacy. Additional capital may be required to compensate for any shortcomings in management; poor management often is the cause of bank failures.

The composition of a bank's market and the competition within that market will affect capital. A stable institution with an established market share probably will not sustain the losses that a new player in the same marketplace will.

The economic environment of a bank's trade area will have a bearing on capital adequacy. A bank must be able to meet present and future financial needs of the market it services. What has been the bank's traditional growth? Are increases anticipated?

Earnings retention, earnings quality and earnings history demonstrate how quickly unexpected losses may be absorbed. We can also add to the list access to capital markets, quality and character of ownership, effectiveness of the planning process, the burden of occupancy expenses and the quality of operating procedures.

Given the importance that we as regulators attach to capital, the factors just enumerated, and the diversity of the institutions, how do regulators derive guidelines for individual institutions?

There was great concern that the joint Federal Reserve/OCC capital adequacy guidelines upon publication would become rigid standards rather

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"Qualitative analysis will remain fundamental for reaching conclusions on capital adequacy."

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than guidelines for the banker and the bank supervisor, as intended. Instead, the OCC's capital standards require a case-by-case analysis of individual banks—an analysis primarily of qualitative rather than quantitative factors. Qualitative analysis will remain fundamental for reaching conclusions on capital adequacy.

Basically, the comptroller's guidelines establish minimum floors for primary capital based on asset size and a zone concept for the total capital to total assets ratio. The zones are perceived as screening mechanisms that trigger a predetermined supervisory action. The zone concept, it is felt, eliminates the increasingly heavy reliance on peer group analysis. Peer group analysis tends to ignore institutions' disparate characteristics and may impose inflexible standards on banks and bank holding companies. The zone approach is

structured to give greater latitude to financial organizations in their capital planning and to regulators in supervising the capital adequacy of individual banks and the entire banking system.

Another benefit of the zone concept is the explicit operating guidance it provides the banking community. It minimizes the guesswork of capital planning for banks and holding companies since they now know what the regulatory response will be at a particular level.

Establishing the guidelines entailed a series of studies by OCC personnel. We wanted to find out at what point field examiners and supervisory personnel become concerned with equity capital levels. We did this by comparing examiner-assigned capital ratings to actual capital ratios. Those studies showed an extremely close correlation between the examiner's subjectively determined ratings and actual ratios—concrete proof of the consistency of the assigned ratings.

The studies also showed that the threshold level for concern was different for banks under

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"Studies show that, in fact, higher capital does not necessarily prevent bank failure."

$1 billion, those we call community banks. The guidelines represent OCC capital policy as it is being practiced in the field and how it is applied in the corporate area.

Regulators, obviously, would prefer to see higher capital ratios, indicating a larger cushion against unforseen circumstances. But studies show that, in fact, higher capital does not necessarily prevent bank failure. In the 1920s and 1930s, approximately 9,000 institutions failed and equity/total assets averaged 13 percent. Once again, we are back to the loss of confidence function of capital. Those banks did not fail because they ran out of capital; many failed because they lacked the confidence of depositors and regulators.

A study following the 1974-1975 recession led us to confirm the above hypothesis about capital levels. The institutions that failed in the wake of that recession, such as USNB in San Diego,

Franklin NB, and Hamilton of Chattanooga, did not fail primarily due to lack of capital. Apparently no significant study has been able to relate definitively the incidence of bank failure to capital levels. Studies have identified various primary causes of failures. They range from drastic loss of liquidity, characteristic of bank failure during severe depressions, to management inadequacies or outright dishonesty. The excellent study by George Vojta concludes: "The weight of scholarly research is overwhelmingly to the effect that the level of bank capital has not been a material factor in preventing bank insolvency, and that ratio tests for capital adequacy have not been useful in assessing or predicting the capability of a bank to remain solvent."

Given this type of thinking, what did we want and expect from our capital adequacy guidelines? The objectives of our guidelines were actually simple. We wanted a reduction, where appropriate, in the disparities between smaller and larger banks. We wanted the flexibility to adjust for the degree and type of risk assumed by each institution. The larger institutions have lower ratios because of their ability to attract and retain sophisticated management, depth of management, more comprehensive planning and control systems, and opportunities to achieve more diversified portfolios. Diversified portfolios mean that credit risk may be spread over a wider range of geographic area, product lines, and types of customers. Larger banks also attract diversified funding sources, which reduce liability risks.

Incidentally, smaller banks have a legal incentive to maintain higher capital ratios. For example, lending limits are linked to capital. So basically the differences in capital ratios with respect to size reflect the realities of the marketplace and various legal restrictions. It is interesting that smaller institutions have increased capital ratios in recent years. Those increases are choices freely made—not regulatory mandates.

The OCC recognizes that smaller institutions often are capable of achieving many of the characteristics that justify lower capital in larger banks. We feel our guidelines are flexible enough to take this into consideration. We know that small banks achieve consistently above-average rates of return on assets. We also know that there has been a significant change in the structure of financial markets. So many institutions were competing that it became necessary to eliminate artificial competitive disadvantages. As regulators, we have developed more sophisticated early

warning systems, so problems are identified and corrected earlier. Congress has also helped by giving us appropriate enforcement tools to effect timely remedial actions.

These guidelines represent a more objective and consistent supervisory approach to capital adequacy. Banks should benefit by being able to manage their capital positions with a full knowledge of the likely supervisory posture and response. We consider the guidelines a superior approach to previous inconsistent methods, including formal and informal rules of thumb, reliance on peer group parameters and published and unpublished standards. None of these methods recognized the unique characteristics of individual banks, and their strict use may have imposed inflexible, inconsistent and inappropriate standards.

In conclusion, the OCC will continue to assess capital adequacy on a case-by-case basis, relying primarily on qualitative analysis, while preserving a significant role for quantitative elements and comparative analysis.

—John H. Noonan*
and Susan Kay Fetner**

*Director, Commercial Examinations Division, Office of the Comptroller of the Currency

**National Bank Examiner, Office of the Comptroller of the Currency

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A Review of Bank Capital and Its Adequacy

The role of capital in banking is no different from its mission in any business endeavor. It reflects a core or base of funds permanently employed in the business that affords a sense of financial stability to the organization and the wherewithal to deal with adversity. The degree of its presence generally is viewed as a measure of relative financial strength.

In both banking and industry, the adequacy of capital is an elusive measure. Perhaps the only real determinant of adequacy is the aggregate consensus of the marketplace—that is, leverage, or the inverse of the capital ratio, should be extended until the marketplace reacts adversely and reflects concern.

This presentation will focus on the principal factors that influence the marketplace's perception of bank capital. We believe such factors are the perspective of history, regulatory guidelines, current trends, and the degree of recent stability.

However, before exploring the role of capital or reflecting on determinants of its adequacy, we need to define capital in its contemporary sense within the context of banking. Generally, or at least in an industrial context, capital suggests simply the owner's equity in the organization. Over the past decade or so, capital within the banking industry has become, due to regulatory convention, a blending of common stockholders' equity, reserves and other permanent or semi-permanent sources of funds.

Capital in the Current Sense

In December 1981, the principal commercial bank regulatory agencies adopted a common definition of what constitutes capital for commercial banks. Capital was said to consist of two basic components, primary (or permanent) capital and other capital (Table 1).

Appropriately, this framework clearly separated bank capital into the permanent component and other long-term funds. Importantly, from our point of view, the permanent funds employed in the business constitute real capital, whereas the other longer-term funds do not reflect a permanent call on resources available to weather adversity and therefore take a position of lesser importance.

Other capital, in particular subordinated notes and debentures (often referred to as capital notes), became popular in the late 1960s as a device to bolster sagging overall capital ratios. Regulatory guidelines soon permitted a banking company to maintain up to one-third of its overall capital in the form of debt with an original maturity in excess of seven years.

While such a definition of capital allowed the banks to *appear* better "capitalized," it did absolutely nothing to correct the basic problem of declining equity ratios. Simply stated, banks were able to stabilize their capital ratios by progressively issuing capital notes up to the aggregate limitations. At that point, without correcting the basic reason for the declining equity capital ratio, overall capital ratios would mathematically commence to decline once again. Clearly, there is a balance sheet role for long-term funds that carry maturities in excess of normal deposits. However, we believe the role is more oriented toward our concept of liquidity rather than toward capital.

Thus, while total capital funds from a regulatory viewpoint include a variety of forms, our principal focus rests with the permanent sources of capital representing equity in the business.

The Role of Capital

Capital, or more specifically equity and reserves in a banking context, plays a rather

Table 1

Primary (permanent) capital

    Common equity (including equity reserves)
    Perpetual preferred stock
    Loan-loss reserve
    Other instruments with a mandatory
      conversion-to-common equity feature

Other Capital Items

    Convertible securities
    Subordinated notes and debentures
    Sinking fund preferred stock

singular role of demonstrating financial strength and stability. Basically, capital stands ready to absorb adverse financial developments that could impair the viability or continuity of a bank's business. It is a vital component of the on-going confidence necessary to a depository institution. Unlike other components of the balance sheet, it provides only a limited passive role in the business as a source of cost-free funds (for instance, perpetual preferred dividends are declared from earnings).

In many ways we view bank equity much like a fire extinguishing system in a modern building. It is designed to inspire confidence. If it must be used, little will be the same afterwards, but the building itself will survive.

The point is often made that banks do not fail due to inadequate capital. Such a statement is true as far as it goes. Lack of capital does not cause a failure. Failures are more often due to massive real or prospective losses on earning assets or the loss of liquidity, which itself is usually related to the perception of prospective losses. However, if the equity were sufficient to absorb the prospective losses, liquidity would likely not be threatened. After a bank failure, there is seldom residual equity available for distribution to common stockholders. Thus, while inadequate equity does not precipitate failure, it is the inevitable result of a failure. Accordingly, we conclude that a bank would not fail if capital were in fact adequate. To take this to an extreme: would a bank with 100 percent equity ever fail?

Several years ago, the New York Federal Reserve Bank employed a capital measurement plan based on a liquidation concept. The notion was that equity should be sufficient to protect depositors if it were necessary to liquidate the bank. Specific percentages were allocated to various types of risk assets. Then the adequacy of an institution's equity was measured in terms of whether the equity was sufficient to cover the percentages allocated. The concept was that the equity capital provided a cushion against the risk inherent in the bank's assets. Such an approach has its merits in that it established a specific standard. However, the standards were not flexible to changing credit or interest rate risk. More practically, the framework fell into disuse as large banks in the jurisdiction found it increasingly difficult to maintain the specified standards.

The point has on occasion been made that the strength of a financial institution and its first line of defense against adversity is earning power, with the corollary being that capital is of lesser importance. To the extent that earning power is measured in terms of profitability, or return on assets, we cannot quarrel with this.

However, unless the dividend payout ratio is uniquely high, a relatively high return on assets is almost always associated with a relatively well-capitalized bank. *Thus, it would be difficult to divorce empirically the perceived value of a high level of profitability from a well-capitalized bank. They go hand in hand.* In fact the only variable that can alter this relationship would be the rate of asset growth. And in the event of adversity, asset growth could be discretionarily controlled by management. An additional factor to remember is that adversity, almost by definition, suggests a strain on earning power. To the extent that earning power is reduced or eliminated, the focus will necessarily shift to capital.

Thus, we suggest strongly that capital plays a critical, although passive, role in maintaining the financial strength and credibility of a financial institution in the marketplace, a vital role for any institution that must rely on continuing access to funds from a wide array of sources.

Capital is often viewed as a basis for adjusting for relative degrees of business risk. That is, the greater the perceived business risk, the greater the level of capital employed in the business. It is interesting that the reverse is often true where banks with greater perceived asset risks have lower equity capital ratios. A classic example is the lower level of equity ratios

among multinational banks that have the greater proportion of LDC risk exposure relative to regional banks.

Capital Adequacy and the Marketplace

With the role of capital defined as a measure of financial strength, we believe that its adequacy can only be determined by the cumulative view of the marketplace, which itself is the judge of financial strength.

Except for the influence of specific regulatory minimums or guidelines, the judgment of the marketplace tends to focus on relative rather than absolute levels.

For example, if equity ratios were appreciably lower today than they were several years ago, it would be logical for the marketplace to assume relative inadequacy. Conversely, a recently improved trend would suggest adequacy. In fact, equity ratios have generally stabilized in recent years following a decade of decline. The longer that current equity levels are maintained, the greater the perception of adequacy will become. *Stability creates a benchmark of adequacy.*

Closely related to the influence of historic trends on the marketplace's perception are the current or prospective factors influencing the stability of equity ratios or measurable shifts in the degree of risk inherent in bank portfolios.

Finally, the marketplace is strongly influenced by regulatory definitions of adequate capital, especially when they are expressed in specific terms.

Historic Perspective on Capital Ratios

Banking commentaries unsupported by actual data often refer to the declining trend of bank equity capital ratios. Equity ratios have, in fact, been relatively stable in recent years but *did* decline significantly between the mid-1960s and the mid-1970s. Average equity as a percent of average total assets has declined very modestly among money-center banks and increased slightly at regional banks over the past nine years.

However, equity capital ratios at the 25 largest banks as of year end 1976 reflected a decline of 38.9 percent from year end 1966.

As we will discuss in greater depth subsequently, maintaining equity capital ratios (except

external infusions) is a mathematical function of four variables:

- return on assets (profitability),
- level of dividend payout,
- existing equity-to-asset ratio, and
- growth rate of assets.

The decline that took place in equity ratios, then, resulted because asset growth was higher than the rate of equity retention. Or, stated another way, profitability was too low to support the asset growth.

Until the early 1960s, bank asset expansion was funded principally by demand deposits and consumer savings. Spreads earned on these sources of funds were large enough to allow for significant capital account growth and also to permit generally high dividends. Assuming a prime rate of 6 percent, a passbook rate of 4 percent, a capital to asset ratio of 9 percent, a reserve requirement of 5 percent, and compensating balances of 15 percent, a bank could earn 143 basis points after taxes—a 15.8 percent return on capital. Assuming no debt in the capital structure and a 50 percent dividend payout ratio, this 15.8 percent return would support equity capital account growth of approximately 8 percent.

If the dividend payout ratio were reduced to 33 percent, the return would support equity growth at 11.1 percent. At either rate, assets could expand the same amount with the equity-to-asset ratio remaining in equilibrium. Arithmetically, if the equity capital backing of assets were lower, the same level of profitability and dividend payout would support greater asset growth while equity ratios remained in equilibrium.

During the early 1970s, however, larger banks supported the bulk of their earning asset growth with certificates of deposits (CDs) and borrowed funds. Historically, it appears that the prime rate was not properly set in relation to the cost of marginal funds (CDs and other borrowings such as federal funds). Banks must have relied on an average-cost analytical framework when their emphasis should have been on marginal costs. As a result, maintaining a constant equity capital ratio through retained earnings was mathematically impossible.

From 1964-1974, the average spread between the prime rate and the composite cost of CDs and federal funds was approximately 45 basis points. Given this spread, a 5 percent reserve

requirement on the CDs, a compensating balance of 10 percent, a 7 percent prime rate, a 50 percent tax rate, and a 10-basis-point cost of servicing the lending relationship, the after-tax return on such a loan would be 0.40 percent. If the compensating balance were adjusted upward to 20 percent, the return would improve to 0.88 percent. However, even an 0.88 percent return on an incremental asset could not support much asset growth if the dividend remained at 50 percent and equity ratios were as robust as was implied by the old New York Federal Reserve Bank formula, which suggests 12 percent capital backing behind risk assets. *The easy solution was to operate in disequilibrium and permit the equity-to-asset ratio to decline.*

Recent Ratio Stability and Financial Equilibrium

Since equity ratios declined to where they could be supported by the lower, but stabilized, profitability levels, both the Goldman Sachs & Co. regional and money-center indices have operated within a relatively stable range of financial equilibrium. Since 1975, the internally funded asset growth rate has more or less mirrored the actual growth rate of assets.

Accordingly, if bank profitability and capital ratios remain stable in the future, we believe that banking observers will become increasingly more sanguine in their concern over declining ratios. The record will reflect a greater degree of stability and in time the decline that took place in the 1960s will lose significance.

Regulatory Guidelines

In December 1981, the Federal Reserve Board and the Office of the Comptroller of the Currency issued specific capital adequacy guidelines for regional and community banks. They were amended last June to include multinational banks. Originally, 17 multinationals had been exempted from specific minimum ratios on the argument that their businesses were so complex as to require individual subjective analysis. However, most multinationals boosted their ratios significantly by issuing primary (equity) capital prior to their inclusion at the same minimum capital levels as the large regional banks. This suggests that low levels of equity were important reasons for their earlier exclusion.

We view regulators' action in drafting guidelines as being especially significant. It specifically establishes a definition of what constitutes capital and sets minimum standards from a regulatory point of view. Such a regulatory minimum then becomes an important benchmark for the marketplace's evaluation of adequacy. Additionally, it provides a basis for banks to utilize themselves in their corporate planning.

Historically, regulators generally relied on a peer group evaluation of capital adequacy that we believe was deficient on at least two counts. Half the banks in any given peer group were always by definition under capitalized, and the break between peer groups was highly subjective. Clearly, this system could not gain the support of financial analysts. In addition, since it dealt with a floating ratio rather than a specific analytical framework, no clear signals were sent to the marketplace regarding the regulatory view on adequacy. Thus, the new regulatory guidelines are very valuable.

Earlier we presented the regulatory definition of the two components of total bank capital: primary capital and other capital. In adopting the new guidelines, banking institutions are placed in one of three categories:

Multinationals—as designated by their principal regulatory agency

Regionals—all banks with over $1 billion in assets not designated as multinationals

Community banks—all others.

For multinational and regional banks, the minimum acceptable level of primary capital is 5 percent. For community banks, the minimum standard was set at 6 percent. Regulatory agencies emphasize that in both cases these are minimum standards that should be exceeded.

For evaluating total capital adequacy, three categories have been set. Capital will be deemed adequate for Category I banks if their primary capital ratios are above the guideline minimums. Category II banks will be viewed as potentially undercapitalized and subject to extensive regulatory discussion. Category III will be considered undercapitalized and placed under continuing regulatory supervision. In applying these tests, regulatory agencies focus on consolidated entities. Thus, multibank holding companies are assessed on a consolidated basis rather than in terms of each individual bank.

Table 2. Equity Capital Ratio for 40 Selected Banking Organizations

As a Percent of Period-End Total Assets at 6/30/83

	Common Equity	Loan-Loss Reserve	Other Primary Capital	Total Primary Capital	Estimated Other Capital	Total Capital
Allied Bancshares	6.22%	1.01	-	7.23%	0.61%	7.84%
Bank of Boston Corp.*	4.93	0.68	-	5.61	1.62	7.23
BankAmerica Corp.	3.63	0.57	0.58	4.78	0.64	5.41
Bankers Trust N. Y. Corp.	4.06	0.64	0.92	5.62	0.60	6.22
Barnett Banks of Florida	4.90	0.66	-	5.56	2.30	7.86
Chase Manhattan Corp.	3.56	0.68	0.46	4.70	1.45	6.16
Chemical N. Y. Corp.	3.80	0.65	0.68	5.13	1.45	6.58
Citicorp	3.80	0.56	0.30	4.66	2.18	6.85
Citizens & Southern (Ga.)	5.62	0.76	-	6.39	2.00	8.39
Citizens Fidelity Corp.	6.60	0.94	-	7.53	-	7.53
Continental Illinois Corp.	4.22	0.92	-	5.14	3.10	8.25
Crocker National Corp.	4.80	0.58	0.11	5.49	0.78	6.27
First Bank System	5.19	0.65	-	5.84	2.34	8.18
First Chicago Corp.	4.06	0.61	0.71	5.38	0.88	6.27
First City Bancorp of Texas	5.43	0.71	0.04	6.18	1.44	7.62
First Interstate Bancorp	4.59	0.74	-	5.33	2.81	8.14
First Union Corp.*	4.91	0.76	0.05	5.71	0.65	6.36
InterFirst Corp.	6.10	0.74	-	6.84	2.41	9.25
Irving Bank Corp.	4.29	0.76	-	5.06	1.46	6.52
Manufacturers Hanover Corp.	3.41	0.59	0.79	4.79	4.01	8.50
Maryland National Corp.	6.15	0.67	-	6.81	4.35	11.16
Mellon National Corp.	5.12	0.89	-	6.02	2.50	8.51
Mercantile Texas Corp.	5.63	0.78	-	6.41	1.78	8.19
J. P. Morgan & Co.	4.92	0.70	0.84	6.47	0.68	7.15
National City Corp.	6.22	0.60	-	6.82	1.26	8.08
NCNB Corp.	4.81	0.62	-	5.43	2.09	7.52
Norwest Corporation*	5.18	0.74	-	5.92	7.46	13.38
PNC Financial	6.25	0.71	-	6.96	-	6.96
Rainier Bancorporation	6.19	0.80	-	6.99	-	6.99
RepublicBank Corporation	5.22	0.75	-	5.97	1.95	7.92
Republic N.Y. Corp.*	3.47	0.49	1.03	5.00	3.53	8.53
Security Pacific Corp.	4.46	0.87	-	5.33	0.64	5.97
Southwest Bancshares	5.46	0.66	-	6.12	1.67	7.79
Sun Banks	5.87	0.50	-	6.37	1.16	7.53
Texas American Bancshares	6.16	0.68	-	6.84	2.64	9.48
Texas Commerce Bancshares	5.46	0.70	-	6.16	0.29	6.45
U. S. Bancorp.	8.08	0.64	-	8.72	3.70	12.41
Valley National Corp.	5.67	0.63	-	6.30	0.67	6.97
Wachovia Corp.	6.68	0.77	0.01	7.47	0.18	7.65
Wells Fargo & Co.	4.46	0.77	-	5.23	1.24	6.47
Average	5.14	0.71	0.16	6.01	1.76	7.77

*March 31, 1983.

Source: Goldman, Sachs & Co.

Table 3. Equity Capital Ratios of Ten Largest Banking Organizations

As a Percent of Period-End
Total Assets at 6/30/83

	Common Equity	Loan-Loss Reserve	Other Primary Capital	Total Primary Capital
BankAmerica Corp.	3.63%	0.57%	0.58%	4.78%
Bankers Trust N. Y. Corp.	4.06	0.64	0.92	5.62
Chase Manhattan Bank	3.56	0.68	0.46	4.70
Chemical N. Y. Corp.	3.80	0.65	0.68	5.13
Citicorp	3.80	0.57	0.30	4.67
Continental Illinois	4.22	0.92	-	5.14
First Chicago Corp.	4.06	0.61	0.71	5.38
Manufacturers Hanover Corp	3.41	0.59	0.79	4.79
J. P. Morgan & Co.	4.92	0.70	0.42	6.04
Security Pacific Corp.	4.46	0.87	-	5.33
Average	3.99%	0.68%	0.49%	5.15%

Source: Goldman, Sachs & Co.

Current and Prospective Trends

We argue that compliance with these new capital adequacy guidelines is now, by far, the most influential factor in the marketplace's determination of adequacy. Thus, a review of the industry's current compliance is appropriate. Table 2 shows primary and total capital expressed as a percent of total assets as of June 30, at selected banks. As a group these selected institutions exceed the minimum standards in both the primary and total capital categories.

The exceptions are among the multinationals, basically with respect to primary capital levels. Table 3 focuses in detail on the 10 largest banking companies as of June 30. Common equity equalled approximately 4 percent of total assets, the loan-loss reserves stood at 0.68 percent of assets, and other accredited forms of primary capital accounted for 0.49 percent of assets, placing the total primary capital for the group on average at 5.15 percent of total assets. Four institutions do not meet the minimum primary capital standards set by regulatory agencies. However, the shortfall is insignificant and can be met easily with "other" primary equity. Thus, for the moment, the industry appears to be in compliance with acceptable levels of capital adequacy.

The key question then relates to the prospects for future compliance. Here primary capital is the critical issue. Total capital is of less interest to us, since it tends to have more liquidity than capital characteristics and lacks permanence.

Focusing on primary capital and its three components, we tend to view common equity and the loan-loss reserve in concert given the obvious relationship we will address shortly. The other accepted forms of primary capital, principally perpetual preferred stock or mandatory convertible securities, are quite different. They constitute one-time capital market infusions and have no self-maintenance aspects. That is, there is no natural recurring mechanism for their growth as there is with common equity. In this regard, the important question is how much of the "other" primary capital can be included in total primary capital? We cannot answer this because we believe it can be addressed only by the marketplace. However, we believe that the important issue is not how much of an "extender" or supplement to common equity is used, but rather the level of common equity (and loan-loss reserves) itself.

Aside from external infusions, the maintenance of primary equity capital depends on the retention rate of equity expressed as a percentage of total assets and the rate of asset expansion. For

example, if equity retained (net income less dividends) equals .50 percent of assets and total equity represents 5 percent of total assets, asset growth of 10 percent would be consistent with perpetual asset growth of 10 percent. Assuming the same level of retention, a faster asset growth rate implies shrinkage in the equity to asset ratio.

In aggregate the first half 1983 (annualized) asset return at the 10 largest banks was 0.58 percent. After deducting the cost of primary capital, which is the common preferred dividend and interest expense in the case of mandatory conversion notes, the retention rate was 0.35 percent of total assets. Recall the 3.99 percent asset to equity ratio as of June 30 for these same 10 banks shown in Table 3. It follows mathematically that to maintain the 3.99 percent equity to asset level, total assets can only grow at 8.75 percent. Such is not likely to be the case. *Accordingly, for the multinationals profitability must improve, or the common equity ratio is apt to decline.* Thus, although the large banks appear to be at or above minimum primary capital standards, we believe future maintenance of minimum standards may be a problem.

Enlarging our universe to include the regionals, common equity ratio maintenance does not appear to be as great a problem.

An interesting relationship exists between common equity and the loan-loss reserve. Historically, bank observers considered only half the loan-loss reserve a form of equity on the theory that half the reserve belonged to stockholders while the other half, having been built out of tax deductions, represented a deferred tax claim of the government. Now, with regulators giving full credit for the loan-loss reserve, it has a potential for leveraging. To build primary capital by $1 through common equity, $2 in pre-tax earnings are required. However, $2 in pre-tax earnings allocated to the loan-loss reserve results in a full $2 increase in primary capital. Thus, loan-loss reserve levels can be expected to increase over time.

Conclusion

In sum, we believe that the combined influence of the stability of capital ratios in recent years and the general compliance with the new regulatory guidelines should foster a perception of capital adequacy within the industry today.

However, looking to the future, two factors appear to be critical. One is the profitability and the other is the extent to which the marketplace will permit the use of substitutes for common equity within primary capital.

—**James G. Ehlen, Jr.***

Senior Bank Analyst, Goldman, Sachs & Co.

Summary of Discussion at the Capital Session

Discussion of the role of capital and capital standards in bank surveillance covered several aspects of the definition of capital, the impact of regulatory capital guidelines on bank behavior and on private and public surveillance, and the impact of competition on the meanings of capital ratios. Private sector and regulatory views diverged, but participants from both sectors admitted the need to consider the views of the other.

Larry Meeker pointed out that the definition of capital one uses is closely related to the purpose of capital. James Ehlen indicated that investors view capital as a cushion against which bad debts can be charged in the event of trouble. Capital protects their investment in a going concern; for them capital is equity capital. On the other hand, the FDIC and regulators in general seem also to be interested in protecting the FDIC insurance fund. This interest leads to consideration of long term debt (as well as equity) as capital.

Mark Biderman and James Ehlen admitted that a bank's state of compliance with regulator capital guidelines was important because it indicated the extent to which the bank would be under regulatory direction. Some questioned whether compliance was important to investors beyond this, especially if the bank's capital had a large secondary capital component. In this regard, Larry Meeker pointed out that to the extent that capital standards were relied on to maintain market confidence, investors' concept of capital may be important to regulators. He also projected that regulators' increased reliance on market discipline might force review of regulatory capital definitions.

An additional capital definition issue revolved around what should be deducted from capital in computing capital-asset ratios. Participants generally agreed that ideal ratios would subtract an estimate of losses still carried in the asset portfolio from both assets and capital. However, private sector analysts pointed to the unavailability of examiner classifications as an impediment to this, and regulators indicated that all classified assets were not necessarily losses. Others indicated that rules of thumb for estimating losses from examiner classifications worked fairly well.

George Benston raised a final question of definition. This dealt with accounting and market values of assets and liabilities. Accounting values will not equal economic values if balance sheet numbers do not reflect market values. At least in the short run, this can leave large differences in reported and market numbers. Mark Biderman opined that banks' accounting reports were among the closest to market values because of the large portion of assets and liabilities that were both short term and marketed. He also pointed out that writing assets and liabilities to market in each period would cause large gyrations in income—gyrations that would make income statements difficult to interpret. Robert Eisenbeis pointed out that the problem of divergence between market and accounting data was well known in financial markets and that investors have seemed comfortable with overstated capital in several periods of high interest rates. He suggested that deposit insurance that covered, implicity, 100 percent of deposits in large banks was a likely reason for this phenomenon.

Discussion of the impact of capital guidelines brought out several issues; most dealt with the impact of the guidelines on bank behavior and the impact of changes in behavior on the interpretation of capital. The most far reaching of these issues covered the role of guidelines as incentives for off-balance sheet activities of banks. Participants generally agreed that the regulators' standards did indeed give banks some incentive to move activities off their balance sheets in order to avoid capital guides. Some participants also pointed out; however, that banks' search for fee income resulted in the same sorts of actions. There was general agreement that such actions resulted in different risks for banks from the risks before off-balance sheet activities were undertaken. There was no agreement on whether these activities raise or lower risk; however, participants seemed to agree that this phenomenon changed the meaning of traditional capital ratios.

Other behavioral effects of the guidelines were observed in tendencies of some banks to push their capital to the limits of the guides. David Kidwell questioned what the impact of regulatory guidelines would be in a more rapidly growing economy where banks have strong incentives to increase their assets. He and others saw potential tensions between the capital guidelines and industry growth.

Rapid integration of the financial industry in recent years has changed the interpretation of capital for private sector analysts and regulators alike. Revised interpretation has come about because of changes in risk that integration has brought. Broader geographic and interindustry competition has subjected banks to competition from more competitors and from non-traditional competitors. Such competition changes the traditional interpretation of many financial ratios. If the integration changes banks' risk, then the risk-cushion of capital does not function in the same way.

III. DISCLOSURE

Recent FDIC proposals have heated up discussions of how much information financial institutions should be required to disclose. What specifically should be disclosed and how?

Full Disclosure: The SEC's Requirements Relating to Bank Holding Companies

Federal securities laws require that investors in a publicly traded company be furnished with complete and timely information about the firm and its securities. This full disclosure concept is critical to the efficiency of our capital markets and the protection of investors. During the 50 years since the securities laws were enacted, the Securities and Exchange Commission has developed a comprehensive disclosure system as well as an effective enforcement program to ensure compliance with that system. This article will review generally the commission's present disclosure system and will discuss specifically the requirements applicable to the approximately 800 bank holding companies (BHCs) that file disclosure documents with the commission.

The SEC's Disclosure System

Requirements

Under the Securities Act of 1933, issuers making public offerings of securities are required to make certain specific disclosures in registration statements when they bring securities to market. Periodic reporting is required of these issuers in the Securities Exchange Act of 1934. The SEC recently adopted a single, comprehensive disclosure system for domestic issuers. It makes disclosure requirements uniform under both acts and allows Exchange Act periodic reporting to satisfy disclosure requirements of Securities Act registration statements whenever possible.

Under integration, there is a three-tier system for the registration of securities by domestic issuers. This system requires the same basic information package to be included in the registration statement of all registering companies. Specific requirements differ primarily in the extent to which the required information can be incorporated by reference from other documents.

—Form S-3: Disclosure of information is streamlined for the largest companies, primarily by incorporating by reference in the prospectus information in the latest annual Form 10-K and all other periodic reports filed since the end of the fiscal year covered by that form.

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—Form S-2: Registrants in the middle tier are allowed to comply by using their annual report to shareholders as the main part of the prospectus.

—Form S-1: Issuers that do not meet the eligibility standards for streamlined treatment or that otherwise elect not to use the other forms set forth required information in a more extensive prospectus delivered to investors rather than incorporated by reference.

Domestic registrants are subject to the Exchange Act's continuous reporting requirements as well as proxy solicitation regulations. Among other things, the Exchange Act requires that companies file annual, quarterly and current reports and proxy statements.

The annual report on Form 10-K is the cornerstone of the SEC's integrated disclosure system. That report is in a four-part format and requires:

—Part I
—a comprehensive discussion of the issuer's business;
—a discussion of properties owned by the issuer;
—a summary of pending legal proceedings;
—information regarding matters submitted to a vote of security holders;
—Part II
—market and related shareholder matters;
—selected financial data for five fiscal years;
—management's discussion and analysis of financial condition and results of operations;
—audited financial statements and supplementary financial data;
—Part III
—information relating to the issuer's officers and directors, including their remuneration and related transactions;
—information on security holdings of management; and
—Part IV
—certain exhibits and financial statement schedules.

The quarterly report on Form 10-Q updates the information in Form 10-K. The current report on Form 8-K provides timely communication of significant events, thus completing the continuous stream of information about the company. Form 8-Ks are filed to indicate:
—changes in control;
—acquisition or disposition of a substantial amount of assets;

—bankruptcy or receivership;
—changes of accountant;
—resignation of directors; and
—other information the issuer may wish to report.

Companies making proxy solicitations must comply with the SEC's Regulation 14A, which requires a proxy (or information) statement. This statement provides shareholders with information necessary to make informed decisions on matters to be voted on in the proxy.

Uniform Procedures, Requirements and Other Guidelines

Under the integrated disclosure system, the commission has adopted various uniform procedural, disclosure and accounting requirements.

The commission's principal accounting requirements are embodied in Regulation S-X (S-X), which governs the form and content of, and requirements for, most financial statements filed under federal securities laws. S-X covers such matters as qualifications and reports of independent accountants; time periods to be covered by financial statements; general footnote requirements; format requirements for financial statements of commercial and industrial, investment, insurance and bank holding companies; interim financial statements; pro forma financial information and supplemental schedules. The commission's comprehensive review of Regulation S-X over the past several years has established uniform financial statement requirements applicable to virtually all filings with the commission pursuant to the Securities Act and the Exchange Act, as well as annual reports to security holders prepared in accordance with the commission's proxy rules.

In order to provide companies and their advisors with current guidance, the commission also publicizes its views on various accounting and financial reporting matters in Financial Reporting Releases (FRRs).

In April 1982, the commission issued FRR No. 1 announcing publication of a codification of certain existing Accounting Series Releases (ASRs). The material included represents only those portions of the 307 ASRs issued since 1937 that are relevant today. Portions of 71 of the 207 ASRs dealing with general accounting issues were identified as providing current, meaningful guidance to registrants, independent accountants

and others in complying with commission requirements. The codification is indexed and provides a useful reference for the commission's current published views on accounting and auditing matters relating to financial reporting. It has been updated periodically by the issuance of new FRRs.

In a related action, the commission published Accounting and Auditing Enforcement Release (AAER) No. 1 as the first in a new series of releases to announce accounting and auditing matters related to commission enforcement activities. AAER No. 1 includes a topical index for the material included in the 100 enforcement-related ASRs to facilitate reference to specific areas addressed by the commission in those releases.

The commission staff gives further guidance through periodic Staff Accounting Bulletins (SABs) as a means of informing the financial community of its views on accounting and disclosure issues. During the past year, the staff published SABs on various financial reporting topics including: (a) application of the purchase accounting method to business combinations involving financial institutions; (b) implementation of the commission's revised requirements for separate parent-company-only financial information; (c) presentation of certain information in connection with business combinations; (d) valuation of certain assets acquired from related parties; (e) disclosure by BHCs about foreign outstandings; (f) financial statement requirements involving the formation of a one-bank holding company; (g) accounting for sale of stock by a subsidiary; (h) terminations of defined benefit pension plans; and (i) financial statement requirements involving the guarantee of securities by a parent or by a subsidiary. While SABs are not official rules, the staff expects the guidelines to be followed in SEC filings.

For financial statements filed with the commission, issuers and registrants also must comply with generally accepted accounting principles (GAAP), as established by private sector standard setting organizations such as the Financial Accounting Standards Board.

Application of SEC Disclosure Requirements to Bank Holding Companies

The commission has been a leader in the last decade in establishing timely disclosure standards

for BHCs. Article 9 of Regulation S-X sets forth financial statement disclosure requirements and Industry Guide 3 calls for detailed statistical disclosures about operations, assets and liabilities. The staff has also issued various SABs dealing with the subject. Taken together, these rules and guidelines provide for a comprehensive disclosure system for BHCs.

Article 9 of Regulation S-X

Article 9 sets forth detailed captions that must appear on the balance sheets and income statements as well as certain footnote and schedule requirements. The current requirements grew out of a period of more independent commission actions on BHC reporting. In April 1977, the commission proposed to establish for the first time a comprehensive set of SEC rules for consolidated financial statements of BHCs. Until that time, such financial statements were prepared in accordance with an Article 9 provision which merely referred to the financial statement requirements of Regulation F of the Board of Governors of the Federal Reserve System.

The Securities Act Amendment of 1975 required the federal banking regulatory agencies having primary responsibility for application of the Exchange Act to banks to issue regulations substantially similar to those the SEC adopted for the protection of investors. In light of this amendment, the commission determined that it was no longer appropriate that Article 9 should refer to Federal Reserve regulations for the form and content of bank and BHC financial statements.

Article 9 underwent minor revision in 1980 in ASR 276 when the Commission amended the requirements for reporting amounts due from nonofficer directors and for reporting large time deposits.

In March 1983, the commission adopted a comprehensive revision of Article 9 intended to simplify and improve financial reporting requirements effective December 31, 1983 (FRR 11). The final rules generally reflect current financial reporting practices of BHCs, except for the income statement presentation of investment securities gains or losses, the disclosure requirements for loans to related parties and parent company financial information.

Certain disclosure requirements (previously included in Article 9 and thus required in the primary financial statements) have been relocated as

part of Guide 3. The most significant include information about short-term borrowings, disclosure of investment concentrations, and certain details about foreign activities. These disclosures are primarily analytical in nature and thus are similar to the other types of disclosures called for by Guide 3.

When the commission solicited public comments on the proposed revisions, most commentators expressed general support. Two areas frequently commented on were the proposed revision of requirements for reporting investment security transactions and the proposed modification of the disclosure requirements dealing with loans to related parties.

Investment Securities Gains or Losses.

The proposed rules called for a change in the income statement format to report gains or losses on investment securities as a separate component of income before income tax expense, rather than as a separate item (less applicable taxes) after the caption entitled "income before securities gains or losses." This proposed elimination of the so-called two-step format for reporting income both before and after investment security transactions was commented on by approximately three-fourths of the respondents. A majority objected to the one-step approach on the grounds that the two-step reporting format is a customary presentation which banks have used for many years, and that including the effect of investment securities transactions as a part of income from banking operations would be inappropriate.

A few commentators objected for other reasons. Some said that banks should have the ability to restructure their investment portfolio without penalizing current "operating" income with the related losses, or that the proposed change would increase the potential to manage or smooth reported earnings through the timing and selection of securities transactions.

Although the rule met with considerable opposition, proponents indicated that conforming the reporting format used by BHCs to that used by virtually all other entities would eliminate much of the confusion surrounding a BHC's actual earnings. These commentators generally agreed with the commission that there is no conceptual basis for reporting investment transactions in a manner that implies the gains or losses represent something other than operating earnings. Further, the present reporting was viewed as being inconsistent with several other reporting practices.

After considering comments, the commission continued to believe that the two-step income format promotes the misconception that securities transactions are not part of normal banking operations, and that this format detracts from the primary importance of net income. For these reasons, and because of the potential for inappropriate reporting of certain transactions as security gains or losses, the commission adopted the proposed one-step income statement, with one change. The final rules call for the presentation of investment securities gains and losses as a separate subcategory of other income. The commission emphasized its belief that the revised reporting format should have no bearing on prudent decision-making. Furthermore, the commission's existing disclosure requirements require specific disclosures about the content of the investment securities portfolio and its yields. Such disclosures should provide users with the information necessary to evaluate management's investment policies and strategies.

Some commentators had warned that the one-step format would increase the potential for registrants to manage earnings. In response, the commission emphasized the responsibility of BHCs, as well as all other registrants, to identify clearly and explain the nature and impact of all special, discretionary, or nonrecurring items having a material effect on reported financial condition, changes in financial condition and operating results.

Loans to Related Parties.

The proposed rules included a comprehensive revision of existing requirements relating to loans to BHC insiders and other parties related to the BHC. These changes would have made various definitional changes to correspond with revisions proposed to Regulation S-K. Also proposed were certain required footnote disclosures when (1) a significant portion of related-party loans are nonperforming and (2) any such material loans were made outside the ordinary course of business, and (3) the amount of such loans at the balance sheet date was significantly less than the weighted average amount outstanding during the year. Finally, the proposed revisions would

delete Schedule I, which requires detailed disclosure of certain loans to individual related parties.

After public comment, the requirements regarding related-party loan disclosures were modified in two significant ways. The commission's final rules apply only to members of the "immediate family" of covered persons. This revision will include more relatives than were encompassed by the former rules, but will be significantly less burdensome than the proposal. Second, commissioners deleted a proposal to require that the amount of related-party loans include loans to any corporation or organization of which an executive officer, director or principal shareholder of the registrant or any of its significant subsidiaries is an officer (but not a principal shareholder). The revised final rules require an analysis of the aggregate loans to related parties from the beginning to the end of the period for the latest fiscal year. The commission believes this disclosure should adequately inform investors as to the significance of loan transactions with related parties without imposing an undue burden of calculating a weighted average of such loans or, in some cases, discussing individual loans.

Parent-Only Statements

The operation of banking subsidiaries are subject to broad regulatory restraints that affect the transfer of funds to the parent. Because of the particular relevance of such restrictions to BHCs, the commission in its 1982 release proposing amendments to Article 9, asked for specific comments on the need for parent company financial information for BHCs. The final rules require that condensed financial information of the parent company be presented in the notes to BHCs' consolidated financial statements.

The rules set forth certain minimum disclosures that must be included with the condensed parent company information. These include (1) the disclosure of investments and indebtness of bank subsidiaries separate from nonbank subsidiaries and (2) similar separate disclosure of the amount of cash dividends paid to the registrant for the previous three years by such bank subsidiaries, as distinguished from other subsidiaries.

Industry Guide 3

Industry Guide 3, adopted in 1976, requires historical statistical information about BHCs in seven areas:

—Average balance sheets and analyses of changes in net interest earnings.
—Investment portfolio categorized by type of securities and maturities.
—Information about the loan portfolio, including types of loans, maturities and sensitivities to changes in interest rates, and problem loans.
—Summary of loan loss experience.
—Deposits by category.
—Returns on equity and assets.
—Short-term borrowings.

This analytical information provides an extensive database for analysts and investors to assess sources of earnings potential and risks. While no substantial changes have been made to the guide since its adoption in 1976, numerous refinements were made in 1980 and this past March and August.

Guide 3 grew out of the 1974 recession. The commission became concerned about the impact of severe recessionary conditions on financial institutions' loan loss reserves because of problems in the real estate and other industries. As an initial reponse to these concerns, the commission issued ASR 166 in December 1974, emphasizing the responsibility of all registrants to disclose the potential impact of increased uncertainties on their financial statements. BHCs were cautioned that normal disclosures should be expanded to highlight such factors as increased risks in the loan portfolio because of significant doubts as to collectibility, increased delinquencies and loans extended or renegotiated under adverse circumstances.

During 1974 and 1975, the staff developed and refined disclosure guidelines that formed the basis for statistical disclosures required by the staff for BHC filings. The staff's administrative policies were proposed for comment in 1975 and adopted in August 1976. The commission took this action notwithstanding the concerns expressed about the possible impact of detailed disclosures on a BHC's ability to raise capital and the sensitivity of the detailed foreign disclosures called for.

In August 1983, the commission amended Guide 3's Item III.C, "Nonperforming Loans," to establish a new section—"Risk Elements." The terminology "nonperforming loans" is no longer used in Guide 3 since it is too narrow to encompass all the disclosures required by the new section. This section calls for four categories of disclosure:

—Nonaccrual, past due and restructured loans.
—Potential problem loans.

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—Foreign outstandings.

—Loan concentrations.

The first category contains three of the four classifications which are designated as nonperforming loans in the current Item III. C. of Guide 3. The commission's existing criterion for determining a restructured loan is replaced by the criteria of FASB Statement of Financial Accounting Standards No. 15 for troubled debt restructurings. A significant change in the amended guidelines for disclosure of nonaccrual, past due and restructured loans is the exclusion of certain instructions present in the current Guide which allowed for the use of alternate criteria, and permitted exclusion of certain loans. This change has the effect of enhancing comparability of disclosures among registrants. Users of this information, particularly financial analysts, have stressed the importance of comparability in this area.

The second category, potential problem loans, corresponds to "serious doubts" criterion for classification in the pre-August 1983 Version of Item III. C. These loans are not disclosed as part of the first category described above, but information known by management indicates that the borrower may not be able to comply with present payment terms.

The third category calls for "foreign outstandings" disclosures. This new category is a codification of the substance of the alternative table disclosures of SAB No. 49, "Disclosures by Bank Holding Companies About Certain Foreign Loans". This area is discussed further below. The fourth category calls for disclosure of "loan concentrations," defined as amounts loaned to multiple numbers of borrowers engaged in similar activities that would cause them to be similarly impacted by economic or other conditions. A disclosure threshold of 10 percent of total loans has been provided.

The commission staff believes that these revised guidelines (which become effective on December 31) will improve BHCs' disclosures by focusing more broadly on the various risk elements involved in lending activities. They also require more uniformity in disclosures by registrants, a factor important to analysts and other users of the data in accessing risk.

The amended guidelines pertaining to "nonaccrual, past due and restructured loans" as well as "foreign outstandings" are consistent with the federal banking agencies' present and planned disclosure requirements. Uniformity in the bases for presenting information by BHCs in commission filings and by banks in supplementary disclosures for bank regulatory purposes will reduce compliance burdens and enhance the disclosure reports' usefulness to investors and the public.

Disclosure About Foreign Activities

The commission has taken specific action to ensure adequate disclosure about BHCs' foreign activities in view of the unique risks associated with these activities.

Article 9 requires financial statement disclosure of the following information about foreign lending activities:

—Aggregate amount of foreign loans outstanding.

—Identifiable assets associated with foreign activities.

—Amount of foreign revenue, pretax income and net income.

The last two items must be presented for each significant geographic segment in which the bank does business (Europe, Latin America, and so forth) and in the aggregate for all other geographic areas.

Additionally, Guide 3 provides for disclosure of:

—Foreign loans in each of these categories:

—governments and official institutions,

—banks and other financial institutions,

—commercial and industrial entities,

—other loans.

—An analysis of the allowance for loan losses related to foreign activities.

—Analyses of yields on average foreign assets and rates paid on average foreign liabilities.

—Information regarding deposits in foreign offices.

—The amount of foreign nonaccrual, past due and restructured loans.

In addition to longstanding commission requirements, the staff has recently taken initiatives to ensure disclosure to investors of appropriate information about loans to foreign countries experiencing liquidity problems. On October 26, 1982, the staff issued SAB 49 to express its views regarding disclosure by BHCs about loans to public and private sector borrowers located in countries experiencing liquidity problems. On January 18, 1983, the staff issued SAB 49A concerning the necessity of providing additional disclosures about restructurings of existing debt

of these countries, funding of additional borrowings and other related matters.

SAB 49 generally calls for BHCs to disclose any material outstandings to countries experiencing liquidity problems. The objective is to elicit disclosures about material exposures in countries in which political or economic conditions may cause borrowers difficulty in making timely interest or principal payments. The risks inherent in such transactions are considered by many to be separate from the normal credit risks associated with bank lending.

SAB 49A sets forth the staff's views regarding the need for additional disclosures about material subsequent developments regarding outstandings to foreign countries experiencing liquidity problems. For example, it notes that certain countries are negotiating with or have entered into agreements with U.S. lenders, other foreign banks, international lending agencies and others to restructure existing sovereign debt and to obtain additional new borrowings. The SAB calls for disclosures about these matters, including their impact on the maturities of existing debt principal and on unpaid interest, commitments to extend additional borrowings, and other arrangements such as agreements to maintain deposits with government banks.

In the recent amendments to Guide 3, the commission codified the substance of SAB 49's alternative table disclosure for foreign outstandings. Disclosure of outstandings to individual foreign countries in excess of 1 percent of consolidated outstandings is required for a three-year period. Such reporting identifies the registrant's significant cross-border exposures and allows investors to arrive at their own conclusions as to any potential or actual transfer risks involved.

The revised guidelines also call for additional disclosures when a foreign country is experiencing liquidity problems because of economic or political conditions expected to have a material impact on timely payment. Finally, in addition to disclosures about individual countries whose outstandings exceed 1 percent of total assets, the guidelines call for aggregate disclosures for countries where outstandings are between .75 percent and 1 percent of total assets. This disclosure format is consistent with that proposed in the federal banking agencies' Country Exposure Report.[1]

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[1] Federal banking agencies have announced their intention to provide for increased and more timely disclosures about banks' country exposures. These disclosures would be based on information called for by revised Item 111.C of Guide 3 and would be available to the public upon request.

The guidelines call for separate disclosure by governments and official institutions, bank and other financial institutions, commercial and industrial, and other. Registrants have presented similar breakdowns, and users of reported information have commented that this disclosure is important in assessing a registrant's exposure in certain countries.

The amendments call for disclosure of outstandings repayable in dollars or other non-local currency; they do not require that gross amounts repayable in local currency be disclosed. Many commentators asserted that most loans repayable in local currency are substantially funded by local operations and that unfunded amounts normally do not reflect significant transfer risk. The revised guide provides that any material volume of local currency outstandings not hedged or not funded by local currency borrowings should be reflected in cross-border outstandings.

The amendments allow any legally enforceable written guarantees of principal or interest by domestic or other non-local third parties to be netted against the amounts of foreign outstandings presented. The commission agreed with respondents who asserted that, when the repayment of outstandings is assured by third parties, and the registrant is clearly not exposed to transfer risk because of this recourse, presentation of amounts net of such guarantees more appropriately reflects the registrant's exposure to risks. The amendments allow collateral value to be netted against the cross-border outstandings of a foreign country in certain limited circumstances.

Disclosure of Financial Problems

During periods of economic difficulty, BHCs face particular disclosure challenges. Traditionally, the commission and bank regulatory agencies have differed over the disclosure required of publicly held financial institutions in serious financial trouble. While the commission has always emphasized the responsibility of publicly-held companies to make full and accurate disclosure of their financial condition for the benefit of public investors, bank regulatory agencies traditionally have favored nondisclosure of financial difficulties for a period of time to allow a financial institution to work out its problems. However, some bank regulatory agencies have recognized recently that the increasing emphasis on market

forces instead of government regulation to discipline financial institutions may require greater public disclosure.

The commission has emphasized publicly-held financial institutions' responsibilities to disclose serious financial problems. For example, Guide 3 emphasizes disclosure items that could signal financial difficulties. In addition, in a recent enforcement action,[2] the commission has maintained that an agreement with a bank regulatory agency materially restricting a financial institution's business activities must be disclosed to shareholders. Finally, in a Report of Private Investigation,[3] the commission emphasized that public statements and releases by a financially troubled institution concerning its financial results must go beyond recitation of numbers and must disclose their significance to its financial viability.

Dynamics of Disclosure

This article has outlined the SEC's general disclosure system and specifically discussed disclosures applicable to BHCs, including recent changes. In my view, the disclosures that BHCs provide to their investors and shareholders are more comprehensive and sophisticated than those of most industries. Nonetheless, financial institutions in general and BHCs in particular will continue to face financial reporting challenges in a constantly changing economic, competitive and regulatory environment. The commission and its staff will continue to monitor developments in this area closely, and stand ready to modify existing requirements or to issue additional guidelines to ensure that the investing public continues to receive full and accurate disclosure.

—Edmund Coulson*

[2]See **SEC** v. Youmans, 543 F. Supp. 1292 (E. D. Tenn. 1982).
[3]See **In the Matter of Fidelity Financial Corp.** Exchange Act Release No. 34- 18927 (July 30, 1982).

*Deputy Chief Accountant, Securities and Exchange Commission. As a matter of policy, the commission disclaims responsibility for any private publication of its employees. The views expressed are those of Mr. Coulson and do not necessarily represent the views of the commission or its staff.

DISCLOSURE AND MARKET
DISCIPLINE: ISSUES AND EVIDENCE

Market Discipline and Sources of Bank Funding

The role and importance of disclosure in promoting greater market discipline can be judged in terms of the following criteria:

(1) How much is banking exposed to market discipline currently?

(2) How well does the market utilize new information to assess banking risks?

(3) Does the market "tier" banks according to risk perceived on the basis of nonfinancial factors?

(4) Is the market efficient in incorporating on a timely basis new information to distinguish between firm-specific risk versus industry risks?

(5) Is bank behavior sensitive to market discipline?

We can evaluate these criteria separately in the major markets in which banks are funded. These include (1) large certificates of deposit (CDs) (2) interbank deposits (3) federal funds, commercial paper and bankers acceptances (4) bank stocks and (5) subordinated debt.

Uninsured Deposits and Potential Market Discipline

The extent to which banks of different size are exposed to potential market discipline from uninsured depositors is shown in Table 1. As expected, the distribution is heavily skewed toward the largest banks. (When adding other uninsured liabilities to uninsured deposits, the distribution across bank size groups is roughly the same.) Approximately 74 percent of all uninsured deposits are in banks with assets over $1 billion. These represent only about 1 percent of all insured commercial banks in the United States. The smaller institutions (less than $100 million in assets), which represent 86.6 percent of all banks have, on average, less than 8.9

percent of their domestic deposits uninsured. Moreover, only one of the 319 deposit payoffs in the FDIC's history involved the failure of a bank with more than $100 million in assets. That was the failure of Oklahoma's Penn Square Bank in 1982. Consequently, the predominance of deposits subject to potential market discipline has been in the relatively few banks that have had essentially 100 percent deposit insurance coverage in the event of failure.

While uninsured depositors represent the potential for greater market discipline, particularly for money center and regional banks, realizing this potential depends on how well these depositors scrutinize their banking relationships on the basis of new data. This, in turn, depends on their capacity and willingness to evaluate information publicly available on individual bank performance.

Since the Franklin National Bank failed in 1974, the FDIC has conducted various surveys of large depositors to determine how they evaluate their banking relationships, their sensitivity to their uninsured deposit status, and their reaction to adverse publicity.

In 1977, the Office of Corporate Planning at the FDIC interviewed several large demand depositors at four major failed banks—Franklin National Bank, American Bank and Trust, Hamilton National Bank, and International City Bank and Trust—to analyze how large depositors affect and are affected by deposit insurance. Most of those selected had demand deposits of $100,000 or more at the four banks at the time they were closed, or shortly before. Ten were very large corporations and the remainder mostly intermediate-sized business firms. In addition, treasurers of 20 large corporations were selected randomly for telephone interviews.

In connection with the FDIC's more recent deposit insurance study, telephone interviews were conducted with 23 corporate treasurers,

Table 1. Distribution of Uninsured Deposits and Other Liabilities, by Bank Size (June 1982)

Asset Size	Percent of Banks	Uninsured Percent of Total Deposits (Within Size Group)	Percent of Total Uninsured Deposits Within Size Group	Uninsured Deposits and Other Liabilities as a Percent of Total Liabilities (Within Size Group)	Percent of Total Within Size Group
$10 million	14	5	0.17	7	0.12
$10-25	30	5	1	7	1
$25-50	26	8	3	10	2
$50-100	16	11	4	14	3
$100-500	11	18	12	26	10
$500-1,000	1	24	6	35	6
$1-5 billion	1	33	23	49	24
$5 billion	.025	52	51	68	54
All	100%	28%	100%	42%	100%

Source: Federal Deposit Insurance Corporation

nine fund managers, and 13 uninsured depositors. In addition, reactions to the concept of market discipline were solicited from bankers, academicians and bank rating or analysis services.

We can generalize the results of these surveys as follows:

(1) Corporate treasurers choose their banking relationships primarily on the basis of services offered, availability of financing, and convenience. Financial analysis of their banks is generally cursory. Risk of loss is not an important consideration because of the size of the financial institutions they do business with and a perception that the government will bail out the institutions if they get in trouble. Treasurers say they learn of banking problems mainly through the press. Small businesses that deal with local banks are even less sophisticated in using financial data and less knowledgeable about deposit insurance protection. Interestingly, large depositors in recent bank failures exhibit the same perceptions and reactions toward risk as depositors in bank failures of the mid-1970s.

(2) There is a general concern among those surveyed that disclosure of adverse information through the press would be destabilizing and would result in a "flight to quality," possibly to larger banks.

(3) Institutional investors, such as mutual funds and pension funds, are the most sophisticated in using financial data and exert the most market discipline. To qualify for investment, banks must meet size and performance requirements, which effectively limit investment to the 50 largest banks. Fund managers undertake extensive in-house analysis of banks, relying on newspapers, call reports, 10-K and 10-Q reports, and ratings services.

(4) There is general agreement that broader disclosure could promote greater market discipline. Better, more timely, and more comparable information on asset quality (including foreign loans) is considered most important.

Rate "Tiering" in CD Markets

Developments in the large, negotiable CD market in the aftermath of the Franklin National Bank (1974) and Penn Square (1982) failures shed additional light on the market's efficiency in responding to greater perceived banking risks.

Evidence subsequent to the Franklin failure indicated market "tiering," suggesting size served as a proxy for lower risk. This was reflected in the inability of the CD market to isolate individual banking risks on the basis of differing performance characteristics. For example, after the failure of Franklin National, CD purchasers required a return 25 basis points higher from a regional bank than from a large money center institution.[1] This was double the normal spread prior to that period. Similarly, Dwight Crane (5) found that,

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[1] This represents a Federal Reserve Board estimate. The figure reflects the difference between the median offering rates for 30-59 day maturity CD's issued by so-called "prime in New York" and "other" banks as of September 25, 1974.

for the first time in many years, concern about the viability of large banks contributed to the high interest rates banks were forced to pay for CD funds. However, Crane's study of the top 30 banks in 1974 revealed a high inverse relationship between CD rates and bank size. The study found no consistent relationship between CD rates and measures of financial condition, such as the return on equity or assets, or capital ratios among banks of comparable size. Crane did find, however, an apparent relationship between the profitability of a bank in a given quarter and its CD rate. It is uncertain whether lower profitability induced higher CD rates or vice versa.

In contrast to earlier findings, preliminary FDIC analysis subsequent to the 1982 Penn Square failure reveals no tiering in CD markets. The Penn Square failure was unique in that it represented the first deposit payoff of a bank with more than $100 million in assets. At issue was whether the CD market penalized larger institutions in general because of a recognition that uninsured depositors at large failed banks could incur some losses.

An analysis of three-month and six-month rate spreads between average CD rates (for the 10 largest banks) and treasury bill rates revealed neither a short-term nor long-term effect on the general market for large bank CDs. The average rate spreads as a percentage of Treasury bill rates were not significantly different before and after the Penn Square failure. However, for a four-month period after Penn Square, the market penalized Continental Illinois Bank, which was linked most closely with Penn Square. Continental's rates rose about 100 basis points over rates for the other money center banks. Although comparable data on CD rates were unavailable for smaller banks, there was some limited evidence that uninsured depositors and money market funds reduced their uninsured deposits, regardless of bank size, after publicized loan problems.

While the Penn Square failure itself did not appear to have a general influence on the domestic CD market, other negative events pushed risk premiums on large bank CDs to a three-year high between August and October 1982. These events included the Lombard-Wall bankruptcy and the disclosure of Mexican and Argentine debt problems. This suggested a "flight to quality" in the domestic CD and Treasury bill markets.

A similar pattern has been observed in the Eurodollar CD and interbank markets. These markets account for a substantial portion of uninsured deposits, and potential market discipline, for large U.S. multinational banks.[2] However, the form this discipline takes may be unstable and an inefficient discriminator of individual bank performance. It has been reported that such events as "Drysdale, Penn Square, and Mexico have made these markets more susceptible than ever to rumor and panic" (1). Between the end of July and the end of August 1982, the difference between three-month Eurodollar CDs and three-month Treasury bills almost doubled. During this period, Continental Illinois Bank took itself off the CD run, Banco Ambrosiano was liquidated and Mexico called in the IMF for assistance. With each new disclosure, the rate gap widened.

Like the Eurodollar CD market, the interbank Eurodeposit market is a major source of funding for international banks.[3] Adverse banking developments, such as the Bankhaus Herstatt and Franklin National Bank failures in 1974 and more recent developments have increased rate tiering or reduced credit lines for some banks in the interbank market. However, this market appears inefficient in imposing market discipline since credit rationing based on undisclosed credit lines, rather than price adjustments, is its primary means of discriminating between sound and risky banks.[4] Moreover, its inability to distinguish between "local" and "global" shocks causes the perception that one bank's problems get transmitted to other banks. (11,14, p.17) Consequently, the interbank market is believed to "tier" credit lines less on the basis of financial statements and more or the basis of a bank's ownership status (whether it is private or public), its government's support as a lender of last resort, the bank's importance to its country, and country risk. Although banks have improved their credit analysis practices since the international banking crises of 1974, differences between nations' accounting conventions and disclosure practices

[2] Deposits in foreign offices have exhibited some volatility in the past. Partly as a result of petrodollar recycling requirements, foreign deposits increased substantially between 1975 and 1978. Since then these deposits, in the aggregate, have remained a relatively stable proportion of total deposits (around 19 percent).

[3] "Reliance on interbank funding tends to be higher for smaller banks and newcomers in the international market...a recent study suggests that interbank deposits account for between two-thirds and three-quarters of total external and Eurocurrency deposits," **Risks in International Lending**, Group of Thirty, New York, 1982. (14, p. 16).

[4] Giddy (11) finds that individual-bank deviations from the yields on three-month Eurodollar time-deposit bid rates are not systematically related to bank size, profitability, or capital asset ratio.

still make it difficult to interpret annual reports (14, p.18).

Uninsured Deposits and Bank Behavior

To defend the market discipline concept completely, we should be able to demonstrate that either the actual response of the private marketplace or the potential for discipline has some impact on bank risk-taking. Unfortunately, we are not aware of any studies that test banks' responses to negative signals in major funding markets such as lower stock prices, deposit outflows, or higher costs of funds. Some evidence exists, however, on the relationship between uninsured deposits and bank capital.

Studies by Peltzman (21), Mingo (19), and Gonzalez (13) used ordinary least squares regression analysis to test for a substitute relationship between the proportion of total deposits insured in a bank and its capital position or capital growth. The results are mixed. Peltzman found that, for the period 1963-65, the proportion of insured deposits was inversely related to the percentage change in bank capital, after holding structural variables constant. This suggests that a greater proportion of uninsured deposits leads to more capital growth and, thus, greater market discipline. The data, however, were based on state aggregates rather than individual bank data.

In an attempt to update the Peltzman study using individual bank data, Mingo confirmed Peltzman's findings for 1970, but only for banks that were undercapitalized relative to the standards desired by appropriate regulators. To the extent that a disproportionately greater percentage of large banks may have been undercapitalized at the time, Mingo's finding may have reflected greater regulatory pressure on larger banks' capital rather than market discipline. An analysis by Gonzalez in 1974 confirmed that bank size, rather than the proportion of uninsured deposits, was influencing levels and ratios of bank capital for 1966 and 1975.

On balance, there appears to be no clear-cut evidence that bankers respond to the potential discipline of large depositors. Time-series analyses of the impact of legislative changes on deposit insurance coverage, and lags in banks' response to changes in flows of uninsured deposits, would help clarify the issues. A study of the portfolio changes of banks in response to changes in stock prices and cost of funds would also be worthwhile.

Market Discipline in Bank Capital Markets

A number of studies have been undertaken to determine the ability of debt and equity markets to evaluate banking risks. They generally question whether greater banking default risks, resulting from higher bank leverage, will require higher returns on investments in the debt and equity markets. With the exception of a few studies, evidence that the debt and equity markets distinguish bank risk based on capital levels is not pervasive. Beighley, Boyd and Jacobs (2), Peltzman (21) and Durand (7) have found that bank performance characteristics such as dividend payouts, earnings, growth, and loan loss rates explain the price of a bank's stock and its price-earnings ratio.

Further evidence of the capital markets' efficiency in responding quickly to new banking information can be derived from studies of the markets' advance response to bank failures. Pettway and Sinkey (23) studied six bank failures between 1973-1975. Analyzing trends for each bank's stock using a conventional market model, they found that, on average, the market signaled problems with these banks 33 weeks before regulatory agencies placed them on problem-bank lists.

Stover and Miller (25) found evidence that the markets for bankers acceptances, commercial paper, and federal funds also anticipated the Franklin National Bank failure. A time-series analysis of the rate spreads on each instrument and the Treasury bill rate revealed that these markets anticipated Franklin's problems about 10 months prior to failure. Importantly, the Franklin failure did not cause a permanent structural shift in risk perceptions in these markets or in the stock market (22,25).

The paucity of recent evidence leaves open the question of whether the bank debt market could be a viable source of discipline. The FDIC's deposit insurance study cites several advantages of subordinated debt in providing market discipline, saying it: (1) provides a longer-term perspective because length of maturity prevents fleeing during adversity; (2) possesses fixed-return without receiving a benefit for increased risk; and (3) is subordinated to depositors, insured

and uninsured, in the event of failure (10, Chapter III).

To summarize, the potential for bank depositors to exert "true" market discipline is limited primarily to the largest 1 percent of commercial banks. The discipline is not broad-based, but limited mainly to large institutional investors. Large depositors tend to "tier" banks based on nonfinancial factors, particularly in offshore markets. This suggests some general instability in these markets from adverse rumor or publicity attendent to banking developments. In any event, there is no clear evidence that banks are responsive to the potential instability of large uninsured depositors.

The available evidence relating to other money markets and capital markets suggests greater market efficiency. That is, these markets have been able to anticipate banking problems and react in an orderly manner. However, most of the evidence is based on a few bank failures in the mid-1970s. Updated analyses with a larger sample of bank failures would be useful to substantiate earlier findings.

Disclosure and Banking Risks

It could be argued that fuller or better quality of disclosure of bank performance might reduce the marketplace's shortcomings in providing discipline on bank risk-taking. For broader disclosure to be useful in this regard, certain conditions should be met. First, the disclosed data should provide a prior indication of deteriorating bank performance. Hopefully, this would afford "riskier" banks time to respond to market forces and to undertake remedial action. On the other hand, if the marketplace recognizes serious banking problems after the fact, it could limit the bank's ability to remedy its problems, and might even worsen its situation.

Second, the required disclosure should help the marketplace assess risks for banks of all sizes. As indicated earlier, capital markets, not deposit markets, exert the greatest market discipline. However, the Securities and Exchange Act of 1934, which requires that certain types of disclosures be sent to the public or made publicly available, applies only to relatively larger banks and bank holding companies—those registered with the Securities and Exchange Commission.[5]

Collectively, these represent about 3,300 insured commercial banks, or 23 percent of the total. It should be noted that federal bank regulatory agencies recently revised their call reports to require disclosure, on a quarterly basis, of (1) past due, non-accrual and renegotiated loans; (2) a detailed breakdown of remaining maturity (repricing period) of loans and interest bearing securities, fixed and floating rate, to reflect interest rate sensitivity, and (3) information on off balance sheet transactions.[6] In addition, all commercial banks now file reports of income and condition on a quarterly basis.

A third condition for effective disclosure should be proper balance between bank examination-related information and bank balance sheet statistics. A major issue is whether a regulatory agency's judgment on a bank's condition will result in an overreaction in the market and trigger bank runs. To the extent that banks are examined at different times, interbank performance comparisons based on data from examinations are less meaningful. In some cases, the information will be out of date. It has been argued that adverse classification of loans and other reported information reflect subjective, and sometimes inconsistent, judgments by examination staff and not formal determinations by the agency (10, Chapter IV, p. 11). In addition, the examiners' ability to get reliable information from banks' staffs may be undermined by disclosure of examination information.

Chapter IV of the FDIC's deposit insurance study refers to the general types of information available to regulators but not disclosed to the public. This information is contained in routine reports of examination and memoranda of the agencies regarding informal and formal administrative action to correct weaknesses that are moderately severe or worse (10, Chapter IV, pp. 11-12).

Disclosure of Examination-Related Data

Notwithstanding the practical problems in disclosing bank examination data, a number of studies have evidenced their value in predicting risk in bank loan portfolios. Although limited by the lack of rigorous statistical testing, studies have shown a positive relationship between

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[5] A description of these requirements is found in (10, Appendix C).

[6] New reported and disclosed information on insider loans, and other changes to the call reports, are expected in March 1984 (FDIC Bank Letter 25-83).

"classified assets" (those subject to risk of non-repayment) and eventual loan charge-offs (8, 9, 26, 27). However, these studies failed to test for the statistical significance between the charge-off experience of classified and nonclassified loans, or between classified loans and loans "past-due." The studies also failed to track systematically the path of loan classifications from "substandard" to "doubtful" to "loss."

The "before the fact" information content of examiner loan classifications is also borne out by bank failure and problem bank models. Sinkey (24) found that a low net capital ratio (total capital and reserves minus classified assets/total assets) was the best predictor of small and large bank failures in the mid 1970s. Bovenzi, Marino, and McFadden (4) provide more recent evidence of the role of classified loans as an early warning of bank failures. If the ratio of classified assets to equity capital is incorporated in a financial ratio model that distinguishes between failed and non-failed banks from 1980-1983, the proportion of bank failures identified by the model increases. This improvement in the basic model lasts two years prior to failure. Substituting the ratio of past-due loans to total assets for the ratio of classified assets to equity capital also improves the basic model's performance in predicting failures. The larger the lead time before failure, the better the "past-due" ratio performs relative to the "classified asset" ratio. Both ratios are statistically more significant than other financial ratios in the model.

Ratios such as those contained in failure prediction models are potentially more meaningful than absolute values in comparing the performance of banks of different size. While the results of these models appear to support the "before the fact" value of including examiner classifications in selected ratios for disclosure, certain qualifications are worth noting. Since the benchmark of performance is bank failure or survival, the studies do not reveal the process of deterioration and improvement of bank performance. To some extent, bank management takes remedial action when loans are criticized by examiners (26).

Some major analytical questions remain. What are the interrelations of examination and call report ratios in explaining the deterioration process? What threshold levels are considered alarming? These questions are not intended to diminish the contribution of failure prediction models, but rather to suggest further areas of research.

Adverse Disclosure and Market Stability

As noted earlier, the disclosure of examination-related data raises concern over possible market overreaction to a regulatory agency's adverse evaluation of a particular bank. The FDIC's experience is that adverse publicity, usually in the press, has resulted in deposit runoffs in some cases. Generally, though, the bank was near failure when the runoffs occurred, and the deposit drain simply hastened the inevitable.

More formal statistical analyses have tested the response of the stock market and bank depositors to adverse news. In January 1976, the New York Times disclosed the names of 35 banks on the Federal Reserve's problem list. Studies of the impact of this disclosure on bank stock prices, using conventional market models, revealed no significant change in the market's risk perceptions of these banks after disclosure (16,20). Moreover, Murphy (20) found no evidence of a "spillover effect" on market prices of a control group of similar-sized banks in the same geographic areas. Finally, a study by Kurtz and Sinkey (18) analyzed the reaction of depositors at small banks to unfavorable publicity based on bank irregularities such as embezzlement, fraud and misapplication of funds reported to the U.S. attorney in 1970. By examining deposit flow patterns before and after the adverse publicity, the authors concluded that the impact of disclosed bank irregularities on deposit flows was insignificant. Demand deposit withdrawals (about 10 percent) occurred for only six months after disclosure, and were partially offset by continued growth in other deposit categories. One year after disclosure, 65 percent of the banks had recouped their losses entirely.

Summary and Conclusions

The combination of high deposit insurance coverage (actual and de facto), and bank deregulation have placed an added burden on the marketplace to regulate bank behavior and discourage excessive risk-taking. There is a tendency, however, to overestimate the incentive and willingness of uninsured depositors to exert an effective and non-disruptive influence on the banking industry. On the other hand, bank capital markets and markets for purchased funds have shown some evidence of imposing such discipline, in a non-disruptive fashion, on larger institutions that are most dependent on these markets for funding.

Shortcomings of the marketplace in restraining bank risk-taking could be corrected to some degree by broader disclosure. In particular, the disclosure of bank examination data could help bank-funding markets to identify an institution's weaknesses while remedial action is still possible. The impact of such disclosure on stock prices and deposit flows may not be as disruptive as some expect. However, the disclosure of examination-related information may reduce the effectiveness of the examination process. Furthermore, the recently required bank disclosure of past-due and other nonperforming loans may serve as an effective substitute for disclosure of classified loans from examination reports.

On balance, evidence of the existence and potential of "true" market discipline is not persuasive enough to warrant its substitution for the discipline provided by regulatory agencies. While bank customers' greater perceived risk of loss from bank failure could increase incentives to impose market discipline, market participants' behavior will depend largely on the nature and scope of changes in the deposit insurance system. It is difficult to predict how pervasive the resulting market discipline would be among various bank-size groups.

—**Gary G. Gilbert***

*Gary G. Gilbert, former assistant director of the division of research and strategic planning for the Federal Deposit Insurance Corporation, was appointed assistant to the president for economic and regulatory analysis for the Bank Administration Institute, effective Oct. 17, 1983.

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DISCLOSURE NEEDS OF FINANCIAL ANALYSTS: LARGE BANK HOLDING COMPANIES

During the 1970s and early 1980s, disclosure by banks and bank holding companies has increased materially and, on balance, has been of considerable help in providing banking analysts with expanded information and statistics. As a result, we are better informed. External events and significant industry changes were the primary factors stimulating greater disclosure.

The formation of bank holding companies in the late 1960s and early 1970s and the listing of many large banking organizations on national exchanges, with a resultant broadening of their ownership, led to greater disclosure. In the mid-1970s, commercial real estate problems among certain large banks and related REITs led to greater disclosure of nonperforming assets. Also in the mid-1970s, massive changes in international flows of funds, as well as the Bankhaus Herstatt failure, underscored the need for disclosure of international data. Official agencies, including the Bank of England, the Bank for International Settlements, the International Monetary Fund (IMF), and the Federal Reserve Board all pushed for this increase in disclosure.

The high and extremely volatile interest-rate environment of the late 1970s and early 1980s called forth greater disclosure with regard to asset and liability sensitivity and maturity structure. Most recently, questions surrounding loans to developing countries have called forth disclosure of further information on international transactions.

As analysts of bank equity securities for a large investment banker, we take a fairly narrow view as to what constitutes adequate and useful disclosure. Given the nature of our business, our analysis necessarily tends to be concentrated on the consolidated financial results of large bank holding companies. Large money center/international and larger regional bank holding companies generally are subject to the substantial disclosure requirements of the Securities and Exchange Commission as well as national or state banking regulators.

Our analysis, like that of the regulators, involves a thorough examination of capital adequacy, asset quality, management, earnings power, and liquidity in assessing the fundamental position of individual institutions. Yet we distinguish ourselves from regulatory analysts by also attempting to incorporate the effects of financial market and valuation influences in determining attractive investment opportunities. There is no question that required disclosure exerts a powerful influence in both our fundamental and psychological assessment of individual bank holding companies.

The large bank holding companies on which we concentrate are already subject to stringent reporting requirements. These requirements, and the historically homogeneous nature of this universe of companies, give this segment of the banking industry a significant degree of uniformity in reporting statistical and financial information.

We see this, for example, in the presentation of income statement, balance sheet, loan portfolio, investment account, and asset quality data. Yet, despite the homogeneous nature of the industry's financial reporting, individual banks' managements retain a significant degree of discretion on certain aspects of disclosure.

In such an environment a banking institution may improve the information content of normally reported data in order to assist the analyst in assessing the company's fundamental outlook.

Consider some simple examples of such disclosure and their analytical usage. Although we concentrate on consolidated bank holding company information, a proper assessment of a company's fundamental prospects should involve a breakdown of the company into parts. While information is readily available with respect to individual banks in particular holding company systems through either federal or state banking

regulators, we often lack sufficient information to assess properly nonbank subsidiaries of the holding companies we are analyzing.

Additional beneficial disclosure might take the form presented in a First Atlanta Corp. quarterly financial supplement that provides analysts with consolidated income statements and balance sheets. While information from those statistics cannot be taken simply at face value without some knowledge of the business of the entities that make up the company, we are provided with detailed and continuing information on "components" of the holding company. This helps us to make a judgment as to the prospects for the company as a whole, and to obtain a clear view of the performance of subsidiaries.

This information is quite useful and brings us to a second example.

As a strategic response to current and prospective pressures on the commercial banking industry, a significant number of institutions have

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"Required disclosure exerts a powerful influence on both our fundamental and psychological assessment of individual bank holding companies."

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sought to diversify further their revenue and earnings sources. In doing this they have attempted to generate a higher proportion of their income from non-interest sources. As this occurs, the revenue and earnings sources attributable to specific segments of the institution begin to get "lost" in the consolidating process. If revenue items are simply aggregated into non-interest income items, how can we determine the level and trend in the relative performance of individual areas of the organization?

An interesting approach has been adopted by Fleet Financial Group, a firm with a significantly diverse asset base, revenues, and earnings sources. In addition to the fairly standard presentation required of all large holding companies, this firm has been reporting its results on a line-of-business basis while also reporting certain information by

specific subsidiary. This information provides a relatively high degree of useful data with respect to segment operations.

Along similar lines, Citicorp, in the second quarter of 1983, began to disclose limited amounts of information about the earnings contributions of its three main business segments (institutional banking, individual banking, and capital markets).

Some voluntary disclosure of information by banks may be partially self serving, due to the relatively attractive position in which it places certain institutions compared with others in the industry. Several regional banks willingly disclosed in their 1982 annual reports significant details about their international loan portfolios not released uniformly by the large money center bank group. These latter banks would have looked much less favorable in terms of volume and concentration of international loans. Large banks were required to report countries to which loan exposure exceeded more than 1 percent of total outstandings. Some regional banks went considerably beyond the required data, providing breakdowns of individual asset categories and maturity structure, particularly where most of the loans appeared short-term or self-liquidating in nature, or were in acceptance form. They also disclosed which asset categories were insured by government agencies.

Besides this increased disclosure by individual institutions, additional disclosure sometimes arises through regulatory requirements. Often, these requirements are a response to environmental developments—for example, increased foreign loan disclosure requirements by the SEC and the regulators related to international credit quality problems and a new provision in call reports related to loans sold, a direct response to factors related to the Penn Square Bank situation.

The overriding intention of requiring additional information clearly appears to be imposing the discipline of the marketplace on banking institutions. Additional disclosure requirements accomplish this, in theory, by enhancing the efficient allocation of capital resources and funding sources and reinforce the need for banking institutions to diversify risk and to avoid "undue" risks.

A recent example of significant financial market reflection of risk/reward relationships occurred in the late summer of 1982. The cost of funds for Continental Illinois and Chase Manhattan was

impacted in the short-term money markets following the Penn Square and Drysdale Securities losses. The overall large bank equity market was affected as well because of investors' concerns over the potential impact on the banking industry.

Not surprisingly, given the heightened level of concern about asset quality problems over the

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"Requiring additional information clearly appears to be imposing the discipline of the marketplace on banking institutions."

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past year, most of the new or expanded disclosure guidelines have been related directly to foreign loans and non-performing loans. The codification of certain guidelines in these areas may enhance the uniformity of reporting within the industry.

Banking developments have induced bank and securities regulators to require much new information about certain crucial elements of bank holding companies' financial condition. Efforts by these companies to please financial analysts and to differentiate themselves also continue to bring more analytical information to the public's attention.

That financial disclosure among large banks should have increased so dramatically is appropriate and reflects both the increasing complexity and volatility of the banking business and the needs of the financial marketplace.

—James H. Wooden
and Thaddeus W. Paluszek*

*Merrill Lynch, Pierce, Fenner & Smith

SUMMARY OF THE DISCLOSURE SESSION

Participants in the disclosure session concentrated their discussion on the relevance of currently disclosed financial information on banking organizations and the impact of disclosure on public and reporter behavior. Regulators were generally viewed not as users of disclosed information but as parties interested in the use to which the public puts the information.

Participants generally agreed that public disclosure of financial information on banks and bank holding companies is much more detailed and sophisticated than it was in the past. Harold Levine and James Wooden indicated that the quantity of information was, at times, overwhelming but doubted that they would give up any of it. Both attributed better disclosure in part to the demands of investors and analysts for more useful information on banks.

James Ehlen pointed out that for immediate analysis and recommendations, required reports by the SEC and regulatory agencies were quite late. He indicated that company press releases and contacts with financial officers were the main sources of current information in the financial markets and that required reports were used for more detailed reappraisal.

George Benston and Mark Biderman pointed out that increased diversification of banking companies introduced information problems for both reporters and users of data. Reporting by activity is consistent with diversification, but that requires reporters to decide on the fineness of activity breakdowns, while users may have difficulties assessing the entire company from its parts. Gary Gilbert cited difficulties in reporting how risks of various parts of a company meshed together.

In answer to a question about disclosure related to expected industry problems, Harold Levine saw need for considering asset concentrations and the impact of inflation and disinflation. Gary Gilbert added nonbank operations and overhead to the list of areas for additional disclosure. Participants saw no system for anticipating necessary new disclosures. James Wooden indicated that looking hard for potential problems and asking for data was the best that could be expected.

In discussing the impact of disclosures on the public's investment decisions, Hal Levine pointed out that holders of nondeposit liabilities and equity of banks were the most likely to react to disclosure because they were much more likely to lose than were depositors with explicit or implicit insurance. Several participants maintained that implicit deposit insurance provided by the FDIC's common practice of merging rather than liquidating troubled banks limited the need for technically uninsured depositors to analyze banks carefully.

Academic participants argued that particular reporting requirements or formats would be unlikely to impact reporters' business decisions. Private-sector analysts were much less sure, pointing out that few securities losses had been taken since January 1983 when these items were reported directly in net income and not shown on a separate line.

Private-sector financial analysts reported frequent instances when disclosures of financial problems had serious impacts on the prices of the bank's securities. In this they supported the regulators' belief that market discipline would work to limit risk-taking by banks.

Federal Reserve Bank of Atlanta
Workshop on Bank Surveillance
September 12-13,1983

Recent Developments in Early Warning Systems

Moderator:
Donald L. Koch
Senior Vice President and
Director of Research
Federal Reserve Bank of Atlanta

Presentations:
Irene Booker
Vice President
Cates Consulting Analysts, Inc.

John Bovenzi, Economist
Federal Deposit Insurance Corporation

Barron Putnam, Manager
Surveillance Section
Federal Reserve Board

Leon Korobow
Assistant Vice President,
Bank Supervision
Federal Reserve Bank of New York

Discussants:
Robert A. Eisenbeis
Wachovia Professor of Banking
University of North Carolina

Jon Burke
First Vice President
Robinson-Humphrey/American Expresss

Financial Analysis in Bank Monitoring

Moderator:
B. Frank King
Research Officer and Senior
Financial Economist
Federal Reserve Bank of Atlanta

Presentations:
Barron Putnam
Manager Surveillance Section
Federal Reserve Board

Richard Stillinger
Vice President
Keefe, Bruyette & Woods, Inc.

Discussants:
James G. Ehlen, Jr.,
Senior Bank Analyst
Goldman, Sachs & Company

Thomas E. Zemke
National Bank Surveillance
System Director
Office of the Comptroller
of the Currency

The Role of Capital and Capital Standards

Moderator:
David D. Whitehead
Senior Financial Economist
Federal Reserve Bank of Atlanta

Presentations:
John Noonan
Director for Commercial Examinations
Office of the Comptroller
of the Currency

James G. Ehlen, Jr.
Senior Bank Analyst
Goldman, Sachs & Company

Discussants:
Larry Meeker
Assistant Vice President
Federal Reserve Bank
of Kansas City

Mark Biderman
Senior Vice President
Oppenheimer & Company

David Kidwell
Blount National Professor of Finance
University of Tennessee

Disclosure

Moderator:
William N. Cox
Vice President and
Associate Director of Research
Federal Reserve Bank of Atlanta

Presentations:
Gary Gilbert
Assistant to the President
Bank Administration Institute

Edmund Coulson
Deputy Chief Accountant
Securities and Exchange Commission

James H. Wooden, Vice President
Merrill Lynch, Pierce, Fenner
& Smith, Inc.

Discussants:
George Benston
Professor of Accounting
Economics and Finance
University of Rochester

Other Participants:

Charles V. Collier
Assistant Director for Surveillance
& Special Activities
Federal Deposit Insurance Corporation

David Cooke
Examination Specialist
Federal Deposit Insurance Corporation

Larry Cuy
Assistant Vice President
Federal Reserve Bank of Cleveland

W. M. Davis
Vice President
Federal Reserve Bank of Atlanta

William Estes
Senior Examiner
Federal Reserve Bank of Atlanta

Susan Fetner
National Bank Examiner
Office of the Comptroller
of the Currency

Jack Guynn
Senior Vice President
Federal Reserve Bank of Atlanta

Caroline Harless
Examiner
Federal Reserve Bank of Atlanta

Robert E. Heck
Vice President
Federal Reserve Bank of Atlanta

Donald Inscoe
Coordinator for Uniform
  Performance Reports
Federal Financial Institutions
  Examinations Council

Robert Keleher
Research Officer
Federal Reserve Bank of Atlanta

David Krakower
Manager
Financial Analysis Unit
Federal Reserve Bank
  of San Francisco

Louella Moreno
Supervisory Financial Analyst
Federal Reserve Board

Richard Randall
Vice President
Federal Reserve Bank of Boston

Lisa Rockoff
Research Analyst
Federal Reserve Bank of Atlanta

Joseph Sinkey
Professor of Banking and Finance
University of Georgia

Gene D. Sullivan
Research Officer
Federal Reserve Bank of Atlanta

Larry Wall
Economist
Federal Reserve Bank of Atlanta

FINANCE

$ millions

UNITED STATES

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	1,293,911	1,278,239	1,170,355	+ 11	Savings & Loans				
Demand	305,224	302,296	282,895	+ 8	Total Deposits	601,039	599,734	534,621	+ 12
NOW	84,041	80,677	59,257	+ 42	NOW	17,885	17,526	10,606	+ 69
Savings	343,427	3344,083	149,970	+129	Savings	178,900	184,971	91,575	+ 95
Time	596,211	584,147	704,161	− 15	Time	407,887	400,495	433,169	− 6
Credit Union Deposits	60,924	61,029	48,931	+ 25		JUL	JUN	JUL	
Share Drafts	5,478	5,448	3,153	+ 74	Mortgages Outstanding	467,492	463,263	501,678	− 7
Savings & Time	50,136	49,884	41,962	+ 19	Mortgage Commitments	31,756	30,282	15,865	+100

SOUTHEAST

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	146,033	144,606	124,843	+ 17	Savings & Loans				
Demand	55,735	35,353	32,365	+ 72	Total Deposits	83,355	85,316	78,877	+ 6
NOW	10,759	10,325	7,665	+ 40	NOW	2,882	2,879	1,704	+ 69
Savings	37,962	38,025	14,653	+159	Savings	22,544	23,908	11,536	+ 95
Time	65,430	64,261	72,389	− 10	Time	58,685	59,350	65,808	− 11
Credit Union Deposits	5,867	5,859	4,617	+ 27		JUL	JUN	JUL	
Share Drafts	475	479	302	+ 57	Mortgages Outstanding	65,600	66,196	69,736	− 6
Savings & Time	5,001	4,982	3,896	+ 28	Mortgage Commitments	4,700	4,598	2,981	+ 58

ALABAMA

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	15,314	15,162	13,886	+ 10	Savings & Loans				
Demand	3,913	3,687	3,300	+ 19	Total Deposits	5,103	5,080	4,530	+ 13
NOW	950	915	672	+ 41	NOW	147	138	91	+ 62
Savings	3,130	3,152	1,557	+101	Savings	869	886	544	+ 60
Time	7,929	7,898	8,715	− 9	Time	4,147	4,119	3,926	+ 6
Credit Union Deposits	904	904	837	+ 8		JUL	JUN	JUL	
Share Drafts	86	84	59	+ 46	Mortgages Outstanding	3,669	3,657	3,957	− 7
Savings & Time	777	775	677	+ 15	Mortgage Commitments	216	205	47	+360

FLORIDA

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	50,911	50,344	40,633	+ 25	Savings & Loans				
Demand	12,450	12,449	11,298	+ 10	Total Deposits	52,418	54,540	47,661	+ 10
NOW	4,463	4,305	3,313	+ 35	NOW	2,035	2,076	1,158	+ 76
Savings	17,442	17,278	6,176	+182	Savings	15,500	16,728	7,689	+102
Time	17,655	17,243	20,357	− 13	Time	35,253	36,179	38,810	− 9
Credit Union Deposits	2,551	2,547	2,083	+ 22		JUL	JUN	JUL	
Share Drafts	237	240	165	+ 44	Mortgages Outstanding	38,991	39,068	41,191	− 5
Savings & Time	2,023	1,997	1,640	+ 23	Mortgage Commitments	3,240	3,241	2,345	+ 38

GEORGIA

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	21,134	20,798	17,374	+ 22	Savings & Loans				
Demand	6,799	6,779	5,772	+ 18	Total Deposits	7,752	7,751	9,869	− 21
NOW	1,456	1,366	1,101	+ 32	NOW	229	216	193	+ 19
Savings	4,709	4,684	1,637	+188	Savings	1,772	1,808	1,176	+ 51
Time	9,199	9,018	9,655	− 5	Time	5,914	5,885	8,598	− 31
Credit Union Deposits	1,344	1,329	855	+ 57		JUL	JUN	JUL	
Share Drafts	70	70	29	+141	Mortgages Outstanding	8,075	8,144	8,996	− 10
Savings & Time	1,189	1,191	775	+ 53	Mortgage Commitments	472	455	167	+183

LOUISIANA

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	24,973	24,872	22,859	+ 9	Savings & Loans				
Demand	5,847	5,837	5,758	+ 2	Total Deposits	8,435	8,351	7,898	+ 7
NOW	1,404	1,367	1,071	+ 31	NOW	178	173	110	+ 62
Savings	5,257	5,357	2,428	+117	Savings	2,362	2,400	1,215	+ 94
Time	13,020	12,817	13,989	− 7	Time	5,982	5,865	6,591	− 9
Credit Union Deposits	196	196	123	+ 59		JUL	JUN	JUL	
Share Drafts	23	23	9	+156	Mortgages Outstanding	7,143	7,529	7,332	− 3
Savings & Time	191	192	116	+ 65	Mortgage Commitments	511	462	281	+ 82

MISSISSIPPI

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	11,550	11,503	10,375	+ 11	Savings & Loans				
Demand	2,408	2,388	2,205	+ 9	Total Deposits	2,417	2,402	2,466	− 2
NOW	822	793	571	+ 44	NOW	91	85	52	+ 75
Savings	2,426	2,450	733	+231	Savings	488	494	232	+110
Time	6,228	6,152	6,999	− 11	Time	1,864	1,852	2,197	− 15
Credit Union Deposits	N.A.	N.A.	N.A.			JUL	JUN	JUL	
Share Drafts	N.A.	N.A.	N.A.		Mortgages Outstanding	2,003	1,997	2,177	− 8
Savings & Time	N.A.	N.A.	N.A.		Mortgage Commitments	46	40	20	+130

TENNESSEE

	SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.		SEPT 1983	AUG 1983	SEPT 1982	ANN. % CHG.
Commercial Bank Deposits	22,151	21,927	19,716	+ 12	Savings & Loans				
Demand	4,318	4,213	4,032	+ 7	Total Deposits	7,230	7,192	6,453	+ 12
NOW	1,664	1,579	937	+ 78	NOW	202	191	100	+102
Savings	4,998	5,104	2,122	+136	Savings	1,553	1,592	680	+128
Time	11,399	11,133	12,674	− 10	Time	5,523	5,450	5,686	− 3
Credit Union Deposits	872	883	719	+ 21		JUL	JUN	JUL	
Share Drafts	59	62	40	+ 48	Mortgages Outstanding	5,719	5,801	6,083	− 6
Savings & Time	821	827	688	+ 19	Mortgage Commitments	215	195	121	+ 78

Notes: All deposit data are extracted from the Federal Reserve Report of Transaction Accounts, other Deposits and Vault Cash (FR2900), and are reported for the average of the week ending the 1st Wednesday of the month. This data, reported by institutions with over $15 million in deposits as of December 31, 1979, represents 95% of deposits in the six state area. The major differences between this report and the "call report" are size, the treatment of interbank deposits, and the treatment of float. The data generated from the Report of Transaction Accounts is for banks over $15 million in deposits as of December 31, 1979. The total deposit data generated from the Report of Transaction Accounts eliminates interbank deposits by reporting the net of deposits "due to" and "due from" other depository institutions. The Report of Transaction Accounts subtracts cash in process of collection from demand deposits, while the call report does not. Savings and loan mortgage data are from the Federal Home Loan Bank Board Selected Balance Sheet Data. The Southeast data represent the total of the six states. Subcategories were chosen on a selective basis and do not add to total. N.A. = fewer than four institutions reporting.

CONSTRUCTION

	AUG 1983	JUL 1983	AUG 1982	ANN % CHG		AUG 1983	JUL 1983	AUG 1982	ANN % CHG
12-month Cumulative Rate									
UNITED STATES									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	47,986	46,560	47,160	+ 2	Value - $ Mil.	60,878	57,555	35,018	+ 74
Industrial Bldgs.	5,108	5,079	5,498	- 7	Residential Permits - Thous.				
Offices	11,929	11,512	13,392	- 11	Single-family units	825.7	787.6	463.5	+ 78
Stores	6,179	5,827	5,458	+ 13	Multi-family units	630.2	595.1	395.1	+ 60
Hospitals	1,861	1,889	1,694	+ 10	Total Building Permits				
Schools	882	846	861	+ 2	Value - $ Mil.	108,864	104,115	82,179	+ 32
SOUTHEAST									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	7,454	7,184	6,275	+ 19	Value - $ Mil.	11,027	10,334	6,432	+ 71
Industrial Bldgs.	645	622	737	- 12	Residential Permits - Thous.				
Offices	1,775	1,697	1,334	+ 33	Single-family units	169.6	162.2	93.9	+ 81
Stores	1,129	1,077	1,035	+ 9	Multi-family units	136.3	125.2	81.0	+ 68
Hospitals	443	424	203	+118	Total Building Permits				
Schools	168	166	94	+ 79	Value - $ Mil.	18,480	17,517	12,707	+ 45
ALABAMA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	425	379	387	+ 10	Value - $ Mil.	387	353	221	+ 75
Industrial Bldgs.	29	28	78	- 63	Residential Permits - Thous.				
Offices	55	53	55	0	Single-family units	7.6	7.2	3.9	+ 95
Stores	78	66	66	+ 18	Multi-family units	7.0	6.4	4.0	+ 75
Hospitals	29	30	21	+ 38	Total Building Permits				
Schools	9	8	8	+ 13	Value - $ Mil.	812	732	608	+ 34
FLORIDA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	3,743	3,636	3,154	+ 19	Value - $ Mil.	6,334	5,920	3,993	+ 59
Industrial Bldgs.	338	324	362	- 7	Residential Permits - Thous.				
Offices	838	809	624	+ 34	Single-family units	89.0	84.8	50.0	+ 78
Stores	621	596	555	+ 12	Multi-family units	76.2	70.0	50.5	+ 51
Hospitals	287	258	97	+196	Total Building Permits				
Schools	52	52	18	+189	Value - $ Mil.	10,077	9,557	7,147	+ 41
GEORGIA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,186	1,125	1,020	+ 16	Value - $ Mil.	2,172	2,062	1,118	+ 94
Industrial Bldgs.	164	155	160	+ 3	Residential Permits - Thous.				
Offices	342	320	240	+ 43	Single-family units	39.0	37.4	21.4	+ 82
Stores	123	114	103	+ 19	Multi-family units	22.3	21.2	10.7	+108
Hospitals	25	26	26	- 4	Total Building Permits				
Schools	27	24	35	- 23	Value - $ Mil.	3,358	3,187	2,138	+ 57
LOUISIANA									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	1,163	1,148	884	+ 32	Value - $ Mil.	976	923	580	+ 68
Industrial Bldgs.	54	56	88	- 39	Residential Permits - Thous.				
Offices	402	380	265	+ 52	Single-family units	16.6	16.0	9.2	+ 80
Stores	123	120	162	- 24	Multi-family units	13.7	12.5	8.2	+ 67
Hospitals	54	60	15	+260	Total Building Permits				
Schools	63	65	25	+152	Value - $ Mil.	2,138	2,072	1,464	+ 46
MISSISSIPPI									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	186	165	170	+ 9	Value - $ Mil.	260	256	150	+ 73
Industrial Bldgs.	6	6	13	- 54	Residential Permits - Thous.				
Offices	16	15	42	- 62	Single-family units	4.5	4.6	3.1	+ 45
Stores	36	34	38	- 5	Multi-family units	3.0	3.1	2.0	+ 50
Hospitals	18	14	4	+350	Total Building Permits				
Schools	8	8	1	+700	Value - $ Mil.	446	420	321	+ 39
TENNESSEE									
Nonresidential Building Permits - $ Mil.					Residential Building Permits				
Total Nonresidential	752	730	660	+ 14	Value - $ Mil.	898	819	371	+142
Industrial Bldgs.	56	53	35	+ 60	Residential Permits - Thous.				
Offices	121	119	107	+ 13	Single-family units	12.9	12.2	6.3	+105
Stores	147	146	110	+ 34	Multi-family units	14.1	12.0	5.6	+152
Hospitals	30	36	40	- 25	Total Building Permits				
Schools	9	8	7	+ 29	Value - $ Mil.	1,650	1,549	1,031	+ 59

NOTES:

Data supplied by the U. S. Bureau of the Census, Housing Units Authorized By Building Permits and Public Contracts, C-40. Nonresidential data excludes the cost of construction for publicly owned buildings. The southeast data represent the total of the six states. The annual percent change calculation is based on the most recent month over prior year. Publication of F. W. Dodge construction contracts has been discontinued.

GENERAL

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.

UNITED STATES

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	2,640.5	2,616.1	2,499.8	+ 6
Taxable Sales - $bil.		N.A.	N.A.	N.A.	
Plane Pass. Arr. 000's		N.A.	N.A.	N.A.	
Petroleum Prod. (thous.)	SEP	8,680.1	8,648.6	8,684.3	- 0
Consumer Price Index					
1967=100	SEP	301.8	300.3	293.3	+ 3
Kilowatt Hours - mils.	JUL	192.6	171.5	183.6	+ 5

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Prices Rec'd by Farmers					
Index (1977=100)		137	139	136	+ 1
Broiler Placements (thous.)		77,027	79,386	78,072	- 1
Calf Prices ($ per cwt.)		56.2	57.4	59.0	- 5
Broiler Prices (¢ per lb.)		33.8	31.8	26.8	+26
Soybean Prices ($ per bu.)		8.46	7.57	5.22	+62
Broiler Feed Cost ($ per ton)		240	228	209	+15

SOUTHEAST

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	318.0	314.5	296.4	+ 7
Taxable Sales - $ bil.		N.A.	N.A.	N.A.	
Plane Pass. Arr. 000's	JUL	4,310.2	4,412.1	4,353.0	- 1
Petroleum Prod. (thous.)	SEP	1,400.0	1,381.0	1,386.5	+ 1
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUL	31.6	28.6	33.8	- 7

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Prices Rec'd by Farmers					
Index (1977=100)		125	122	118	+ 6
Broiler Placements (thous.)		29,386	30,270	29,477	- 0
Calf Prices ($ per cwt.)		54.2	53.7	54.9	- 1
Broiler Prices (¢ per lb.)		32.9	31.0	25.7	+28
Soybean Prices ($ per bu.)		8.70	8.06	5.30	+64
Broiler Feed Cost ($ per ton)		229	217	204	+12

ALABAMA

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	35.1	34.7	33.0	+ 6
Taxable Sales - $ bil.	JUN	27.2	26.9	26.4	+ 3
Plane Pass. Arr. 000's	AUG	115.9	116.6	107.3	+ 8
Petroleum Prod. (thous.)	SEP	52.0	53.0	57.0	+ 2
Consumer Price Index					
1967=100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUL	3.9	3.5	4.7	-17

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		1,057	–	1,095	- 3
Broiler Placements (thous.)		10,011	10,034	9,475	+ 6
Calf Prices ($ per cwt.)		51.7	52.1	53.7	- 4
Broiler Prices (¢ per lb.)		30.5	30.0	24.5	+24
Soybean Prices ($ per bu.)		8.26	7.79	5.33	+55
Broiler Feed Cost ($ per ton)		240	225	205	+17

FLORIDA

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	118.6	117.4	108.9	+ 9
Taxable Sales - $ bil.	SEP	71.4	70.7	66.7	+ 7
Plane Pass. Arr. 000's	JUL	2,083.3	2,142.1	2,277.5	- 9
Petroleum Prod. (thous.)	SEP	57.0	59.0	73.0	-22
Consumer Price Index - Miami	SEP	JUL	SEP		
Nov. 1977 = 100		162.9	160.8	156.1	+ 4
Kilowatt Hours - mils.	JUL	8.9	8.0	9.2	- 3

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		2,933	–	2,853	+ 3
Broiler Placements (thous.)		1,882	1,956	1,795	+ 5
Calf Prices ($ per cwt.)		60.4	59.3	56.4	+ 7
Broiler Prices (¢ per lb.)		34.0	31.0	25.0	+36
Soybean Prices ($ per bu.)		8.26	7.79	5.33	+55
Broiler Feed Cost ($ per ton)		250	235	210	+19

GEORGIA

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	56.0	55.3	52.0	+ 8
Taxable Sales - $ bil.	2Q	40.4	39.9	38.8	+ 4
Plane Pass. Arr. 000's	AUG	1,648.3	1,641.8	1,510.9	+ 9
Petroleum Prod. (thous.)		N.A.	N.A.	N.A.	
Consumer Price Index - Atlanta	AUG	JUN	AUG		
1967 = 100		303.9	302.3	295.6	+ 3
Kilowatt Hours - mils.	JUL	5.5	4.7	5.2	+ 6

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		1,408	–	1,486	- 5
Broiler Placements (thous.)		11,719	12,213	12,281	- 5
Calf Prices ($ per cwt.)		50.7	50.4	50.5	+ 0
Broiler Prices (¢ per lb.)		33.5	31.0	25.5	+31
Soybean Prices ($ per bu.)		8.66	7.68	5.28	+64
Broiler Feed Cost ($ per ton)		220	210	200	+10

LOUISIANA

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	45.4	44.7	43.1	+ 5
Taxable Sales - $ bil.		N.A.	N.A.	N.A.	
Plane Pass. Arr. 000's	AUG	279.3	276.1	272.9	+ 2
Petroleum Prod. (thous.)	SEP	1,207.0	1,185.0	1,164.0	+ 4
Consumer Price Index					
1967 = 100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUL	5.3	5.1	5.9	-10

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		615	–	690	-11
Broiler Placements (thous.)		N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)		54.5	56.0	56.7	- 4
Broiler Prices (¢ per lb.)		35.0	32.0	27.5	+27
Soybean Prices ($ per bu.)		8.76	8.45	5.30	+65
Broiler Feed Cost ($ per ton)		280	270	250	+12

MISSISSIPPI

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	20.5	20.4	19.3	+ 6
Taxable Sales - $ bil.		N.A.	N.A.	N.A.	
Plane Pass. Arr. 000's	AUG	38.4	37.5	32.5	+18
Petroleum Prod. (thous.)	SEP	84.0	84.0	92.5	- 9
Consumer Price Index					
1967 = 100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUL	2.3	2.0	2.4	- 4

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		939	–	987	- 5
Broiler Placements (thous.)		6,024	6,068	5,926	+ 2
Calf Prices ($ per cwt.)		54.9	53.4	58.3	- 6
Broiler Prices (¢ per lb.)		35.0	32.5	28.0	+25
Soybean Prices ($ per bu.)		8.78	8.03	5.44	+61
Broiler Feed Cost ($ per ton)		210	197	200	+ 5

TENNESSEE

	LATEST DATA	CURR. PERIOD	PREV. PERIOD	YEAR AGO	ANN. % CHG.
Personal Income					
($bil. - SAAR)	1Q	42.4	42.0	40.1	+ 6
Taxable Sales - $ bil.	SEP	36.5	36.3	32.7	+11
Plane Pass. Arr. 000's	AUG	161.5	154.9	157.5	+ 3
Petroleum Prod. (thous.)	SEP	N.A.	N.A.	N.A.	
Consumer Price Index					
1967 = 100		N.A.	N.A.	N.A.	
Kilowatt Hours - mils.	JUL	5.7	5.3	6.4	-11

Agriculture		SEPT 1983	AUG (R) 1983	SEPT (R) 1982	ANN. % CHG.
Farm Cash Receipts - $ mil.					
(Dates: JUL, JUL)		964	–	924	+ 4
Broiler Placements (thous.)		N.A.	N.A.	N.A.	
Calf Prices ($ per cwt.)		52.3	50.8	53.4	- 2
Broiler Prices (¢ per lb.)		31.5	30.5	25.0	+26
Soybean Prices ($ per bu.)		8.94	8.08	5.09	+76
Broiler Feed Cost ($ per ton)		215	215	176	+22

Notes:
Personal Income data supplied by U. S. Department of Commerce. Taxable Sales are reported as a 12-month cumulative total. Plane Passenger Arrivals are collected from 26 airports. Petroleum Production data supplied by U. S. Bureau of Mines. Consumer Price Index data supplied by Bureau of Labor Statistics. Agriculture data supplied by U. S. Department of Agriculture. Farm Cash Receipts data are reported as cumulative for the calendar year through the month shown. Broiler placements are an average weekly rate. The Southeast data represent the total of the six states. N.A. = not available. The annual percent change calculation is based on most recent data over prior year. R = revised.

EMPLOYMENT

	AUG 1983	JUL 1983	AUG 1982	ANN. % CHG.		AUG 1983	JUL 1983	AUG 1982	ANN. % CHG.
UNITED STATES									
Civilian Labor Force – thous.	113,578	113,980	111,887	+ 2	Nonfarm Employment– thous.	89,649	89,992	89,088	+ 1
Total Employed – thous.	103,167	103,273	101,177	+ 2	Manufacturing	18,866	18,654	18,751	+ 1
Total Unemployed – thous.	10,411	10,707	10,710	– 3	Construction	4,306	4,205	4,164	+ 3
Unemployment Rate – % SA	9.5	9.5	9.8		Trade	20,636	20,585	20,492	+ 1
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	14,931	15,056	14,877	+ 0
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	19,996	19,929	19,208	+ 4
Mfg. Avg. Wkly. Hours	40.2	40.0	39.0	+ 3	Fin., Ins., & Real Est.	5,540	5,534	5,402	+ 3
Mfg. Avg. Wkly. Earn. – $	353	354	332	+ 6	Trans. Com. & Pub. Util.	4,344	5,001	5,070	–14
SOUTHEAST									
Civilian Labor Force – thous.	14,672	14,612	14,291	+ 3	Nonfarm Employment– thous.	11,375	11,406	11,263	+ 1
Total Employed – thous.	13,278	13,152	12,885	+ 3	Manufacturing	2,182	2,155	2,156	+ 1
Total Unemployed – thous.	1,393	1,459	1,405	– 1	Construction	648	644	656	– 2
Unemployment Rate – % SA	9.7	9.7	9.8		Trade	2,734	2,724	2,675	+ 2
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	2,051	2,080	2,042	+ 0
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	2,291	2,295	2,230	+ 3
Mfg. Avg. Wkly. Hours	40.9	40.5	39.5	+ 4	Fin., Ins., & Real Est.	669	667	651	+ 3
Mfg. Avg. Wkly. Earn. – $	310	310	291	+ 7	Trans. Com. & Pub. Util.	656	696	700	– 6
ALABAMA									
Civilian Labor Force – thous.	1,745	1,758	1,728	+ 1	Nonfarm Employment– thous.	1,312	1,319	1,313	– 0
Total Employed – thous.	1,532	1,526	1,469	+ 4	Manufacturing	334	327	334	0
Total Unemployed – thous.	212	232	259	–18	Construction	61	60	59	+ 3
Unemployment Rate – % SA	12.2	12.4	14.2		Trade	267	266	268	– 0
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	294	302	288	+ 2
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	218	218	216	+ 2
Mfg. Avg. Wkly. Hours	41.1	40.7	39.7	+ 4	Fin., Ins., & Real Est.	60	60	59	+ 2
Mfg. Avg. Wkly. Earn. – $	312	309	287	+ 9	Trans. Com. & Pub. Util.	64	71	72	–11
FLORIDA									
Civilian Labor Force – thous.	5,097	5,017	4,819	+ 6	Nonfarm Employment– thous.	3,783	3,811	3,679	+ 3
Total Employed – thous.	4,677	4,608	4,444	+ 5	Manufacturing	471	465	449	+ 5
Total Unemployed – thous.	419	409	375	+12	Construction	257	254	251	+ 2
Unemployment Rate – % SA	8.4	8.4	7.7		Trade	1,032	1,027	983	+ 5
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	585	600	585	0
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	929	931	893	+ 4
Mfg. Avg. Wkly. Hours	40.4	40.5	39.5	+ 2	Fin., Ins., & Real Est.	294	293	280	+ 5
Mfg. Avg. Wkly. Earn. – $	296	296	279	+ 6	Trans. Com. & Pub. Util.	205	231	229	–10
GEORGIA									
Civilian Labor Force – thous.	2,699	2,702	2,687	+ 0	Nonfarm Employment– thous.	2,247	2,237	2,207	+ 2
Total Employed – thous.	2,512	2,502	2,485	+ 1	Manufacturing	505	501	501	+ 1
Total Unemployed – thous.	188	199	201	– 6	Construction	109	108	107	+ 2
Unemployment Rate – % SA	6.9	7.1	7.4		Trade	540	537	524	+ 3
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	420	420	426	– 1
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	396	395	376	+ 5
Mfg. Avg. Wkly. Hours	41.2	40.8	39.3	+ 5	Fin., Ins., & Real Est.	121	121	118	+ 3
Mfg. Avg. Wkly. Earn. – $	289	287	264	+ 9	Trans. Com. & Pub. Util.	148	148	147	+ 0
LOUISIANA									
Civilian Labor Force – thous.	1,908	1,898	1,865	+ 2	Nonfarm Employment– thous.	1,577	1,584	1,601	– 2
Total Employed – thous.	1,678	1,659	1,662	+ 1	Manufacturing	192	192	202	– 5
Total Unemployed – thous.	229	239	202	+13	Construction	115	115	125	– 8
Unemployment Rate – % SA	12.3	12.4	11.5		Trade	367	366	369	– 1
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	304	306	296	+ 3
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	306	306	303	+ 1
Mfg. Avg. Wkly. Hours	39.5	40.4	40.7	– 3	Fin., Ins., & Real Est.	81	80	80	+ 1
Mfg. Avg. Wkly. Earn. – $	385	401	385	0	Trans. Com. & Pub. Util.	121	125	129	– 6
MISSISSIPPI									
Civilian Labor Force – thous.	1,057	1,078	1,058	– 0	Nonfarm Employment– thous.	777	783	781	– 1
Total Employed – thous.	929	933	937	– 1	Manufacturing	205	203	203	+ 1
Total Unemployed – thous.	129	146	121	+ 7	Construction	39	40	42	– 7
Unemployment Rate – % SA	12.3	12.3	11.6		Trade	163	163	164	– 1
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	168	172	169	– 1
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	120	123	119	+ 1
Mfg. Avg. Wkly. Hours	40.5	39.8	39.0	+ 4	Fin., Ins., & Real Est.	33	33	33	0
Mfg. Avg. Wkly. Earn. – $	270	266	250	+ 8	Trans. Com. & Pub. Util.	37	39	40	– 8
TENNESSEE									
Civilian Labor Force – thous.	2,166	2,159	2,134	+ 1	Nonfarm Employment– thous.	1,679	1,672	1,682	– 0
Total Employed – thous.	1,950	1,924	1,888	+ 3	Manufacturing	475	467	467	+ 2
Total Unemployed – thous.	216	234	247	–13	Construction	67	67	72	– 7
Unemployment Rate – % SA	10.4	10.1	11.2		Trade	365	365	367	– 1
Insured Unemployment – thous.	N.A.	N.A.	N.A.		Government	280	280	278	+ 1
Insured Unempl. Rate – %	N.A.	N.A.	N.A.		Services	322	322	323	– 1
Mfg. Avg. Wkly. Hours	40.9	40.4	39.0	+ 5	Fin., Ins., & Real Est.	80	80	81	– 1
Mfg. Avg. Wkly. Earn. – $	308	303	279	+10	Trans. Com. & Pub. Util.	81	82	83	– 2

Notes: All labor force data are from Bureau of Labor Statistics reports supplied by state agencies.
Only the unemployment rate data are seasonally adjusted.
The Southeast data represent the total of the six states.
The annual percent change calculation is based on the most recent data over prior year.

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Federal Reserve Bank of Atlanta
P.O. Box 1731
Atlanta, Georgia 30301

Address Correction Requested