AN EMPIRICAL EVALUATION OF THE COMMUNICATIVE EFFECTS ON INVESTORS OF CHANGES IN REPORTING PROCEDURES BY COMMERCIAL BANKS

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CHAPTER I

INTRODUCTION

Nature of the Problem

Accounting has been defined by the American Accounting Association as "the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information."[1] A primary user of publicly reported accounting data is the investor who uses data for the purpose of evaluating present or potential investments in the reporting entity.

A key element in the above definition of accounting is that of communication; for without communication, identification and measurement of economic information is of little consequence. Communication is accomplished through the media of accounting reports. In their reports, accountants desire and constantly strive to report relevant information in a manner which will convey this information to the users of those reports.

Several research studies have tested the effects of alternative accounting practices on the behavior of people. Williams and Griffin have summarized some of those studies;[2] however, no study has been

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[1]American Accounting Association, A Statement of Basic Accounting Theory (Sarasota, 1966), p. 1.

[2]Thomas H. Williams and Charles H. Griffin, "On the Nature of Empirical Verification in Accounting," Abacus (Dec., 1969), pp. 157-178.

found which tests the impact on actual investors' decisions of changes in reporting procedures (a change in reporting procedure occurs when an item which was reported in financial statements for prior periods but not included in computation of the final reported income figure is included in computation of the final reported income figure for the period of change). For example, a switch in reporting procedures by banks to report Gains or Losses from Sales or Exchanges of Assets in the income statement rather than in the analysis of transfers to Undivided Profits constitutes a change in reporting procedure. Changes in financial statement reporting procedures are made to provide more or better information to investors. Whether or not such changes succeed in providing information needs to be tested.

Purpose of Study

The purpose of this study is to contribute to available knowledge on the impact of accounting changes by evaluating communicative effects on investors of changes in reporting procedures in annual reports of commercial banks. In particular, this study determines whether or not material changes in the formats of income statements in 1969 annual reports of commercial banks provided information to investors. Stock market prices are the end results of investors' actions; therefore, the changes in stock market prices provide one vehicle in assessing whether or not the accounting changes provided information to investors.

Reasons for Selecting the Banking Industry for Study

The banking industry was selected for study for several reasons:

1. Several banks made changes in the formats of their 1969 financial statements which had sizeable effects on final reported incomes. Amounts of the items involved in the reporting changes averaged about 18% of net income for all commercial banks in the United States insured by the Federal Deposit Insurance Corporation. Percentages for individual banks sometimes varied considerably from that average; for example, the percentage for The Bank of New York Company, Inc. was about 40%. These changes appear to be large enough to permit development of methodology to test effects of the changes on investors.

2. In the recent past, a substantial controversy raged between various accounting and banking representatives over the changes tested in this study. The fact that the controversy became very heated provides evidence that the reporting changes were expected, by both accountants and bankers, to have sizeable effects on the future actions of interested parties, especially investors. It is of interest to ascertain the actual impact of the reporting changes on investors.

3. The banking system is at the heart of the financial system in the United States. Bank stock prices greatly affect abilities of banks to raise additional capital through the issuance of stocks. Thus, factors which influence these stock prices are deemed to be important for individual banks, the banking industry, and the free enterprise economic system.

4. Prior studies have found that reported earnings of banks are highly correlated with bank stock prices and are increasing in

importance. Close associations between reported earnings of banks and bank stock prices are desirable in this study because the accounting changes affected reported earnings and because effects of the changes are measured through stock prices. A myriad of factors affect stock prices. If effects of reported earnings are minute, an attempt to isolate effects of changes in accounting procedures may be futile. Strong relationships between reported earnings and stock prices give credence to the notion that it is feasible to isolate effects of changes in accounting procedures through analysis of stock price changes.

5. Dividend rates are generally major influences on stock prices. Prior studies have found dividend rates paid by banks to be conservative and consistent over time. Changes in stock prices of banks attributable to changes in dividend rates are therefore mitigated. Evidence of conservative and consistent dividend payout rates provides additional credence to the notion that it is feasible to isolate stock price changes attributable to changes in accounting procedures.

6. Most banks operate on a calendar year basis for accounting purposes, and banks are otherwise homogeneous relative to companies in other industries. Comparability between banks is thereby facilitated.

7. Philips and Mayne have reported that comparatively little academic research has been devoted to bank stock analysis and to bank financial statements.[3]

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[3]G. Edward Philips and Lucille S. Mayne, "Income Measures and Bank Stock Values," Empirical Research in Accounting: Selected Studies, 1970 (Chicago, 1970), p. 179.

Justification for Study

Because reporting procedures may affect the efficiency with which investors use accounting data, the manner in which accountants report data is of utmost importance in the communication process. By shedding light on unanswered questions concerning effects of reporting changes on investors, conclusions of this study will have very significant implications for the accounting profession in its efforts to communicate relevant data to investors via financial statements.

Numerous authors have indicated that research is needed to assess impacts of accounting information on investors. In his review of an empirical study of accounting methods and stock prices by Mlynarczyk, Neter commented that "the effect of accounting information on stock prices is an important and relevant topic."[4] In another review of the Mlynarczyk study, Hakansson made the following comment relative to Mlynarczyk's main hypothesis that investors did not distinguish between deferred tax accounting and flow-through tax accounting in valuing the earnings of companies in the electric utility industry:

> ...rejection or acceptance of the main hypothesis has important implications with respect to resource allocation in the economy. However, there are also other significant implications which, from the accountant's vantage point, are closer to home. The first of these concerns the role of the code chosen to communicate accounting information and its effect on the decoding process, i.e., the interpretation of financial statements by investors.[5]

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[4]John Neter, "Discussion of An Empirical Study of Accounting Methods and Stock Prices," Empirical Research in Accounting: Selected Studies, 1969 (Chicago, 1969), p. 85.

[5]Nils H. Hakansson, "Discussion of An Empirical Study of Accounting Methods and Stock Prices," Empirical Research in Accounting: Selected Studies, 1969 (Chicago, 1969), p. 82.

Ijiri commented:

> ...a more important question is whether these different profit figures affect managers' decisions, and, if so, under what conditions. Unless we can show that the different figures (or, more precisely, different patterns of figures) lead to different decisions under a given set of conditions, there is no point in arguing the merits or demerits of alternative accounting methods.[6]

The comments by Ijiri were specifically directed toward effects of alternative accounting methods on managers. His reasoning is logically extendable to assessing the impacts of alternative reporting procedures on investors. Finally, Gonedes stated:

> It appears that an important task for accounting researchers is to design and conduct tests that will indicate the (market-determined) informational content of (1) accounting numbers produced via a particular set of procedures, and (2) accounting numbers produced via alternative sets of accounting procedures. As indicated earlier, these tests may involve direct use of market reactions...[7]

The research methodology utilized in this study has not, to the author's knowledge, been employed heretofore. The research methodology will add to the store of empirical research tools available to test the effects of accounting data on investors. It is anticipated that this study will open the door to further research on effects of reporting changes involving other time periods, other industries, and other types of reporting changes.

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[6]Yugi Ijiri, The Foundations of Accounting Measurement (Englewood Cliffs, 1967), p. 150.

[7]Nicholas J. Gonedes, "Efficient Capital Markets and External Accounting," The Accounting Review, XLVIII, No. 1 (Jan., 1972), p. 21.

Scope and Methodology

This study is historical in nature. The methodology is designed to empirically test the effects on investors of certain changes in reporting requirements of commercial banks in 1969 annual reports. Major reporting changes involved the provision for loan losses, securities gains or losses, and designation and composition of the final reported earnings figure.

Banks which had material changes in reporting procedures are designated as test banks, and banks which had immaterial changes in reporting procedures are designated as control banks. Test and control banks are matched to achieve homogeneity. Base years (1961 through 1968, inclusive) price-earnings ratios of a test bank are pairwise correlated with the price-earnings ratios of each matched control bank to obtain a prediction of the test bank's price-earnings ratio for the year of reporting change (1969). The actual price-earnings ratio of the test bank is compared with the predicted price-earnings ratio to determine whether unexpected changes occurred. Analyses of unexpected changes are made to ascertain the impacts on investors of the changes in reporting procedures.

The correlations in this study reflect relationships between base years price-earnings ratios for the test and control banks. The relationships may be used to predict a price-earnings ratio for the test banks only if the price-earnings ratios for the control banks for the test year are known. Thus, the methodology is designed for posterior analysis rather than prediction of future price-earnings ratios.

The analysis of investor reactions to the reporting changes is a macro analysis based on the aggregate effects as reflected in stock

prices as related to reported earnings of the banks. This approach may be contrasted with a micro approach whereby one focuses on specific behavior of a particular investor.

Test of Market Efficiency

The efficient market hypothesis has been viewed in different ways. One way to view market efficiency or inefficiency is in terms of functional fixation. Functional fixation is a term applied by Ijiri, Jaedicke, and Knight to managers who rely on certain selected accounting data without analyzing the composition and quality of those data.[8] The term was extended to investors by Mlynarczyk.[9] Beaver commented on functional fixation as follows:

> ...In essence, the implication of the functional fixation hypothesis is that two firms (securities) could be alike in all "real" economic respects and yet sell for different prices, simply because of the way the accountant reported the results of operations. The implication is that the market ignores the fact that observed signals are generated from different information systems. Hence, it does not distinguish between numbers generated by different accounting methods either over time or across firms. Needless to say, this implies market inefficiency...[10]
>
> (Emphasis added)

Beaver's view is based on the premise that market efficiency is accomplished only by correct interpretation and use of the data by

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[8]Yugi Ijiri, R. Jaedicke, and K. Knight, "The Effects of Accounting Alternatives on Management Decisions," Research in Accounting Measurement (Sarasota, 1966), pp. 186-199.

[9]F. A. Mlynarczyk, "An Empirical Study of Accounting Methods and Stock Prices," Empirical Research in Accounting: Selected Studies, 1969 (Chicago, 1969), pp. 63-89.

[10]William H. Beaver, "The Behavior of Security Prices and Its Implications for Accounting Research (Methods)," published as Part II of Report of the Committee on Research Methodology in Accounting, The Accounting Review, supplement to XLVII (1972), p. 420.

investors. Correct interpretation of the data by investors in the two firms mentioned by Beaver would yield equilibrium prices which contain no difference attributable to differing accounting methods.

Abdel-khalik argues that correct interpretation and use of the data by investors is not a requirement for market efficiency.[11] Allowance is made for nonoptimal equilibrium price levels since investors' decisions are based on expectations about the future and investors do not always assimilate and use information in ways to yield optimality. Abdel-khalik stated:

> ...The fact that the market reacts to accounting signals implies the presence of ... an informational content. But to imply that another accounting alternative measuring the same signal will induce a similar reaction is an unjustifiable assertion. Furthermore, it should be emphasized that using any other accounting alternative in generating accounting numbers does not imply that the market will be inefficient. Efficiency is a property of the market, not of accounting numbers, and, therefore, other things being equal, the reaction of the market will not be any less efficient but it might be quite different. Accordingly, drawing implications from the efficient market hypothesis to accounting does not shed light on the nature of the accounting process or its alternatives and such implications may not be carried any further than showing the relevance of accounting data unless, of course, the scope of research expands to evaluate the differential effect of alternatives on the market performance.[12] (Emphasis added)

Thus, Abdel-khalik's view of the efficient market hypothesis allows for differential effects on equilibrium prices from economic data reported under alternative accounting methods. This condition can not exist in an efficient market as viewed by Beaver.

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[11]A. Rashad Abdel-khalik, "The Efficient Market Hypothesis and Accounting Data: A Point of View," The Accounting Review, XLVII, No. 4 (Oct., 1972), pp. 792-793.

[12]Ibid.

This study concerns the impact of changes in reporting procedures on investors and not with testing the efficient market hypothesis as envisioned by Abdel-khalik. However, a conclusion on the impact of changes in reporting procedures on investors necessarily suggests existence or nonexistence of an efficient market as envisioned by Beaver.

Brief Statement on Findings of Study

Findings in this study suggest that the changes in reporting procedures made by the test banks in their 1969 annual reports did not provide information to investors in such a manner that stock prices were significantly affected. Results of the tests are strong and consistent in support of that conclusion.

Definitions of Terms

Selected terms used in this study are defined in Appendix A. The terms are listed in alphabetical order for easy reference.

Organization of Thesis

Chapter I has presented an introduction.

Chapter II presents background information on financial reporting by commercial banks and on items involved in the reporting changes tested.

Chapter III develops a theory of investors' responses and stock price determination and explains, within the framework of that theory, how investors used accounting information.

Chapter IV reports results of selected prior research relevant to this study.

Chapter V states the hypothesis to be tested.

Chapter VI explains the development of and justification for the empirical procedures used.

Chapter VII contains the empirical findings.

Finally, Chapter VIII summarizes this study, discusses the assumptions and limitations in view of the data and the empirical procedures used, and presents the author's conclusions and suggestions for further research.

CHAPTER II

FINANCIAL REPORTING BY COMMERCIAL BANKS

Historical Information

Prior to 1964 banks were exempt from the Securities Acts due to their regulated status; thus, banks were not subject to financial information disclosure requirements of the Securities and Exchange Commission. Securities of less than a dozen banks were marketed through a national securities exchange, such as the New York Stock Exchange, which had financial information disclosure regulations. Only a small percentage of banks were audited by independent Certified Public Accountants. Financial disclosures were minimal. Financial statements emphasized financial position rather than results of operations. Edward T. Shipley, former chairman of the Accounting Principles Committee of the American Bankers Association and past president of the Association for Bank Audit, Control, and Operations, commented on bank reporting as follows:

> Prior to the Securities Acts Amendments in 1964, not a great deal was done to provide bank shareholders and the investment community with statements, but most banks limited their disclosure of their financial affairs to the dissemination of the reports of condition (i.e., balance sheets) required by the various supervisory authorities. ... Statements of financial condition did not reveal earnings except as they might perhaps be deducible by comparison of surplus and undivided profit figures with the same accounts disclosed in earlier statements; comparative figures, showing changes from one statement to the next, were never required and seldom provided. While most supervisory authorities did require

the filing of annual reports of earnings and dividends, those were unavailable to the public.[1]

Presumably due to recognition of increasing activity in trading of bank securities and of widespread ownership of such securities, the Securities Acts were amended in 1964 to vest regulatory authority and responsibility for developing and enforcing bank financial disclosure and reporting regulations with the Comptroller of the Currency for national banks, with the Federal Reserve Board for state member banks, and with the Federal Deposit Insurance Corporation for insured state nonmember banks.

In late 1964 the Federal Reserve Board[2] and the Federal Deposit Insurance Corporation[3] issued substantially identical codes, generally known as Regulation F, which specified rules for financial and other information to be made public by state-chartered banks with more than $1,000,000 of assets and more than 750 stockholders. In 1967 the required number of stockholders was lowered to 500.

M. A. Schapiro & Co., Inc. reported the percentage of Federal Reserve state member banks and all state nonmember insured banks covered by the rules was only 2.1 per cent under the 750 shareholder requirement and 3.2 per cent under the 500 shareholder requirement.[4]

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[1]Edward T. Shipley, "Bank Accounting Principles: A Progress Report," Law and Contemporary Problems, XXXII, No. 1 (Winter, 1967), p. 132.

[2]Federal Reserve Board, Securities of Member State Banks (Washington, 1964).

[3]Federal Deposit Insurance Corporation, Bank Securities Disclosure Regulations (Washington, 1964).

[4]M. A. Schapiro & Co., Inc., Bank Stock Quarterly (New York, Mar., 1967), p. 15.

However, Mills and Luh noted that smaller banks were urged to follow the reporting rules required for larger banks, so issuance of the reporting regulations by the Federal agencies had broader impact than was indicated by the small percentage of banks which literally was subject to the requirements.[5]

Although national banks were required to issue annual reports to stockholders effective with their 1963 annual reports, the Comptroller of the Currency did not issue regulations for these banks aimed at establishing full disclosure and uniform accounting procedures until May, 1967. Mills and Luh compared these regulations with Regulation F and found differences in methods of distributing information to the public, showing of details in financial statements, and treatment of bond discount.[6]

Prior to issuance of Regulation F, many banks carried securities gains or losses (net of income tax effect) and provisions for loan losses (net of income tax effect) directly to Undivided Profits or to special reserve accounts. However, included in regulations issued by the regulatory agencies were requirements that banks provide their stockholders with annual financial statements which included an income statement and which disclosed amounts relating to securities gains or losses and provision for loan losses. Appendix B contains an income statement format used by many large publicly-held banks by the end of 1968.

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[5]Robert H. Mills and Frank Luh, "Financial Reporting of Commercial Banks," The Journal of Accountancy (Jul., 1968), p. 49.

[6]Ibid.

The Bankers-Accountants Controversy Over Format of Bank Income Statements

Over the years controversy developed between bankers and accountants over use of the current operating performance type of income statement. The current operating performance income statement reflects results from regular and recurring operations. The primary idea underlying such income statements is that predictions of future operating results are facilitated by excluding results from material extraordinary events and transactions. The all-inclusive income statement includes results from material extraordinary events and transactions under the premise that an income statement is complete only if it includes all items which affect earnings for the reporting period, including material extraordinary items.

Shipley summarized the controversy in the following manner:

> Among the subjects of continuing discussions in bank financial reporting is the possible adoption of the so-called 'all-inclusive' income statement. This concept means simply that the income statement should reflect all income and expense items, including even extraordinary, nonrecurring items; the alternative approach reflects the idea that the income statement should reveal current operating performance and that extraordinary items, unrelated to operations for the period, should by-pass the income statement and be directly credited to or charged against the capital accounts. The SEC and the AICPA have tended to favor the all-inclusive income statement, although extraordinary items are expected to be presented "below the line," as additions to or deductions from net operating income in arriving at net income. In banking, the debate has centered on two important items, the creation of a bad debt reserve and the treatment of gains or losses on securities transactions. There are substantial reasons why the generally preferred all-inclusive income statement would be detrimental to the best interests of banks and investors in bank securities.[7]

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[7]Shipley, p. 144.

Issuance of Regulation F in 1964 did not resolve the controversy. Regulation F simply represented a compromise and did not fully satisfy either income statement philosophy.

Major items involved in the controversy were:

1. Provision for loan losses. Bankers preferred to report a provision for loan losses (net of income tax effect) as a 'Nonoperating deduction' below the final reported income figure designated as 'Net operating earnings' (See Appendix B). Accountants felt that a normal provision for loan losses should be included at the gross amount in 'Operating expenses' with the deduction for income taxes applicable to operations appropriately adjusted for its effect.

2. Securities gains or losses. Bankers preferred to report 'Securities gains or losses' (net of income tax effect) as a 'Non-operating deduction' below the final reported income figure designated as 'Net operating earnings' (See Appendix B). Accountants felt that 'Securities gains or losses' (net of income tax effect) should be reported below the operating income figure but included in determination of the final reported income figure to be designated as 'Net income.'

3. Designation and composition of the final reported income figure. Bankers preferred that the final reported income figure be designated as 'Net operating earnings' (See Appendix B). Accountants preferred that the final reported income figure be designated as 'Net income' which would be computed by increasing or decreasing the operating income figure (computed with inclusion of the provision for loan losses as discussed above) by the 'Securities gains or losses' (net of income tax effect) and 'Extraordinary charges or credits' (net of income tax effect).

What was the reason for the controversy? The answer to this question was provided by the editors of The Journal of Accountancy when they stated:

> Some accountants may wonder why the Institute appears to have incited a conflict with bankers. . . . The answer should be clear: CPAs are increasingly conscious of their responsibilities to third parties who may rely on opinions of auditors that statements are fairly presented. The Institute believes that under the continually rising standards of financial reporting many bank income statements are simply not fairly presented from the viewpoint of investors.[8]

Arguments presented by bankers and by accountants in support of their positions in the controversy are not germane to this study. If interested in these positions, the reader is referred to Hoyt.[9]

Developments on the Controversy Through 1969

In December, 1966 the Accounting Principles Board of the American Institute of Certified Public Accountants issued Opinion Number 9 entitled "Reporting the Results of Operations."[10] This opinion basically adopted the all-inclusive income statement approach. However, commercial banks were specifically exempted from provisions of the opinion pending completion of a special study on bank reporting being conducted at the time.

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[8]"Editors' Notebook: Consistency Gap - Bank Accounting," The Journal of Accountancy (Aug., 1968), p. 29.

[9]Hugh A. Hoyt, "The Relative Predictive Capacity of Two Bank Earnings Measures: An Empirical Evaluation" (unpub. Ph.D. dissertation, Michigan State University, 1970), pp. 17-33.

[10]Accounting Principles Board of the American Institute of Certified Public Accountants, Opinions of the Accounting Principles Board - Number 9: Reporting the Results of Operations (New York, 1967), pp. 105-140.

In January, 1968 results of the special study by the Committee on Bank Accounting and Auditing of the American Institute of Certified Public Accountants, which basically adopted the all-inclusive income statement philosophy, were published.[11] Subsequently, in March, 1969 the Accounting Principles Board issued Opinion Number 13, extending provisions of Opinion Number 9 to commercial banks.[12] These actions by the American Institute of Certified Public Accountants brought the controversy between bankers and accountants to a head.

Agreement on many of the major points in the controversy was reached in July, 1969 between representatives of the American Institute of Certified Public Accountants, the American Bankers Association, the three Federal banking regulatory authorities, and the Securities and Exchange Commission. This agreement was substantially in conformity with recommendations of the American Institute of Certified Public Accountants. Subsequent to the agreement, the three Federal bank regulatory agencies required banks under their jurisdictions to report the 'Net income' figure in their annual reports and to employ other new accounting and reporting procedures, beginning with 1969 annual reports.

To add perspective on required changes in reporting procedures, which were the major items involved in the bankers-accountants controversy, Appendix C contains an income statement format suitable for inclusion in annual reports by banks under the 1969 Federal bank

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[11]Committee on Bank Accounting and Auditing of the American Institute of Certified Public Accountants, Audits of Banks (New York, 1968).

[12]Accounting Principles Board of the American Institute of Certified Public Accountants, Opinions of the Accounting Principles Board - Number 13: Amending Paragraph 6 of APB Opinion No. 9, Application to Commercial Banks (New York, 1969), pp. 199-202.

regulatory agencies requirements, and Appendix D reconciles differences between the final reported income amounts under reporting formats used before the 1969 changes (Appendix B) and after the 1969 changes (Appendix C). In addition, major required changes in reporting procedures and in accounting practices are summarized in Appendix E.

Current Developments on Items Involved in the Controversy

Provision for Loan Losses

For tax years starting before July 12, 1969, banks using the reserve method were allowed income tax deductions for additions to loan loss reserves of 0.8% of eligible year-end loans outstanding until total reserves built up to a maximum of 2.4% of eligible year-end loans outstanding. The 1969 Tax Reform Act changed the formula to reduce the maximum total reserves to 1.8% of eligible year-end loans outstanding for taxable years commencing after July 11, 1969 and before 1976, and scheduled further reductions in the percentage to 1.2% and to 0.6% for taxable years beginning after 1975 and 1981, respectively. As an alternative to using the maximum reserves formula, a bank may compute reserves on the basis of its average loan loss experience for the taxable year and the five preceding taxable years. For taxable years commencing after 1987, each bank will be required to base provisions for loan losses on average loan losses experienced.

To the extent that use of the income tax formula allows provisions for loan losses in excess of loan loss rates being experienced, provisions for contingencies are being made. The 1969 Tax Reform Act reduces and eventually eliminates loan loss contingency provisions.

For financial statement reporting for 1969 and subsequent years, only normal provisions for loan losses based on loan loss rates being experienced are deducted in the income statement. Provisions for contingencies are charged to Undivided Profits. Therefore, the income tax law changes will reduce the charges to Undivided Profits. No change in amounts reported in the income statements results from the 1969 Tax Reform Act.

Securities Gains or Losses

Federal Income Tax Law Changes. For taxable years beginning before July 12, 1969, banks and other corporations were permitted to include net realized gains from sales or exchanges of securities (other than securities treated as being sold as dealers) held over six months in determination of gains which were subject to favorable capital gains tax rates. For non-bank corporations, net capital losses were not deductible in the taxable year of the loss. However, banks experiencing such net losses could deduct the losses from income taxable at ordinary rates for the taxable year of the loss. In a net securities gain year, losses on sales of securities served to offset amounts treated as capital gains; therefore, banks had incentive to realize all such losses in net securities loss years when the losses could be deducted from income taxable at ordinary rates. In a net securities loss year, gains on sales of securities served to offset losses deducted from income taxable at ordinary rates; therefore, banks had incentive to realize all such gains from sales of securities held over six months in net securities gain years when such gains qualified for favorable capital gains treatment. The incentive for a particular bank to realize its

securities losses in one year and to realize its securities gains in a different year provides a reason that securities gains or losses for an individual bank in a particular year were likely to be substantial in relation to the final reported earnings figure for that year.

Effective for taxable years commencing after July 11, 1969, the Tax Reform Act eliminated favorable capital gains treatment previously available to banks for net realized securities gains. The gains are includible in income taxable at ordinary rates. Since the advantage from realizing all securities gains in certain taxable years and all securities losses in other taxable years has been curtailed, it is anticipated that more offsetting of the gains and losses in a particular year will occur with the result that fluctuations of net securities gains or losses will likely be reduced compared to what the fluctuations would have been under the prior tax law.

Proposed Changes in Valuation of Marketable Securities in Financial Statements. Prior to its termination, the Accounting Principles Board of the American Institute of Certified Public Accountants had under consideration a proposal that marketable securities be reported in financial statements at current market values. Action on the proposal was deferred for the newly established Financial Accounting Standards Board. If such a proposal is adopted and is made applicable to banks, it is likely that the amounts of securities gains and losses reported by banks in their future financial statements will be materially affected.

Impact of Current Developments on This Study

Current developments have no impact on historical tests utilized in this study. However, such developments are of interest when considering implications of the findings of this study.

CHAPTER III

A THEORETICAL FRAMEWORK FOR STOCK PRICE DETERMINATION AND FOR INVESTOR DECISION-MAKING

Significant relationships between reported earnings and stock prices are assumed. Support for such relationships is offered in two forms: a theoretical model and a review of prior empirical research.

Chapter III develops a theoretical framework to support the assumed relationships between reported earnings and stock prices. The developed framework does not deal with the normative issue of how investors should act, but instead deals with the pragmatic issue of how investors do act. Chapter IV contains the review of prior research.

True Value of a Share of Common Stock

An investor buys a share of common stock for the purpose of receiving payments attributable to that share in the future. Those payments are in the forms of cash dividends that will be received during the investment period and the cash proceeds that will be received upon disposal of the investment. Consideration should also be given to benefits such as stock dividends, stock options, stock warrants, and stock rights associated with the investment.

The cash flows associated with the investment relate to different points in time. Due to the time value of money, the numbers of dollars

must be adjusted to a common point in time to make them comparable. The procedure for accomplishing this is known as discounting. The market normally associates higher expected returns with higher risk of receiving those returns. Thus, the discount rate used in computing the true value of a share of stock should be the rate commensurate with the risk associated with receiving the returns from that share of stock. Reasoning similar to this was expressed in 1938 by Williams and has strong support in current literature.[1]

Investor's Reactions to his Environment

Investors cannot ascertain with certainty the true value of a share of common stock. In his real world of uncertainty, each investor arrives at an estimated value of the share based on his expectations of related future cash flows and his judgment of the associated risk and discount rate. If his estimated value exceeds the market price for the share, the investor will presumably buy (or hold) the share, assuming he has the means to do so; and, conversely, if the value for the share is estimated to be less than the market price for that share, the investor presumably will sell the share (if any) which he owns.

The investor makes continuous decisions to hold, buy, or sell shares of common stock. Holding a share comprises continuous decisions in the sense that the investor continually opts to hold the share rather than exercising the alternative of selling. The environment in which these continuous decisions are made is unstable and uncertain.

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[1]J. B. Williams, The Theory of Investment Value (Cambridge, 1938).

With an unstable and uncertain environment, the theory of the investor's decision-making process must center on his short-run adaptive reactions. The goal of the investor has been specified as maximization of the present value of the future cash flows from investments. Short-run adaptation to the unstable environment may involve alteration of this goal; however, it is unlikely that the goal will be seriously violated.

March and Simon maintain that an individual in an uncertain situation will increase his search for clarification of consequences of alternatives under consideration.[2] To obtain clarification about possible future performance of stock under consideration, the investor seeks additional information about the company on which he can base his expectations. However, the investor is limited by the amount of information available and by his ability to use such information in his deliberations. The latter limitations is referred to by March and Simon as bounded rationality.[3] Due to bounded rationality the decision-maker bases his decisions on a limited, approximate, and simplified model of the real situation. Information for this model is chosen by the investor based on his past experiences and is commonly derived from such sources as the company's financial statements, investment services, financial analysts, company representatives, and friends.

March and Simon assert that the decision-maker, to avoid uncertainties, attempts to structure his environment by adopting standard

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[2]James C. March and Herbert A. Simon, Organizations (New York, 1958), p. 115.

[3]Ibid., p. 200.

decision-making rules.[4] Such rules rely on learned behavior and, thus change slowly over time; so when information of a sort experienced repeatedly in the past becomes available, response will ordinarily be highly routinized.

Use of Published Financial Statements by the Investor

From a theoretical viewpoint, it has been argued that an investor attempts to reduce uncertainties of his environment through using short-run adaptive reactions, obtaining additional information, and using simplified and standard decision-making rules. Since future cash flows attributable to a share of common stock cannot be ascertained with certainty, the investor must rely on information and procedures which are operationally feasible to predict future cash flows. It appears logically and operationally feasible that simplified and standard decision-making rules are used by the investor whereby data on past operations serve as an imput into a decision model which attempts to predict results of future operations of a company.

Accounting information in financial statements of companies may well serve as inputs into the investor's decision model, as those data represent summaries of a myriad of transactions and events which occur. The theoretical framework which has been developed contends that investors have limited capacities for assimilating and using information. Under this bounded rationality concept, investors are likely to rely on data in financial statements to avoid informational overloads.

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[4]Ibid., p. 140.

In addition, data in financial statements are presumed to be useful for investors because many bankers and accountants have indicated that the data are furnished for the expressed purpose of providing information to investors. Walter B. Wriston, president of the First National City Bank of New York, has stated:

> The basic objective of releasing information about the banks or corporation is to supply the shareholders with information that is full, frank and complete about the way their corporation or bank is performing in order that they may make a judgment about the investment value of the shares that they hold or may plan to acquire.[5]

A substantial number of empirical studies, some of which are discussed in the following chapter, have shown that accounting data in financial statements are widely used by investors. Conceptually, investment opportunities are dependent on the market price of the stock which the investor holds or plans to acquire. Since stock prices will likely be affected by actions of large numbers of investors, the investor should be interested in the financial statement data to apprize anticipated resulting effects on stock prices and on his investment opportunities.

Use of Reported Earnings by the Investor

The American Institute of Certified Public Accountants, which spearheaded the accountants' side of the bankers-accountants controversy, has placed increased emphasis in recent years on reported earnings, as opposed to balance sheet values, and has geared many of its pronouncements and requirements toward making earnings figures more

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[5]Walter B. Wriston, "Banker Scores New Accounting," The New York Times, Sec. F (Apr. 19, 1970), p. 7.

useful to investors. Underlying these efforts is a belief that reported earnings are relevant to investor decisions and are actually used by investors. In fact, the whole bankers-accountants controversy rested on assumptions by all the parties involved that changes in reporting would have substantial effects on investors. Otherwise, the controversy would not have arisen and become so heated.

In the stock valuation theory, it was stated that future cash flows are what the investor seeks. How can it also be contended that reported earnings, which are not presented in terms of cash flows, are relevant for the investor? The answer is that the investor is primarily interested in future cash flows to himself (comprising cash dividends and the selling price of his share of common stock) and not the past cash flows to and from the bank itself. Cash received by banks may be expended for interest, salaries, purchases of assets, retirement of debts, and a variety of other purposes. Analysis of past cash flows normally provides little basis for assessment of future dividends and stock prices. A better starting point from which to assess potential future dividends and stock prices is the earnings record of the bank. This is particularly true when it can be shown that there is a strong relationship between levels of earnings and dividends.

Research by Adams[6] and by Standard and Poor's Corporation[7] has indicated that cash dividends paid by banks have consistently represented a conservative portion of available earnings and that there has

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[6]Sherman Adams, "Are Bank Dividend Policies Too Conservative?," Innovations in Bank Management - Selected Readings, ed. Paul Jessup (New York, 1969), p. 205.

[7]Standard and Poor's Corporation, Industry Surveys - Banking and Savings & Loan Basic Analysis, Sec. 2 (Apr. 29, 1971), pp. B 41-42.

been considerable adherence to traditional payout policies. If it is reasonable to assume that traditional payout policies of the bank under investigation will continue, an investor may predict future cash dividends based on estimates of future earnings of the bank. But can past earnings be used to validly predict future earnings? Again, empirical evidence is reported in the following chapter. In theory, past and currently reported earnings should be of use in predicting future earnings. The American Accounting Association has stated:

> Almost all external users of financial information reported by profit-oriented firms are involved in efforts to predict the earnings of the firm for some future period. ... The past earnings of the firm are considered to be the most important single item of information relevant to the prediction of future earnings...[8]

Sprouse stated that "The primary purpose of the measurement of last year's income reported to investors is to provide a basis for predicting future years' income."[9] The Study Group on the Objectives of Financial Statements issued a very recent statement along the same lines:

> Earnings as reported in financial statements have come to be, and in all probability will continue to be, the single most important criterion for assessing the enterprise's accomplishments and earning power.[10]

Thus, reported earnings should be useful to investors in predicting future earnings, and predictions of future earnings should be

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[8]American Accounting Association, A Statement of Basic Accounting Theory, pp. 23-24.

[9]Robert T. Sprouse, "The Measurement of Financial Position and Income: Purpose and Procedures," Research in Accounting Measurement, eds. Robert Jaedicke, Yuji Ijiri, and Oswald Neilsen (Sarasota, 1966), p. 106.

[10]Study Group on the Objectives of Financial Statements, Objectives of Financial Statements (New York, 1973), p. 31.

helpful in predicting future dividends. To the extent that predicted earnings exceed amounts of predicted cash dividends, future net assets (assets less liabilities) of the bank will be increased, presumably resulting in increased stock prices. Therefore, reported earnings may be of some use to the investor in estimating future stock prices.

Still another reason why investors are interested in reported earnings is that investors often consider the variability in reported earnings in assessing risk associated with an investment in the share of common stock. Both risk and expected returns are weighed by investors when selecting between alternative investment opportunities.

In 1952 Markowitz publicized a new dimension to stock investing; namely, that of portfolio selection.[11] Markowitz recognized that an investor, while seeking highest expected returns, generally wishes to avoid risk. For an investor who owns more than one security, Markowitz associated risk with the investor's portfolio, so that riskiness of the portfolio depends on interrelationships between securities as well as attributes of individual securities. An efficient portfolio is one which either maximizes expected returns at a given degree of risk or minimizes risk for given expected returns. There exist large numbers of efficient portfolios, each of which comprises different combinations of risk and expected returns such that higher risk is associated with higher expected returns and lower risk is associated with lower expected returns. An investor prefers individual securities which move his portfolio toward the efficient portfolio determined by his tastes and preferences for risk and expected returns. In addition to the attribu-

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[11]Harry M. Markowitz, "Portfolio Selection," The Journal of Finance, VII, No. 1 (Mar., 1952), especially pp. 77-91.

tes of individual securities discussed earlier, interrelationships between securities must be assessed under portfolio theory.

To determine the extent that accounting income numbers are helpful in assessing portfolio risk, defined as covariances of returns from assets, Ball and Brown tested the association between income numbers and risk characteristics of firms by computing cross-sectional correlations between measures of covariability in accounting income numbers and covariability in ex post rates of return. They tentatively concluded that at least 30% to 40% of risk information is conveyed by accounting income numbers.[12] Beaver, Kettler, and Scholes also tested the association between accounting and market risk data. Support was found for the argument that accounting risk measures are reflected in market price based risk measures and that the degree of association was highest with earnings variability.[13]

The above discussions and empirical evidence on the use of reported earnings by investors contained in the following chapter present substantial support underlying the assumption of this study that there is a significant relationship between reported earnings and stock market prices. The earnings figure in which the investor is interested is not the total earnings of the company but rather the portion of those earnings attributable to a share of common stock; that is, the reported earnings-per-share. Hence, earnings-per-share is used in this study.

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[12]Ray Ball and Philip Brown, "Portfolio Theory and Accounting," Journal of Accounting Research, VII, No. 2 (Autumn, 1969), pp. 314-321.

[13]William H. Beaver, Paul Kettler, and Myron Scholes, "The Association Between Market Determined and Accounting Determined Risk Measures," The Accounting Review, XLV, No. 4 (Oct., 1970), pp. 654-682.

Investor's Reactions to Changes in Reporting Procedures in Financial Statements

It was stated previously that the investor attempts to structure his environment to avoid uncertainties through the use of standard decision-making rules so that when information of a sort that has been experienced repeatedly in the past becomes available, his response will ordinarily be highly routinized. Allowance must be made for the possibility that the investor may depart from or amend his standard decision-making rules if he recognizes information of a type which has not been experienced repeatedly in the past. Based on this reasoning, let us explore the effect that changes in reporting procedures in the financial statements may have on the investor's decision-making.

This study determines whether or not information was provided by changes in reporting procedures. For this purpose, information is defined as an item which leads to a change in the equilibrium value of the current market price of the stock. A change in the stock price results from changes in investors' expectations with respect to the stock.

Expectations of the Investor Changed due to the Changes in Reporting Procedures

For many years, accountants have advised users of financial statements against blind acceptance and use of the final reported earnings figure. For example, the Committee on Accounting Procedure of the American Institute of Certified Public Accountants has stated:

> ...the committee has been mindful of the disposition of even well-informed persons to attach undue importance

> to a single net income figure and to earnings per share shown for a particular year...[14]

A net income or earnings-per-share figure for a single year is based on many estimates in the accounting measurement process and such a figure for one company may not be strictly comparable with a net income or earnings-per-share figure for other companies or for the same company in different years due to differing accounting practices. In spite of these warnings, there is ample evidence in the financial literature that investors rely heavily on the final reported earnings figure. Following are examples of such comments from Forbes: "The annual net earnings figure tends to have a magical significance not only for the ordinary investor but for the security analysts,"[15] and:

> People tend to demand this kind of simplicity, and the single, conveniently packaged net earnings figure has always seemed to fill the bill perfectly... On their reliability, billions of investment dollars are wagered.[16]

If an investor has repeatedly used the final reported earnings figure in the past in his decision-making processes and his response has become routinized with respect to that figure, Hoyt has said the investor suffers from single-figure fixation.[17]

An investor who has single-figure fixation includes the final reported earnings figure after the reporting changes in his old decision model in the same standard, routinized fashion as in the period(s)

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[14]Committee on Accounting Procedure of the American Institute of Certified Public Accountants, Accounting Research and Terminology Bulletins - Final Edition (New York, 1961), p. 65.

[15]"What are Earnings? The Growing Credibility Gap," Forbes (May 15, 1967), p. 28.

[16]Ibid.

[17]Hoyt, pp. 34-35.

before the reporting changes. By so doing, the changes in reporting procedures have an impact on the investor's decision even though he does not specifically identify the changes.

The changes in reporting procedures may also provide information when the investor does not have single-figure fixation. In this case the investor analyzes the facts underlying the final reported earnings figure. However, prior to the reporting changes, the investor chose not to include items involved in the reporting changes in his decision model and, as a result of the reporting changes, decides to include the items; in other words, the reporting changes cause the investor to change his expectations. Thus, results are the same as if the investor has single-figure fixation: the final reported earnings figure after the changes is included in the investor's unchanged decision model.

Expectations of the Investor Not Changed due to the Changes in Reporting Procedures

An investor who does not have single-figure fixation analyzes the financial statements and identifies the items involved in the reporting changes. If this investor is satisfied with his consideration of these items in the past, no additional information is provided by the changes in reporting procedures. Necessary adjustments are made to the investor's decision model or to the data entered into his decision model so the changes in reporting procedures will not affect his decision.

Suppose such an investor had knowledge in prior years of a particular item which was not included in computation of the final reported earnings and, in the current year, the reporting is changed to

include that item in the income statement. Assuming methods of calculating total amounts involved did not change, one may conclude A PRIORI that the investor's expectations should not be affected in large measure by the changes in reporting procedures.

Several authors, including Standard and Poor's Corporation, have pointed out that professional investors are an important factor in the bank stock market.[18] Cannot one assume that such investors make adjustments to the final reported earnings figure? A person is not on sure grounds by naively reaching such a conclusion, as witnessed by the following conflicting views expressed by Wilson: "no one on Wall Street is making much of an allowance for the way earnings are reported. This is surprising since the market is now supposedly dominated by professionals," and "We've always had differing methods of reporting earnings, but in the past the professionals have made allowances for them."[19] Editors of The Wall Street Journal recently stated: "Obviously, many analysts failed to look very far behind Equity Funding's neat progression in earnings per share..."[20]

If a sufficient number of investors changed their expectations due to the changes in reporting procedures, the stock market price should be affected. Through analysis of stock prices, this study investigates whether or not the changes in reporting procedures made by commercial banks in 1969 annual reports provided information to investors.

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[18]Standard and Poor's Corporation, p. B 31.

[19]Bob Wilson, "Two-Thirds' Exposure," Barron's (May 6, 1968), pp. 29-30.

[20]"Review and Outlook - On Equity Funding," The Wall Street Journal (May 25, 1973), p. 8.

Market Price for a Share of Common Stock

If an investor's estimated value for a share of common stock exceeds the market price of that share, the investor will be willing to pay more than the market price to obtain the share; in fact, he will be willing to pay amounts up to his estimated value. If a sufficient number of investors hold similar expectations and have the means to act, the resulting demand for the stock will tend to cause the market price of a share to increase toward the estimated value. Conversely, if an investor's estimated value is below the market price for a share of common stock; the investor would sell the share at the market price, and, if a sufficient number of investors hold similar expectations, the decreased demand for the stock will tend to cause the market price of a share to drop toward the estimated value.

In an efficient market, such as the major securities exchanges, the market price of a share of common stock at a given time represents an equilibrium price based on the supply and demand for that stock and should be a good estimate of the true value of that share of stock as perceived by a large number of investors. However, not all investors hold the same expectations; therefore, the market price of the stock represents the mean of the distribution of the values associated with investors' expectations.

Information consists of any item which causes the market price of a stock to change (other than changes due to random fluctuations) by changing investors' expectations of future performance, risk, and/or discount rate associated with the stock. In an efficient market, information is disseminated instantaneously so very little delay is experienced in adjustment of the stock prices to information.

The foregoing reasoning follows the efficient market hypothesis in its semi-strong form which maintains that the market equilibrium prices of securities fully reflect all publicly available information and that these equilibrium prices react instantaneously and in an unbiased fashion to information. To date, empirical research heavily supports the efficient market hypothesis up to and including the semi-strong form. Lorie and Hamilton have reviewed much of this research.[21]

This study tests the impact on equilibrium price rather than on stock valuation by an individual investor. The effect on an individual investor's valuation is only an intermediate result; the end result is the effect on the equilibrium price and is viewed as being more critical by this study.

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[21]James H. Lorie and Mary T. Hamilton, The Stock Market - Theories and Evidence (Homewood, 1973), pp. 70-97.

CHAPTER IV

REVIEW OF PRIOR RESEARCH

This chapter presents a review of the literature to (1) reflect aspects of the previously developed theory which have been subjected to research, (2) determine factors identified by prior research as having material impacts on stock market prices, and (3) comment on research which has a bearing on the methodology developed in Chapter VI. Since this study involves commercial banks, research studies which have been directed toward the commercial banking industry are of particular interest. Accordingly, a separate section of this chapter is devoted to such studies.

Research Not Limited to Commercial Banks

Broad Influences on Market Prices of Common Stocks

There is an unlimited number of factors which conceivably affect market prices of common stocks. It appears impractical to specify and weigh all these factors. However, factors expected to have material impacts on bank stock prices must be adequately considered before a conclusion as to effects on investors' expectations of the changes in bank reporting procedures can be substantiated. Identification of such factors is accomplished in this study by reviewing and relying on findings of prior research.

Using stock price changes for 63 firms listed on the New York Stock Exchange from 1927 through 1960, King measured proportions of price changes for each stock attributable to different classes of influence. By use of multiple correlation techniques, King found that the average proportions of the changes in stock prices during the years 1952 through 1960 were related to four kinds of influence, as shown in Table I.

TABLE I

INFLUENCES ON STOCK MARKET PRICES

Type of Influence	Average Proportion of Variation in Stock Price Attributable to the Described Influence
1. A market influence that affected all stocks	31%
2. An industry influence that affected all stocks within that industry	12
3. A variety of other influences confined to limited groups of stocks other than the industry group, but including industry subgroups	37
Subtotal	80%
4. Other influences on individual stocks which were not explained by the above factors	20
Total	100%

Source: Benjamin F. King, "Market and Industry Factors in Stock Price Behavior," Journal of Business, XXXIX, No. 1 (Jan., 1966), pp. 139-190.

While King's study did not include banks per se, based on the generality of the influences studied and on the magnitudes of the influences found by King, it appears likely that effects on bank stock prices due to general market, industry, and industry subgroup influences are large. The methodology of this study developed in Chapter VI matches test and control banks through use of price-earnings ratios for the base years. Stock prices used in computation of these price-earnings ratios were determined in the stock markets by actions of investors who considered all available information, including general market, industry, and industry subgroup factors. As discussed in Chapter VI, a basic assumption of this study is that such relationships established during the base years continue to hold for the test year. The procedure of matching price-earnings ratios for homogeneous banks and of using the established relationships in predicting price-earnings ratios for the test banks for the test year mitigates effects on the conclusions of this study attributable to general market, industry, and industry subgroup factors.

Influence of Reported Earnings or Earnings-Per-Share on Market Prices of Common Stocks

Many authors have acknowledged that reported earnings play a strategic role in the determination of prices for common stocks. Beaver conducted a study to ascertain informational value of annual earnings announcements released during years 1961 through 1965 by 143 firms listed on the New York Stock Exchange. Beaver made both price and volume tests. Stock prices are equilibrium prices based on behaviors of investors in the aggregate and fluctuate primarily in response to

changes in the aggregate supply or demand for the stock. Shifts of investments may be made by individual investors without affecting the aggregate supply or demand for the stock in a manner that will cause a shift in the stock price. A way to test for these effects is to study the volume of shares traded. Thus, the price tests examined changes in expectations of the market as a whole while the volume tests examined changes in expectations of individual investors.[1]

If annual earnings announcements provide information, expectations of the investors will be changed upon receipt of the information and actions will be taken to buy or sell shares of stock based on the changed expectations. Thus, volume and price changes in reporting periods should be larger than in nonreporting periods. Based on this line of reasoning, Beaver used volume and stock price models which, after eliminating effects of market-wide events on changes for individual securities, yielded predictions of expected volume and price changes. Actual volume and price changes were compared with these predictions, and resulting variances were analyzed to ascertain whether changes during the reporting periods were greater than during nonreporting periods. Beaver summarized his conclusions as follows:

> ...the behavior of the price changes uniformly supports the contention that earnings reports possess information content. Observing a price reaction as well as a volume reaction indicates that not only are expectations of individual investors altered by the earnings report but also the expectations of the market as a whole, as reflected in the changes in equilibrium prices.[2]

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[1]William H. Beaver, "The Information Content of Annual Earnings Announcements," Empirical Research in Accounting - Selected Studies, 1968 (Chicago, 1968), pp. 67-85.

[2]Ibid., p. 82.

Beaver also found that informational content of annual earnings announcements was not entirely preempted by earlier news releases. Investors' reactions to annual earnings announcements were found to be very rapid so that a week was sufficiently long to pick up responses that lagged behind investors' first perceptions of the earnings announcements.

Ball and Brown used a stock returns model (stock returns included consideration of both dividends paid and changes in stock prices) which predicted returns from a given stock during a given month after eliminating estimated effects on those returns attributable to market-wide stock price influences. Earnings residuals for the firms were then computed: positive earnings residuals resulted when actual earnings were higher than expected, and negative earnings residuals resulted when actual earnings were less than expected. Comparisons were made between signs of the earnings residuals and signs of the returns residuals, and close association was found between signs of the cumulative price residuals (summed over a twelve-month period including the announcement month) and signs of the earnings residuals. These findings suggested that earnings reports provided information to investors.[3]

Ball and Brown also noted an upward drift in cumulative mean return residuals for the positive earnings group, and, conversely, a downward drift in cumulative mean return residuals for the negative earnings group. These drifts suggested that stock prices adjusted continually to earnings or earnings-per-share information as it became

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[3]Ray Ball and Philip Brown, "An Empirical Evaluation of Accounting Income Numbers," Journal of Accounting Research, VI, No. 2 (Autumn, 1968), pp. 159-178.

available through interim reports and/or press releases, so only 10% of the stock price adjustments took place at the time of the annual earnings announcements.

Effect of Change in Accounting Method on Stock Price or Price-Earnings Ratio

Although this study is directed toward changes in reporting procedures rather than changes in accounting methods, these types of changes are related, and it is of interest to review studies in the area of accounting changes.

O'Donnell analyzed the relationships between reported earnings and stock prices to ascertain the effects on investors' expectations of changes from straight-line depreciation to an accelerated method of depreciation. A sample of 36 companies in the electric utility industry was classified into three groups: (1) companies that did not change, (2) companies that changed from straight-line to an accelerated method of depreciation and reported normalized earnings (i.e., used deferred tax accounting), and (3) companies that changed from straight-line to an accelerated method of depreciation and used flow-through tax accounting. By comparing trends of average price-earnings ratios between the three groups during years 1956 through 1961, O'Donnell concluded that investors in electric utility stocks do not blindly accept the reported earnings figure but make allowances for differences in accounting methods.[4]

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[4]John L. O'Donnell, "Relationships Between Reported Earnings and Stock Prices in the Electric Utility Industry," The Accounting Review, XL, No. 1 (Jan., 1965), pp. 135-143.

In subsequent research, O'Donnell studied a larger sample of electric utility companies for years 1961 through 1966 using the same techniques as in his prior study and came to the same conclusions as discussed on the preceding page.[5]

Mlynarczyk employed multivariate statistical techniques to determine effects of deferred tax accounting (normalizing) and flow-through tax accounting on stock market prices of 95 companies in the electric utility industry during years 1957 through 1961. Mlynarczyk's findings were generally supportive of the conclusion reached by O'Donnell.[6]

The research by O'Donnell and Mlynarczyk generally support a view that investors in common stocks of electric utility companies make allowances for differing accounting methods in their evaluations. However, findings by Livingstone[7] and Culpepper[8] have indicated that employment of differing accounting methods in the electric utility industry affected regulatory rate decisions. Since similar relationships are unlikely in most other industries, implications from results in the studies by O'Donnell and Mlynarczyk are highly restricted, and caution should be exercised in extrapolating results of those studies for purposes of this study.

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[5]John L. O'Donnell, "Further Observations on Reported Earnings and Stock Prices," The Accounting Review, XLIII, No. 3 (Jul., 1968), pp. 549-553.

[6]Mlynarczyk, pp. 63-89.

[7]John L. Livingstone, "A Behavioral Study of Tax Allocation in Electric Utility Regulation," The Accounting Review, XLII, No. 3 (Jul., 1967), pp. 544-552.

[8]Robert C. Culpepper, "A Study of Some Relationships between Accounting and Decision-Making Processes," The Accounting Review, XLV, No. 2 (Apr., 1970), pp. 322-332.

Comiskey tested effects on stock prices attributable to changes from straight-line to accelerated depreciation methods by eleven steel companies in 1968. Whether price-earnings ratios for each test company and for each of fourteen other companies used as a control group increased, decreased, or remained substantially unchanged in 1968 as compared with 1967 was determined. By analyzing numbers of companies with price-earnings ratio increases, decreases, and no-changes, Comiskey concluded that investors make adjustments to allow for differences in accounting methods and are not fooled by accounting manipulations. These results are consistent with those of O'Donnell and Mlynarczyk.[9]

Kaplan and Roll used regression models to investigate effects on stock prices for firms in different industries resulting from two types of accounting change made during the 1960s: switch to flow-through accounting for the investment credit, and switch from accelerated to the straight-line method of depreciation. The sample comprised 275 firms for the changes in tax accounting and 71 firms for the changes in depreciation method. Earnings announcement dates were used as the base date for measuring effects of the accounting changes. Capital asset pricing models were constructed in an attempt to eliminate interest and general market aspects of stock prices, and cross-sectional averaging over several heterogeneous firms was performed to eliminate effects on stock prices of other influences.[10] The conclusion of the study was:

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[9]Eugene E. Comiskey, "Market Response to Changes in Depreciation Accounting," The Accounting Review, XLVI, No. 2 (Apr., 1971), pp. 279-285.

[10]Robert A. Kaplan and Richard Roll, "Investor Evaluation of Accounting Information: Some Empirical Evidence," Journal of Business, XXXXV, No. 2 (Apr., 1972), pp. 224-257.

> ...We have had difficulty discerning any statistically significant effect that [earnings manipulation] had on security prices. Relying strictly on averages, however, one can conclude that security prices increase around the date when a firm announces earnings inflated by an accounting change. The effect appears to be temporary, and, certainly by the subsequent quarterly report, the price has resumed a level appropriate to the true economic status of the firm...[11]

Findings also indicated that, on the average, stocks of firms which increased earnings by changing depreciation methods were generally performing poorly prior to the change in comparison with market performance indices.

Using regression techniques of a capital assets pricing model, Ball examined effects on stock prices of changes in depreciation methods, inventory methods, consolidation policies, accounting for investments, and methods of recognizing revenue. The sample of firms studied comprised 197 firms from several industries which made 267 accounting changes between 1947 through 1961. The conclusion was that the market is not fooled by accounting changes and that accounting data are not important relative to the aggregate supply of information. Findings indicated that the information was reflected in stock prices before the date of the earnings announcement so there was little change in stock price at the time of the earnings announcement. Ball's study also revealed that, on the average, stocks of firms making accounting changes failed to keep pace with market averages for as long as 11 years prior to the accounting changes.[12]

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[11]Ibid., p.245.

[12]Ray Ball, "Changes in Accounting Techniques and Stock Prices," Empirical Research in Accounting: Selected Studies, 1972 (Chicago, 1972), pp. 1-38.

Using data for 123 New York Stock Exchange firms for which data were available on the Compustat tapes, Beaver and Dukes tested the association between alternative earnings generated by differing methods of accounting for the investment credit and the behavior of security prices. Tests were made for three definitions of earnings: earnings based on deferred income tax accounting (currently reported earnings), nondeferral earnings, and cash flow. A market model was used to estimate unexpected price changes after eliminating general market effects on individual stock prices. Degrees of association between unexpected price changes and unexpected earnings changes were examined. Findings, predicated on the expectations models used, revealed that currently reported earnings were most consistent with information used in setting stock prices, while cash flow was least consistent. This suggested that investors were more likely to rely on the currently reported earnings than on non-deferral earnings and cash flow in forming expectations about the stocks.[13]

Beaver and Dukes expanded their prior research to provide answers on whether or not investors rely solely on the final reported earnings figure or analyze data underlying that figure. Data were used for 54 of the firms previously studied which used the straight-line depreciation method for financial statement purposes and the accelerated depreciation method for income tax purposes. Based on averages across firms, the evidence indicated that the investors in the aggregate assigned more depreciation in forming expectations about the stocks than was included

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[13]William H. Beaver and Roland E. Dukes, "Interperiod Tax Allocation, Earnings Expectations, and the Behavior of Security Prices," The Accounting Review, XLVII, No. 2 (Apr., 1972), pp. 320-332.

in reported earnings using straight-line depreciation. These findings suggest that investors analyzed data underlying accounting numbers.[14]

Adjustments of stock prices to changes in depreciation method at the dates of change announcements were examined by Archibald. Regression techniques of a market model were used to eliminate general market effects on stock prices and to investigate stock market reactions to changes from accelerated methods of depreciation to straight-line depreciation during 1955 through 1966 in financial statements of 65 firms from various industries. Cross-sectional average error terms were analyzed for 24 months prior and 23 months after the dates of the change announcements. Archibald found that, on the average, firms which increased income by changing their depreciation method showed below normal stock market performance in periods preceding the change. No immediate substantial effects on stock market performance at the dates of the change announcements were found.[15]

In summary, studies which have tested effects of changes in accounting methods on investors through analyses of stock prices or price-earnings relationships have generally found that investors were not misled by the changes in accounting methods. Accepting the premise that accounting data were used by investors, the general conclusion from the studies is that investors did not blindly accept the final reported earnings but analyzed facts underlying those data.

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[14]William H. Beaver and Roland E. Dukes, "Interperiod Tax Allocation and δ-Depreciation Methods: Some Empirical Results," The Accounting Review, XLVIII, No. 3 (Jul., 1973), pp. 549-559.

[15]T. Ross Archibald, "Stock Market Reaction to the Depreciation Switch-Back," The Accounting Review, XLVII, No. 1 (Jan., 1972), pp. 22-30.

Timing of Adjustments in Stock Prices due to Accounting Information

Timing of stock price adjustments to accounting information must be established as a base for selection of dates for stock price measurement in this study. Correct determination of the effects of the reporting changes can be made only if effects of the reporting changes, if any, were reflected in the stock prices by the dates utilized for stock price measurement. The efficient market hypothesis contends that the market adjusts to information instantaneously. Several research studies on financial statements have focused on the timing issue. While some of the studies have found delays in stock market adjustments to accounting information, delays were temporary so the efficient market hypothesis has not been seriously contradicted.

Several research studies discussed previously included tests on timing of the impact of accounting data on stock prices. Beaver found that responses which lagged behind investors' first perceptions of annual earnings announcements were reflected in stock prices within a week after the annual earnings announcements.[16] Ball and Brown found that stock prices adjusted continually to earnings-per-share information as it became available during the year so that only about 10% of the stock price adjustments to reported earnings was made at the time of the earnings announcements.[17]

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[16]Beaver, "The Information Content of Annual Earnings Accouncements," pp. 67-85.

[17]Ray Ball and Philip Brown, "An Empirical Evaluation of Accounting Income Numbers," pp. 159-178.

Ball found that the market prices reflected information before the dates of the earnings announcements so there was little change in stock prices at the time of the earnings announcements.[18] Kaplan and Roll concluded that security prices increased around the dates when the firms announced earnings inflated by accounting changes but that the effects were temporary, and abnormal increases were abated by the time of announcement of results for the subsequent quarter at the latest.[19] Working with bank stock prices, Hagerman found that information was incorporated quickly into bank stock prices and was reflected in those prices within three or four weeks after release of the information.[20]

The above research results suggest that major effects of accounting data on stock prices occur upon release of the earnings information rather than upon announcement that accounting changes will be made. Because the 1969 reporting change requirements were not issued by the Federal bank regulatory agencies until mid-1969, bank stock prices would not have adjusted on a continual basis throughout 1969 as Ball and Brown's study would infer. In addition, since accounting information is reflected in stock prices in less than two or three weeks after release of the information and because annual earnings announcements normally occur some time prior to issuance of the annual reports, any information in the annual reports will normally already be reflected in stock prices by the time annual reports are distributed.

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[18]Ball, pp. 1-38.

[19]Kaplan and Roll, pp. 224-257.

[20]Robert L. Hagerman, "The Effects of Regulation on Bank Financial Reporting: An Empirical Appraisal" (unpub. Ph.D. dissertation, University of Rochester, 1972).

Research on Commercial Banks

A limited amount of research has been conducted on bank stock prices and on use of accounting data by investors in analyzing common stocks of commercial banks. Since the changes examined in this study were made by commercial banks, research which has dealt with the commercial banking industry is of primary interest.

Influence of Financial Statement Data on Market Prices of Common Stocks

To analyze various factors which simultaneously affected bank stock prices, Durand used multiple regression to ascertain the relative importance of factors which influenced prices for common stocks of 117 banks during the eight years 1946 through 1953. As part of his study, Durand attempted to isolate effects due to such factors as: (1) book value, (2) dividends, (3) earnings, (4) total capital, as a measure of the size of the bank, (5) ratio of assets to capital, (6) ratio of risk assets to capital, (7) ratio of current dividend rate to the average past dividend rate, (8) average annual rate of increase in earnings, (9) stability of earnings, and (10) factors, such as 'reserves,' which constituted hidden addition to capital that might have affected stock prices.[21]

Factors (1) through (3) had significant effects on bank stock prices, but influences of book value, dividends, and earnings sometimes varied appreciably between bank groups and also between years, even within the same bank group. Durand made extensive tests to measure the

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[21]David Durand, Bank Stock Prices and the Bank Capital Problem, National Bureau of Economic Research, Inc. Occasional Paper No. 54 (New York, 1957).

effects of factors (4) through (10). In particular, he expected that growth factors affected bank stock prices. However, effects of these factors on bank stock prices were found to be either too slight or too subtle to be measured by Durand's statistical techniques.[22]

Drzycimski extended Durand's study by testing Durand's findings on a selected sample of 122 large commercial banks for the five year period 1960 through 1964. Findings revealed that geographic location no longer sharply distinguished between banks, that the influence of book value and dividends had declined, and that the influence of earnings had increased in importance in affecting bank stock prices.[23]

Factors Which Influence Price-Earnings Ratios

Since the methodology of this study utilizes price-earnings ratios of commercial banks, prior studies are examined to ascertain factors which influenced these ratios. In addition to the above-discussed tests, Drzycimski used multiple regression and correlation analysis to isolate factors which were most important in determining price-earnings ratios of large commercial banks. Payout ratios were found to have the highest correlation with price-earnings ratios. Results of the tests were not strong as the most highly correlated variable (payout ratios) had a coefficient of determination of only .266. Banks with high payout ratios had the highest price-earnings ratios, and low payout banks had the lowest price-earnings ratios. Drzycimski's tests revealed no

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[22]Ibid.

[23]Eugene F. Drzycimski, "A Study of the Determinants of Common Stock Price and Price-Earnings Relatives for a Selected Sample of Large Commercial Banks" (unpub. Ph.D. dissertation, Michigan State University, 1966).

significant influence on price-earnings ratios due to concentration of stock ownership in a few stockholders. Since stock concentrations did not have significant impact on the price-earnings ratios, it is not necessary to examine the degree of concentration of stock ownership for the banks included in this study.[24]

Adams classified the 50 largest commercial banks whose shares were actively traded in 1966 according to four payout ratio groupings (under 35%, 35%-49%, 50%-59%, and over 59%) and found a fairly high correlation (.83, compared to a perfect correlation of 1.00) between average payout ratios and average price-earnings ratios for the four groups. The conclusion was that large increases in the payout ratio by an individual bank would likely result in appreciable increases in that bank's price-earnings ratio; whereas, small increases in the payout ratio by an individual bank would not necessarily affect stock prices at all. No significant correlation between earnings growth and price-earnings ratios was found. Adams also found that payout ratios for a representative sample of banks did not often change noticeably. The finding that bank dividend policies were consistent leads to an A PRIORI expectation that influences of dividend changes on the price-earnings ratios used in this study were not substantial.[25]

Predictive Capacity of Two Earnings Figures

Investors buy stocks for the purpose of receiving future returns. Presumably future returns are related to future earnings of the firms.

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[24]Ibid.

[25]Adams, pp. 205-215.

Consequently, investors should be interested in predicting future earnings of the firms.

Using six linear forecast models, Hoyt empirically tested whether a net operating earnings-per-share figure (computed by excluding securities gains and losses and provisions for loan losses) or a net income-per-share figure (computed by including securities gains and losses and a normal provision for loan losses) would allow better predictions of an all-inclusive earnings-per-share figure for future periods. Tests were made using data for each of 26 large commercial banks for the twelve year period 1957 through 1968. Results indicated that neither earnings figure showed a consistent superiority as a predictor. Each figure showed a superior predictive capacity over one or more of the forecast periods considered relevant to investors in Hoyt's study.[26]

The research by Hoyt is distinguishable from this study. Isolation of an earnings figure with best predictive ability has implications for specifying the earnings number that should be used by investors, and, consequently, the earnings number that should be reported by accountants. However, Hoyt did not test the impact on actual stock prices of changes in reporting procedures.

Effect of Regulation on Financial Reporting

During the latter part of 1964 the Federal regulatory agencies issued Regulation F which pronounced reporting requirements applicable to financial reports of sizeable state-chartered banks for 1965 and subsequent years. National banks had been filing annual reports prior

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[26]Hoyt, pp. 1-117.

to 1964, but regulations similar to Regulation F detailing reporting requirements for national banks were not issued until 1967.

Hagerman tested informational content of Regulation F by comparing unexpected price movements for 42 state banks (test banks) with unexpected price movements for 55 national banks (control banks) during years 1965 through 1966. Unexpected price changes were obtained through the use of a market model which eliminated general market effects on bank stock prices. Evidence suggested that investors used financial statement data to revise expectations about bank stocks. However, Hagerman found that implementation of compulsory disclosure under Regulation F did not increase the informational content of financial statements for state banks over that previously provided by voluntary disclosure.[27]

Informational Content of Nonoperating Items in Income Statements

Major items involved in the changes in reporting procedures examined in this study are securities gains or losses and provision for loan losses. The following research tested the informational content of these items.

Philips and Mayne used a linear multiple regression model to determine whether nonoperating items in the income statements of 21 commercial banks constituted relevant information for investors by testing the relationships between calculated stock values and certain nonoperating items during years 1958 through 1966. Tentative conclusion

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[27]Hagerman, pp. 1-158.

was that investors cannot safely ignore certain nonoperating items. Findings suggested existence of a strong association between calculated stock values and realized and unrealized securities gains and losses. There was no evidence that 'other charges or credits' were related to calculated stock values, and further research was suggested in the area of loan losses.[28]

The research by Philips and Mayne included nonoperating items involved in this study. However, this study is distinguishable as follows:

1. The study by Philips and Mayne did not concern changes in reporting procedures, which is the focus of this study.

2. Stock values used by Philips and Mayne were calculated by discounting future cash flows assuming a discount rate of 9%, perfect foresight by investors, and that investors planned to hold their shares of stock for stated periods. This research avoids these strict assumptions by utilizing stock prices as established in the market.

3. Philips and Mayne were concerned with the normative issue of whether nonoperating items in financial statements of banks should constitute relevant information for investors. In contrast, this study is concerned with the pragmatic issue of whether the changes in reporting procedures actually affected investors' decision making as reflected in stock prices.

4. Philips and Mayne considered unrealized, as well as realized, securities gains and losses. It is unlikely that unrealized securities gains and losses had material impact on the actual stock prices since,

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[28]Philips and Mayne, pp. 178-188.

as acknowledged by Philips and Mayne, few banks disclosed market values of the securities owned.

5. Loan loss provisions used by Philips and Mayne were computed on the basis of actual charge-offs. In practice, most banks used a moving-average procedure for estimating loan losses.

6. Factors other than earnings variation were ignored by the price valuation model used by Philips and Mayne but are included in this study.

Summary

Commercial banking research, as well as research conducted in other industries, generally supports the contention that accounting information is used by investors and is reflected in stock prices. Earnings data are primary among the influences of accounting information on investors. Book value and dividend data have declined in importance relative to earnings but have remained potentially significant enough to warrant development of tests designed to eliminate effects of large changes in these items from the results of this study.

CHAPTER V

HYPOTHESIS

This study evaluates the communicative effects on investors of changes in reporting procedures in annual reports of commercial banks for the calendar year 1969. Cash flow patterns are not affected by the changes in reporting procedures. Thus, the changes in reporting procedures did not reflect changes in real economic performance. However, stock prices may have been affected if the changes in reporting procedures caused a sufficient number of investors to alter their expectations about the banks.

Information was provided if the changes in reporting procedures caused changes in investors' expectations which affected stock prices. This may occur under either of two conditions: (1) different data were entered into formerly-used decision models (e.g., investors have single-figure fixation) or (2) different decision models were instituted to allow for changed expectations resulting from the information provided by the changes in reporting procedures. To test whether either of these conditions existed, the following hypothesis is tested.

Null Hypothesis

Changes in reporting procedures in annual financial statements of commercial banks for calendar year 1969 did not provide information to investors in common stocks of those banks. Information is deemed

to be provided if it led to changes in investors' expectations and resulted in a change in the equilibrium value of the current market price of the stock.

CHAPTER VI

RESEARCH DESIGN AND METHODOLOGY

Research Methods

This chapter presents the research design and methodology used in this study. The types of research methods are reviewed to provide a framework and rationale for selection of the empirical research approach. An ideal research design for empirically testing the effects of accounting changes on investors through use of stock prices is presented. Because, at the present state of the art, the ideal design is not operational, an operational design is developed in this study. This design and the methodology to implement the design are examined in detail. Finally, the pilot study conducted to test the feasibility of the research methodology and to further develop that methodology is discussed.

Three basic research methods are: (1) theoretical exposition, (2) experimental study, and (3) empirical research. The following discussion provides a deeper appreciation for the methodology utilized in this study.

Theoretical Exposition

In determining the effects of changes in accounting data on investors, theoretical exposition consists of applying logic to develop models of how investors should or do act to achieve postulated goals.

Alternatively, the theoretical model can focus on the results of decision-making processes rather than on the decision-making processes themselves.

Explanatory power of such models may be tested in two ways: (1) by comparing procedures of the model with detailed decision-making processes, and/or (2) by comparing the results provided by the model with actual measured results. If substantial explanatory power is found, the model may be used as an explanatory device in those situations to which the model applies until evidence indicates that the model should be revised or replaced.

Computer simulations may be used to quantify and formalize such models to facilitate development, testing, and application of the theoretical constructs. Roby described the aim of computer simulation as being:

> ...to use computers to derive testable and generalizable consequences from a set of constructs that are internally consistent, having explanatory power, and are themselves susceptible to further analysis and test.[1]

A classic example of the use of computer simulation in a business research context was provided by Bonini who used computer simulation to study the effects of certain informational, organizational, and environmental factors on decision-making within a business firm.[2]

A theoretical model for stock price determination and for investor decision-making was presented in Chapter III. This study goes beyond

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[1]Thornton B. Roby, "Computer Simulation Models for Organization Theory," Methods of Organizational Research, ed. Victor H. Vroom (Pittsburgh, 1967), p. 175.

[2]Charles P. Bonini, Simulation of Information and Decision Systems of the Firm (Englewood Cliffs, 1963).

theoretical formulation to test the impact of the changes in reporting procedures on investors through the use of observed results.

Experimental Study

Experimental study may be conducted in either a laboratory or field setting. To isolate and measure the effects of the item being tested, the experimenter often controls the experimental environment. Even if a natural setting is utilized, the mere fact that the experimenter or his representative is present or that the subject knows he is being observed alters the natural environment. Thus, in an experiment, the environment is to some extent artificial and simplified as compared with a natural environment. Greatest caution must be exercised when extrapolating results from an experiment.

This study investigates the effects of changes which occurred in the past. Since it is desired to assess the impact of these changes on investors in their natural environments and since recorded data are available to make the necessary tests, the hypothesis of this study is more amenable to testing by the use of empirical analysis than by experimental study.

Empirical Research

Empirical research is directed toward analysis of data from observation and experience. The impacts of accounting information on investors may be assessed by analyzing the effects on some intermediate or end result. Pankoff and Virgil suggested four measures: (1) effect on expectations, (2) extent to which the information leads to 'good'

expectations, (3) effect on decisions, and (4) extent to which the information leads to 'good' decisions.[3]

As discussed in Chapter II, effects of accounting information are translated via investor expectations into investor decisions and via investor decisions into stock prices. Thus, stock price adjustments are an end result of accounting information and provide a basic variable examined in this study. It should be noted that stock prices reflect a market response rather than an individual investor response. Support for use of stock prices was provided by Hagerman, Keller, and Petersen when they stated that "evidence provided by the market-oriented studies is preferable to that provided by the laboratory studies for purposes of formulating objectives of the [Financial Accounting Standards Board]."[4] Since the reporting changes under study are directly connected with reported earnings figures, this study makes a posterior analysis of the changes in stock prices relative to the changes in reported earnings as a measure of the impact of the reporting changes on investors.

Ideal Research Design

The ideal design for an empirical test of the effects of changes in accounting data on stock prices is the development of a stock market pricing model which accurately specifies relationships between the

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[3]Lyn D. Pankoff and Robert L. Virgil, "On the Usefulness of Financial Statement Information: A Suggested Research Approach," The Accounting Review, XLV, No. 2 (Apr., 1970), p. 272.

[4]Robert L. Hagerman, Thomas Keller, and Russell Petersen, "Accounting Research and Accounting Principles," The Journal of Accountancy (Mar., 1973), p. 54.

accounting changes and stock price changes in the environment of the test period. By use of such a model beginning with the time the information is first perceived through the time when full effects of the information on the stock prices is realized, the effects of the accounting changes may be determined.

Due to the interrelationships of many variables which affect stock prices and the changing nature of these relationships over time as a result of the unstructured and dynamic environment in which stock prices are established, the ideal design necessitates development of a stock pricing model which considers every variable which affects stock market prices and the interrelationships between these variables. Such a model would need to allow for environmental and structural changes over time.

Operational Research Design

Until a complete and precise model of stock price determination has been developed, alternative approaches must be utilized. Many researchers relating accounting data to stock prices have analyzed stock prices after eliminating general market effects. As reported in Chapter IV, King found that general market influences accounted for approximately 31% of total variation in stock prices.[5] For the remaining variation, which is quite substantial, factors other than accounting data play an important role. Dopuch and Watts expressed some reservations about this approach:

> More recently, attempts have been made to measure significance by observing the relationship between stock market prices and various accounting methods. This type

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[5]Benjamin F. King, "Market and Industry Factors in Stock Price Behavior," Journal of Business, XXXIX, No. 1 (Jan., 1966), pp. 139-190.

> of approach relies in part on the actual decisions of users as reflected in price movements, thus avoiding any biases which might develop from an experimental design. However, the approach requires some model which can isolate the accounting effect from all other events which affect stock prices. Three recent research efforts in this area used essentially the same basic model to isolate the accounting effect. The model is the familiar Sharpe, Litner capital asset-pricing model which defines a security's expected return in terms of a risk-free interest rate and some index of general economic conditions (usually a stock market index). This approach to the evaluation of accounting methods is quite promising. However empirical tests of the capital asset-pricing models have not been entirely consistent, which raises some questions about the ability of such models to isolate an accounting effect on stock prices. This is particularly a problem if the analysis of accounting effects is to be conducted at the firm or even the industry level.[6]

Comments by Meyers were made along similar lines:

> ...our results provide less than a complete defense of the market model, especially in light of the numerous unexplained components generated by our components analysis of both samples. If these components represent some persistent significant source of interdependence among stock prices, then they, rather than industry factors, represent a limitation on the validity of the market model.[7]

The purpose of the foregoing discussions is not to criticize any particular research methodology but to point out that each type of methodology short of the ideal research design has restrictions and limitations. A goal of this research is to develop an empirical methodology for testing the effects of changes in accounting procedures which will add to the store of methodologies available.

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[6]Nicholas Dopuch and Ross Watts, "Using Time-Series Models to Assess the Significance of Accounting Changes," Journal of Accounting Research, X, No. 1 (Spring, 1972), p. 193.

[7]Stephen L. Meyers, "A Re-Examination of Market and Industry Factors in Stock Price Behavior," The Journal of Finance, XXVIII, No. 3 (Jun., 1973), p. 705.

Banks in this study are designated as test banks or control banks depending on the materiality of the 1969 changes in reporting procedures. The effects of the changes in reporting procedures on investors owning stock in the test banks are assessed through use of price-earnings ratios. This methodology seeks to minimize the effects of factors other than the changes in reporting procedures by eliminating banks having changes in factors (other than the changes in reporting procedures) which might have materially affected price-earnings relationships during the test or base years.

If the changes in price-earnings ratios of the test and control banks for the base years are sufficiently correlated, correlation analysis techniques are used to obtain an A PRIORI expected value of the price-earnings ratio for the test bank in the year of reporting changes. Comparisons of actual price-earnings ratios for the test banks with the expected values of the price-earnings ratios yield information on the effects of the changes in reporting procedures on investors.

Use of Price-Earnings Ratios

The changes in reporting procedures under investigation affect the determination of earnings for the banks. The theoretical framework developed and the empirical investigations reviewed in Chapter III suggested a significant relationship between reported earnings and stock prices.

Since the reporting changes under examination affect earnings reported by the banks and since stock prices are considered the most relevant surrogate for investors' reactions to the reporting changes, the vehicles used in this study to measure the impact of the reporting

changes are price-earnings ratios. The numerator and denominator of the price-earnings ratios are measurements in the same scale. The ratios provided by dividing the price for a share of stock by the earnings per share of stock are of no-dimensional magnitudes. Therefore, it is logically possible to compare these ratios between firms or through time, irrespective of the scales of operations of the firms. These comparisons are particularly important to investors who have the options of investing or disinvesting in alternative firms.

A PRIORI Expected Behavior of Price-Earnings Ratios for Banks with Material Reporting Changes

Changes in accounting and reporting requirements of commercial banks effective for 1969 annual reports are discussed in Chapter II and Appendix E. Two of these changes having major impacts on financial statements of several banks involved the provision for loan losses and securities gains or losses.

Banks have historically sustained losses on loans. Prior to 1969, many banks accounted for loan losses on an estimated basis. A primary reason for this was that Federal income tax laws permitted banks using the reserve method to deduct provisions for loan losses which were often substantially larger than loan losses the banks were actually experiencing. To secure deductions for income tax purposes under the reserve method, banks were required to add the loan loss provisions in the loan loss reserve accounts on their books. With few exceptions, banks did not deduct provisions for loan losses in the computation of earnings in their financial statements. As indicated in Appendix B, provisions for

loan losses were subtracted after the final reported income figure in arriving at an amount to be transferred to Undivided Profits. Occasionally part of the provision for loan losses was deducted directly from Undivided Profits or from reserve accounts other than the loan loss reserve account. Thus, the loan loss provisions were reflected in the financial statements but normally elsewhere than in the computation of earnings. Financial statement changes implemented in 1969 required that banks deduct a normal provision for loan losses as an operating expense in the computation of income; additional provisions for loan losses were charged to Undivided Profits in a manner comparable to appropriations of retained earnings by non-bank corporations.

As indicated in Appendix B, securities gains or losses were normally reported after the final income figure in financial statements for years prior to 1969 in arriving at an amount to be transferred to Undivided Profits. Financial statement changes implemented in 1969 required that banks include material securities gains or losses as an extraordinary item in the computation of income.

For 1969, Federal income tax laws permitted banks to deduct a net securities loss as an ordinary deduction; whereas, a net securities gain often qualified as capital gain, receiving favorable income tax treatment in most cases. These income tax provisions encouraged banks to avoid netting securities gains and losses, as an income tax advantage was likely secured if securities gains and losses were realized in separate taxable years. For this reason, it was expected A PRIORI that securities gains or losses reported by several banks in 1969 would be material.

Generally, the inclusion of loan loss provisions and securities gains or losses in the earnings computation reduced the final reported earnings in the year of change as compared with amounts that would have been reported had there been no change (i.e., the denominator of the price-earnings ratio decreased). Since items involved in the reporting changes were reported in the financial statements prior to 1969 and since the reporting changes per se did not reflect changes in real economic performances of the banks, A PRIORI it is expected that substantial stock price adjustments did not result from these reporting changes as information would not be provided to investors who had analyzed data underlying the final reported earnings figure. If no information were provided by the reporting changes, the price-earnings ratios based on the final reported earnings are expected A PRIORI to have increased due to the reporting changes.

To the extent that the reporting changes provided information to investors, stock prices would likely decrease (i.e., the numerator of the price-earnings ratios would decrease) for two reasons: (1) the reporting changes generally decreased reported earnings, and (2) the reporting changes increased the variability of earnings, which would lead investors provided information by the changes to perceive increased risk associated with the stock. Decreases in the stock prices would reduce the price-earnings ratios from their A PRIORI expected values toward the expected values had there been no reporting changes.

Classification of Banks as Test or Control Banks

This study classifies banks into test and control groups depending on the materiality of the changes in reporting procedures. Accordingly,

an operational definition of materiality must be established. Materiality criteria are presently under study by the Financial Accounting Standards Board. Definitive guidelines have not yet been established by accounting authorities, and materiality decisions are based primarily on the judgments of persons preparing financial statements.

Traditionally, accounting data have been considered material if knowledge of the data were expected to alter decisions of the users of the accounting reports. This notion of materiality was proposed in 1957 by the American Accounting Association.[8]

The literature suggests several pragmatic definitions of materiality. By questioning various groups of financial statement users, Woolsey concluded that, on the average, extraordinary items equal to or greater than 10.8% of net income should be considered material.[9] Hicks found that when materiality was guaged in relation to the current years income, users of the financial statements considered an item to be material if it exceeded 10% of net income.[10]

Authors have also offered concepts of materiality which consider past years incomes as well as the current years income. Rappaport suggested that materiality of an item be judged in relation to earnings trends.[11] Use of this approach has not been widely accepted.

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[8]American Accounting Association, Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements (Sarasota, 1957), p. 8.

[9]Sam M. Woolsey, "Development of Criteria to Guide the Accountant in Judging Materiality," The Journal of Accountancy (Feb., 1954), p. 172.

[10]Ernest Hicks, "Materiality," Journal of Accounting Research, II, No. 2 (Autumn, 1964), pp. 161-162.

[11]Donald Rappaport, "Materiality," The Journal of Accountancy (Apr., 1964), pp. 42-48.

Hicks introduced a concept of materiality relating amounts of extraordinary items to an income figure averaged over several years and concluded that an item representing less than 10% of average net income should be considered immaterial and an item representing 20% or more of average net income should be considered material.[12] Bernstein recommended use of a border zone of 10% to 15% of average net income in establishing materiality.[13]

An operational difficulty with the averaging concept lies in the specification of the period over which the average is to be computed. Without definitive guidelines, selection of the period is arbitrary. Use of the averaging concept appears particularly appropriate when net incomes between years fluctuate widely.

In this study changes in reporting procedures which increase or decrease net income in the year of the change by 20% or more are considered to be material while effects of 10% or less are considered to be immaterial. Banks having material reporting changes in 1969 are designated as test banks, and banks having immaterial reporting changes in 1969 are designated as control banks. Banks with reporting changes in the materiality border zone between 10% and 20% are eliminated from the study as such changes are neither clearly material or immaterial.

Matching Banks

The basic method of matching banks in this study is through correlation of price-earnings ratios of the test and control banks.

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[12]Hicks, pp. 161-162.

[13]Leopold Bernstein, Accounting for Extraordinary Gains and Losses (New York, 1969), pp. 89-93.

Detailed discussion of the correlational matchings of the banks is presented in a following section. The effects of the earnings factor and many other factors on stock prices are considered therein. However, before the correlational techniques are applied, other procedures are utilized to isolate non-homogeneous banks.

Homogeneity difficulties are abated in this study due to the involvement of firms from only one industry - the banking industry. Within that industry, requirements of the bank regulatory authorities tended to mitigate diversity. For example, all the banks in this study used calendar years for financial statement reporting.

As discussed in Chapter IV, prior research has revealed three factors which significantly affected bank stock prices - earnings, dividends, and book values of the stocks. In this study, initial screening is conducted to determine if a bank had significant changes in these factors (other than the changes in reporting procedures under examination) during the period covered by this study.

Trends in Price-earnings Ratios. Data in annual reports of the banks and in Moody's Bank and Finance Manuals were reviewed and data were requested directly from the banks to identify extraordinary, non-recurring factors which might have substantially affected trends in price-earnings ratios. Particular attention was given to mergers, consolidations of previously unconsolidated subsidiaries, and changes in accounting methods. Banks having such substantial changes were not included in this study.

Dividends and Book Values of the Stocks. Adams found that bank dividend policies were conservative and greatly influenced by tradition:

> ...the dividend policies of most banks do not often change noticeably. Over the past four years, a representative list of leading banks paid out, on the average, 45% of net operating earnings in cash dividends. For the preceding four years, the ratio was 46%. For the past 15 years, the ratio has averaged 46%...[14]

Accordingly, material changes in dividend rates by the banks in this study were not anticipated; however, as a precaution, tests to isolate substantial changes in dividend rates were conducted.

This study involves nine years of data: test year 1969 and base years 1968 through 1961, inclusive. For each bank, dividend payouts and book values per share of stock were calculated for each year. To make each set of data comparable, adjustments were made for stock splits and stock dividends. For the adjusted dividend payouts and book values per share, regression analysis was applied to ascertain the ranges in which the rates for a particular year were expected to fall. For this purpose, the 5% level of significance was used. Banks having a dividend payout or book value per share in any year outside the expected ranges were eliminated from this study; thus, only banks having all dividend payouts and book values per share with the expected ranges are included in this study.

Groupings of Banks by Size. Warberg applied functional cost analysis to measure profitability of different operations of 951 banks throughout the nation. The conclusion of the study was that functional profitability varies with the size of the banks as follows: small banks are those with deposits up to $50 million; medium-sized banks are those with deposits between $50 million and $200 million; and large banks are

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[14]Adams, pp. 205-215.

those with deposits of $200 million or more.[15] In the interest of achieving homogeneity between banks, this study classifies banks according to the size criteria established by Warberg.

Banks Studied

In selecting banks for inclusion in this study, the objective was to include all banks for which reliable data could be assimilated. Data for 162 banks were examined. These banks included all banks in the United States with stocks traded on the New York Stock Exchange, the American Stock Exchange, the Midwest Stock Exchange, and the Over-The-Counter market on March 16, 1970, which in most cases is the date that stock prices were obtained for the 1969 test year. Random sampling was not necessary because the purpose of this study is not one of prediction. It was hoped that the sample would include small, medium-sized, and large banks to permit comparisons of results between banks in the different size classifications. However, it was anticipated that the concentration would be on the larger banks as those banks would be more likely to have their stocks traded in the major established markets. Also, since a large percentage of banking assets in the United States is concentrated in a relatively few large banks, the impact of the changes in reporting procedures on these banks is of particular importance.

Table II indicates that 80 of the 162 banks considered for inclusion in this study were excluded by the initial screening. The small and medium-sized banks were eliminated because the numbers of those

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[15]Carla M. Warberg, "Functional Profitability Varies with Size of Bank," Business Review (Nov., 1971), pp. 5-11.

banks for which suitable data were available were insufficient to permit adequate testing. Thus, this study is limited to 82 large banks. Table III classifies those banks into test and control groupings. Lists of the banks are contained in Appendix G.

TABLE II

INITIAL SCREENING OF BANKS
CONSIDERED FOR INCLUSION
IN THIS STUDY

	Number of Banks	
Banks considered for inclusion in this study		162
Banks excluded from this study due to:		
Change in reporting procedure in the materiality border zone for the test year	30	
Unavailability of complete data	15	
Non-immaterial change in accounting method (other than the changes under investigation)	13	
Substantial merger	11	
Small and medium-sized banks	6	
Large percentage of outstanding shares held by another bank or bank holding company	3	
Substantial consolidation of a previously unconsolidated subsidiary	1	
Substantial disinvestment in another bank	1	80
Banks included in this study		82

TABLE III

CLASSIFICATION OF BANKS
INCLUDED IN THIS STUDY

	Large Banks
Test Banks	23
Control Banks	59
	82

No non-immaterial change in book values or in dividend payout rates per share of stock was found for the 82 banks included in this study. These results confirm earlier discussions which indicated that dividend payout policies of the banks did not vary substantially.

Matching Banks Through Use of Correlation Analysis

The basic methodology of this study involves a pairwise comparison of price-earnings ratios of each test bank with each control bank. Relationships between price-earnings ratios for the test and control banks in the base years are utilized to statistically predict the price-earnings ratio for the test bank in the test year. Initial screening sought to exclude non-homogeneous banks from this study. Nevertheless, an additional test was performed to determine whether or not price-earnings ratios of the two banks being matched were sufficiently correlated to warrant application of the methodology of this study.

Clark and Schkade present a test of significance for the correlation coefficient that is equivalent to performing an analysis of variance on the sources of variation.[16] The correlation coefficient shows the proportion of the variances between the test bank's price-earnings ratios that is eliminated by estimating the test bank's price-earnings ratio by use of the control bank's price-earnings ratios. The purpose of the test is to assess the likelihood that the correlation between the price-earnings ratios of the two banks occurred by chance. The critical value (6 degrees of freedom, .05 level of significance) for the sample correlation coefficient is .7067. Thus, comparisons between a test bank and a particular control bank are included in this study only if the coefficient of correlation between the price-earnings ratios of the two banks during the base years exceeds .7067.

Basic Research Methodology

Relationships between price-earnings ratios for each test bank and each control bank are established through use of linear correlation techniques. These techniques are appropriate due to their emphasis on changes in ratios over time (rather than magnitudes of the ratios per se), and changes in the ratios are of primary concern in this study. After the test bank and the control bank are matched, there is little reason to believe that relationships of the changes in the ratios of the two banks would be anything but linear as the same general factors influence both sets of ratios. Accordingly, a linear correlation model

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[16]Charles T. Clark and Lawrence L. Schkade, Statistical Methods for Business Decisions (Cincinnati, 1969), pp. 569-570.

is used. To insure that the linear model is appropriate, assumptions underlying the model are tested, as discussed in more detail later.

Control banks are defined as banks which have immaterial changes in earnings for the test year due to the changes in reporting procedures. Hence, the price-earnings ratio of the control bank for the test year is not expected to be materially affected by the changes in reporting procedures. This ratio and the established relationship between the base years price-earnings ratios of the two banks are used to predict the price-earnings ratio of the test bank for the test year had there been no reporting change. This procedure yields Point 2bc value in Figure 1. Point 2bc value represents the most likely value of the price-earnings ratio for the test bank for the test year had reporting procedures employed in prior years been continued. Standard statistical procedures are utilized to set Prediction Interval 2 around the Point 2bc value. These procedures involve determining the standard error of the predicted value and computing the upper and lower bounds of the prediction interval based on the standard error and a selected level of confidence. Point 2ab value is the upper bound, and Point 2cd value is the lower bound of Prediction Interval 2. As discussed in more detail later, tests are made in this study at five different levels of confidence.

The predicted price-earnings ratio and its prediction interval are adjusted to A PRIORI expected values based on the final reported earnings figure (designated NI) per share of stock for the test bank for the test year. Necessary adjustments are derived as follows.

The value of the test bank's price-earnings ratio for the test year at Point 2bc is represented by Price/NOE, where Price represents the

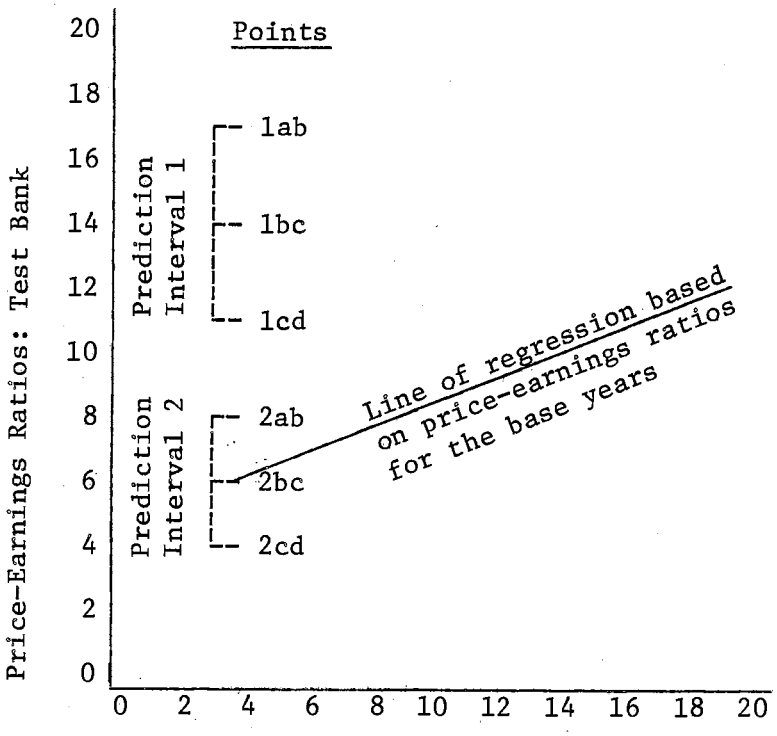

Figure 1. Prediction Intervals

market value per share of stock and where NOE represents earnings per share of stock for the test bank for the test year that would have been reported had the bank followed reporting procedures used in prior years. A PRIORI expected values are based on the assumption that the changes in reporting procedures provided no information to investors. In this case, there should be no change in the price of a share of stock of the test bank for the test year due to the changes in reporting procedures.

A price-earnings ratio based on NI is computed by Price/NI, where Price is equal to the Price in the formula for the computation of Point 2bc value and where NI represents earnings per share of stock for the test bank for the test year under the revised reporting procedures.

Holding the price constant, values for Price/NI may be obtained by multiplying Price/NOE by the factor NOE/NI. Thus, the price-earnings ratios represented by Points 2ab, 2bc, and 2cd in Figure 1 are multiplied by NOE/NI to obtain price-earnings ratios represented by Points 1ab, 1bc, and 1cd, respectively. Point 1bc value represents the A PRIORI most likely expected price-earnings ratio for the test bank for the test year when the ratio is based on the actual final reported earnings for the test year. Point 1ab and Point 1cd values represent the upper and lower bounds of Prediction Interval 1 around the Point 1bc value.

For each test bank in this study, the changes in reporting procedures reduced the final reported earnings figure for the test year as compared with amounts that would have been reported under prior reporting procedures. When NOE is greater than NI, the adjustment factor NOE/NI is greater than one. This means that Prediction Interval 1 lies above Prediction Interval 2, as indicated in Figure 1. It should be noted, however, that Figure 1 is for illustrative purposes and is not drawn to scale. In few pragmatic cases will the magnitude of the changes in reporting procedures be sizeable enough to move Prediction Interval 1 as high in relation to Prediction Interval 2 as is indicated in Figure 1.

Computation of NOE for the Test Year

NOE for the test year must be computed for each bank included in this study to permit classification of the banks by assessment of the materiality of the changes in reporting procedures and, for the test banks, to compute the adjustment factor NOE/NI discussed in the pre-

ceding section. Data in Moody's Bank and Finance Manuals and/or annual reports of the banks were analyzed to ascertain the amounts of the differences between NI and NOE for the test year. These differences due to the changes in reporting procedures are discussed in Chapter II and are summarized in Appendix E. Two major adjustments are for the provision for loan losses and for securities gains or losses, together with the related adjustments to the income tax provision applicable to items included in the computation of income. NI was adjusted by the recognized differences to obtain an estimated NOE.

Reasonableness of the procedures used for estimating NOE was tested by comparing results of the estimates with data on earnings reconciliations furnished by the banks. Earnings reconciliations were requested from 153 banks. Sixty seven banks (43.8% of the total to whom the requests were sent) furnished responses that were usable in testing the reasonableness of the estimating procedures. Results of these tests are shown in Table IV. The results indicate that the procedures are reasonable enough to permit reliance thereon for estimating NOE for the banks included in the study for which usable reconciliations were not received.

Decision Areas and Decision Matrix

If investors are not provided information by the changes in reporting procedures, stock prices should not be affected by the changes and the price-earnings ratio based on the final reported earnings for the test bank for the test year should be distributed in and about Prediction Interval 1 in Figure 2 (part of Figure 2 is a reproduction of Figure 1). To the extent that the changes provide information to

TABLE IV

ACCURACY OF ESTIMATED NOE
FOR THE TEST YEAR

Deviation Between Estimated NOE and NOE as Reported by the Banks, Stated as a Percentage of NOE as Reported by the Banks	Number of Banks	Percentage of Total Number of Banks
0.0% - under 1.0%	59	88.0%
1.0 - under 2.0	3	4.5
2.0 - under 3.0	4	6.0
3.0 - under 4.0	0	0.0
4.0 - under 5.0	1	1.5
Totals	67	100.0%

investors, stock prices will tend to fall for two reasons: (1) the changes in reporting procedures decreased reported earnings, and (2) the changes in reporting procedures resulted in increased variability of earnings, thereby increasing perceived risk by investors. As the stock price falls, the price-earnings ratio based on the final reported earnings figure for the test bank for the test year would move downward from A PRIORI expected values. If investors are furnished information, the price-earnings ratio based on the final reported earnings for the test bank for the test year should be distributed in and about prediction Interval 2 in Figure 2.

Whether or not the changes in reporting procedures provided information to investors is assessed by locating actual price-earnings ratios based on the final reported earnings for the test banks for the test

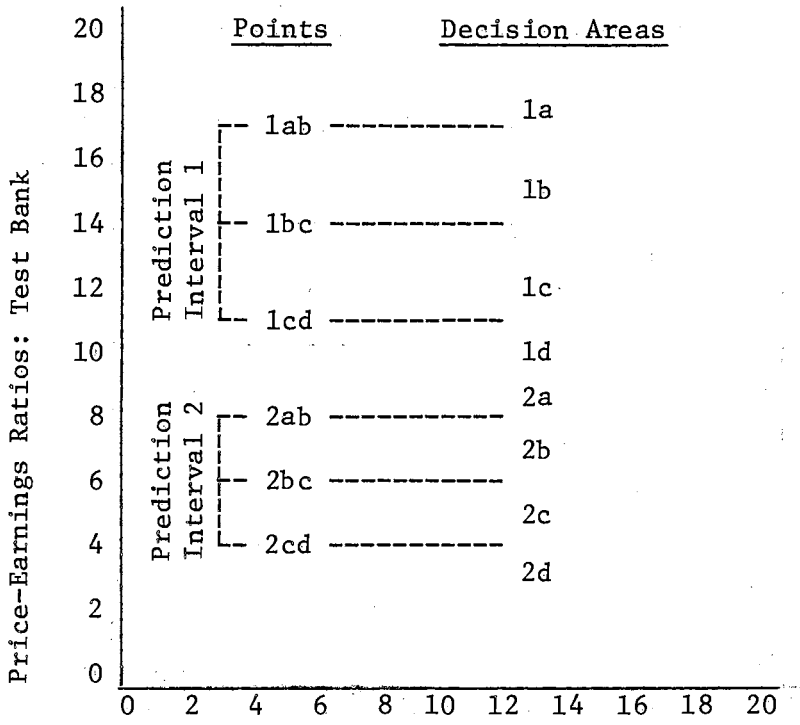

Figure 2. Decision Areas

year in relation to Prediction Intervals 1 and 2. To facilitate accumulation and analysis of these data, the prediction intervals are divided into Decision Areas 1a, 1b, 1c, 1d, 2a, 2b, 2c, and 2d, as illustrated in Figure 2, and results of the tests are accumulated in a decision matrix, as shown in Figure 3. Conclusions yielded by the decision matrix are also presented in Figure 3.

Significance Levels Utilized for Main Tests

Tests were made at five levels of significance: .001, .01, .05, .10, and .20. The primary focus is on results at the .05 level of

Decision Area

Decision Area	2a	2b	2c	2d
1a	(x)			
1b	(x)	(z)	(z)	
1c	(x)	(z)	(z)	
1d	(z)	(y)	(y)	(y)

Result of Test Lies in Decision Matrix Block	Conclusions
(x) or 1a,2a 1b,2a and 1c,2a	Results are within or above Prediction Interval 1 but are outside Prediction Interval 2. Conclusion is that the changes in reporting procedures did not furnish information to investors.
(y) or 1d,2b 1d,2c and 1d,2d	Results are within or below Prediction Interval 2 but are outside Prediction Interval 1. Conclusion is that the changes in reporting procedures furnished information to investors.
(z) or 1b,2b 1b,2c 1c,2b 1c,2c and 1d,2a	Results are within both Prediction Intervals 1 and 2 or are between the two prediction intervals. No conclusion may be drawn.
Blank blocks	Results are inconsistent with the proposition that Prediction Interval 1 lies above Prediction Interval 2. No results should be found in these blocks.

Figure 3. Decision Matrix Format and Decision Areas

significance. The purpose of running five sets of tests is to permit an assessment of the sensitivity of the conclusions to the levels of significance utilized.

Advantages of the Research Methodology

Integration of Materiality of the Changes in Reporting Procedures into the Decision Scheme. Widths of the prediction intervals in Figure 1 are dependent on the degree of correlation between price-earnings ratios for the test and control banks during the base years. The extent to which Prediction Interval 1 moves upward from Prediction Interval 2 is dependent on the materiality of the changes in reporting procedures. Thus, the size of each decision area in Figure 1 is dependent on both the degree of correlation of base years data and the materiality of the changes in reporting procedures.

Interactions of these factors tend to eliminate weak conclusions from this study. The lower the degree of correlation of base years data, the wider will be the prediction intervals, and the lesser the materiality of the changes in reporting procedures for the test bank for the test year, the lesser will Prediction Interval 1 move upward from Prediction Interval 2. Thus, weaknesses of either factor increase the overlap of Prediction Intervals 1 and 2. Areas in the overlap are represented by (z) in Figure 3. For results in these decision blocks, no conclusion is drawn from the test. Effectively, the test is eliminated from the study, thereby eliminating weak conclusions.

Use of Correlation Analysis. Neter and Wasserman have stated that:

> ...It [correlation analysis] has proven to be an extremely useful management tool for studying the statistical relationship between two or more variables so that one variable can be predicted on the basis of the other, or others.[17]

Because base year price-earnings ratios of both the test and the control banks are independent variables, correlation analysis is appropriate for use in this study.

Fresh Approach to Analysis of Effects of Accounting Changes on Investors. In designing the methodology for this study, attempts were made to avoid problems with other methodologies discussed in the literature. For example, the methodology minimizes difficulties with grouping or averaging data over heterogeneous entities, analysis of time series data, and limited consideration of the multitude of variables that affect stock prices.

Use of End Results of Investor Reactions to the Changes in Reporting Procedures. Due to the complexity of stock price determination, severe problems are encountered in attempting to isolate effects on stock prices attributable to changes in accounting procedures. Nevertheless, the end result of investor decisions (i.e., the effects on stock prices) is viewed as the critical variable in determining effects of accounting changes on investors. Therefore, it is toward effects on stock prices that the methodology of this study is directed.

Investigation of Effects of Accounting Changes Other Than for Changes in Depreciation Methods. Prior research indicates that

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[17]John Neter and William Wasserman, Fundamental Statistics for Business and Economics (3rd ed., Boston, 1966), p. 512.

companies have been more prone to change depreciation methods when their stocks were performing below market averages. A bulk of prior research on effects of accounting changes has involved changes in depreciation methods. Since the changes under investigation resulted from requirements of the bank regulatory agencies rather than from poor market performance, this study is distinguishable from the prior studies.

Requirements That Firms Studied Use the Same Accounting Procedures is Avoided. Several studies have attempted to adjust accounting data reported by firms to a common reporting scheme. This procedure yields an artificial earnings figure that was not available to investors without their making similar adjustments. Validity of matching such earnings with stock prices relies on the gross assumption that investors made such adjustments to the data. In this study, if price-earnings relationships of the test and control banks employing whatever accounting methods the banks used and whatever decision criteria investors used are sufficiently correlated during the base period, the assumption is made that these relationships continue for the test year. Thus, the emphasis is switched from use of the same accounting procedures to isolating changes in accounting procedures which would disturb price-earnings relationships. Use of artificial adjustments and artificial data are thereby avoided.

Assumptions Underlying the Correlational Model

Relationships Between Price-earnings Variables of the Test and Control Banks During the Base Years Continue to Hold for the Test Year. Base period relationships are utilized to project price-earnings ratios

for the test bank for the test year with which the actual price-earnings ratio of the test bank is compared. This procedure relies on the basic assumption that relationships between price-earnings ratios of the test and control banks during the base years continue to apply for the test year. Support for this assumption is provided by procedures employed to isolate events which could reasonably be expected to significantly affect the relationships and to exclude banks having such changes from this study.

The Model Adequately Considers Effects on Stock Prices Other Than Reported Earnings. The decision variable in this study is the price-earnings ratio whereby stock price is related to reported earnings. To permit a conclusion to be drawn about the impacts on stock prices of changes in reported earnings resulting from the changes in reporting procedures, the model must adequately consider effects on stock prices other than reported earnings. This is accomplished implicitly by use of the correlational model and through the basic assumption discussed immediately above that relationships between price-earnings variables of the test and control banks during the base years continue to hold for the test year.

Effects of the Changes in Reporting Procedures are Reflected in Stock Prices Utilized in This Study. Substantial support was offered in Chapters III and IV in support of the contention that earnings data are important considerations for investors and in support of the efficient capital market hypothesis which contends that stock prices adjust instantaneously to information. Tests were made in this study to insure that data from annual reports were released by the test

banks prior to the dates utilized to establish stock prices for the test year.

Assumptions of the Method of Least Squares are Sufficiently Met. The line of regression in Figure 1 is based on the statistical method of least squares. Malinvaud discusses four assumptions that underlie the method of least squares: the variables are numerical quantities observed without error, homoscedasticity, independence of the different observations, and normality.[18] Malinvaud states that "if assumptions 1 to 4 are satisfied, all the statistical procedures usually associated with the method of least squares are completely justified."[19] The method of least squares is so powerful that minor violations of the assumptions normally do not result in serious errors. In this connection, Malinvaud stated:

> ...method of least squares. Its main advantage in econometrics lies in the fact that it gives good results without imposing too restrictive assumptions about the distribution of the variables and therefore has a fairly wide field of application. The econometrician, who rarely has detailed information available about the distributions, can generally resort to this method without the risk of making too serious errors.[20]

Nevertheless, tests of the assumptions underlying the method of least squares are made in this study.

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[18] E. Malinvaud, Statistical Methods of Econometrics (Chicago, 1966), pp. 73-94.

[19] Ibid., p. 93.

[20] Ibid., p. 94.

Tests of Assumptions Underlying the Method of Least Squares

Kolmogorov-Smirnov Goodness of Fit Test. The goodness of fit of the data to the model was tested by use of the Kolmogorov-Smirnov goodness of fit test which is described in Appendix H. The Kolmogorov-Smirnov test of goodness of fit is recognized as one of the most powerful tests for normality. Ostle stated that "since the Kolmogorov-Smirnov test is more powerful than the chi-square test, its use is to be encouraged."[21] Matchings of banks reflecting significant departures from normality at the .05 level of significance were eliminated from this study.

Serial Correlation Test. If observations of a time series are not statistically independent, use of simple correlation techniques may not be appropriate. The serial correlation test described in Appendix I tests the dependence between terms in a time series. In this study, the non-circular definition of serial correlation is utilized. Tests using the non-circular definition are more general than tests using the circular definition and yield valid results whether or not a trend in the data exists. Matchings of banks found to have significant positive serial correlation at the .05 level of significance were eliminated from this study.

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[21]Bernard Ostle, Statistics in Research (2d ed., Ames, 1963), p. 471.

Level of Significance Used

Cochran and Cox have stated:

> ...In testing hypotheses, we are interested in the supposition that the true differences has some specified value, most commonly zero. ...difficulty arises because of the variability that is typical of experimental data. As a result of this variability, the data are never exactly in agreement with the hypothesis, and the problem is to decide whether the discrepancy between the data and the hypothesis is to be ascribed to these variations or to the fact that the hypothesis is not true. The contribution of statistics is the operation known as the test of significance...
>
> This technique enables the experimenter to test his hypothesis about the action of the treatments, with the assurance that there is little risk of erroneously rejecting a hypothesis that happens to be correct. Probabilities of .05 and .01 are most commonly used for this risk, and in these cases the tests are said to be made at the 5 and 1% significance levels respectively. These levels are just useful conventions, and a lower probability may be used if the consequences of an erroneous rejection of the hypothesis are very serious. It should be remembered, however, that in lowering this probability value we automatically diminish the chance of rejecting a hypothesis that is false.[22]

In accordance with these guidelines, the tests in this study were made at the .05 level of significance, with the exception of the test of the sensitivity of the conclusions of the study to the level of significance used. The sensitivity test used levels of .001, .01, .05, .10, and .20.

Data Utilized in Study

Price-earnings Ratios

Stock Prices. Stock prices utilized in this study are averages of high and low quotes for stocks traded in the New York Stock Exchange,

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[22]William G. Cochran and Gertrude M. Cox, Experimental Designs (New York, 1957), pp. 4-5.

the American Stock Exchange, and the Midwest Stock Exchange. Bid prices are used for stocks traded in the Over-The-Counter market.

It is important that stock prices be selected from a period late enough so effects of data in annual reports are reflected in the stock prices. However, to avoid effects on stock prices due to subsequent operations, the period should precede the release date for financial data for the subsequent quarter. Accordingly, the month of March was selected as the period from which stock prices were obtained.

A random number table was used to select the trading dates in March for which stock prices were obtained. The following dates were used

Year of Annual Report	Trading Date for Stock Prices
1961	March 26, 1962
1962	March 11, 1963
1963	March 2, 1964
1964	March 29, 1965
1965	March 28, 1966
1966	March 27, 1967
1967	March 12, 1968
1968	March 20, 1969
1969	March 16, 1970

For stocks not traded on the selected trading date, the stock price on the next subsequent trading date was used.

It is particularly important that financial statement data for the test year be released prior to March 16, 1970 by the test banks. That this occurred for each test bank was confirmed by checking earnings announcements in The Wall Street Journals or Barron's or by direct correspondence with the banks.

The bulk of the stock price quotations were obtained from The Wall Street Journals. Other sources included the National Quotation Bureau in New York and the banks via the data request at Appendix F.

Earnings-Per-Share. Net operating earnings per weighted average share of outstanding common stock for each bank for each of the base years was obtained directly or computed from data in Moody's Bank and Finance Manuals. Earnings-per-share were test-checked for reasonableness to data in annual reports.

Since the reported earnings-per-share data were often computed without consideration of stock dividends and stock splits which were effective after year-end but before the dates of the stock prices used in this study, the earnings-per-share were adjusted for such stock dividends and stock splits to make the stock price and earnings data comparable. Adjustments were made for stock dividends and stock splits which were paid after December 31 but which went ex-dividend before the date used to value the stock.

During the period covered by this study, the banks did not in large measure use preferred stock as a means of financing. A search of Moody's Bank and Finance Manuals revealed only 20 of the 82 banks included in this study had convertible debt, convertible preferred stock, stock options, or stock warrants outstanding at December 31, 1969. Annual reports were available and were examined for 12 of these 20 banks. Five of the 12 banks did not report fully-diluted earnings-per-share in their annual reports. Of the 7 banks that reported the fully-diluted earnings-per-share, only one bank gave equal emphasis to both non-diluted and fully-diluted earnings-per-share, while the other six banks reported earnings-per-share in the financial 'highlights' section of the annual reports based only on the weighted average shares outstanding. In cases where data were available to test differences, the two earnings-per-share figures did not materially differ. In line

with the emphasis in reporting to shareholders by the banks, this study utilizes earnings-per-share computed on the basis of weighted average shares of common stock outstanding during the year.

Dividends-Per-Share

Dividend information was extracted from Moody's Bank and Finance Manuals. These data were checked and missing data were obtained from Moody's Annual Dividend Record or Standard and Poor's Annual Dividend Record. Adjustments were made for stock dividends and stock splits so each dividend-per-share would be comparable for each bank for purposes of the regression analysis.

Book Value-Per-Share

Book value-per-share was extracted from Moody's Bank and Finance Manuals. Adjustments were made for stock dividends and stock splits so each book value-per-share would be comparable for each bank for purposes of the regression analysis.

Stock Dividends and Stock Splits

Dividend and capital changes descriptions in Moody's Bank and Finance Manuals often provided information on stock dividends and stock splits. Additional sources included Moody's Annual Dividend Record and Standard and Poor's Annual Dividend Record.

Changes in Accounting Method, Mergers, and Consolidations

Opinions of independent Certified Public Accountants, cover letters, financial summaries, footnotes, and other disclosures in financial statements in the annual reports and/or in Moody's Bank and Finance Manuals were reviewed to identify non-immaterial changes in accounting methods, mergers, and consolidations. In addition, earnings-per-share and book value-per-share data for the prior years presented in comparative financial statements were compared with amounts originally reported for the prior year. By this procedure, non-immaterial adjustments to prior years data to conform with a latter year reporting procedure were isolated. An additional procedure to identify factors which might alter price-earnings trends involved direct confirmations from the banks as follows.

Data Requested Directly from the Banks

A sample data request form is in Appendix F. Five types of data were requested from the banks.

Accounting Year. Banks were requested to furnish information on the accounting period ending date and on whether or not changes in the reporting period were made during the period covered by this study. The purpose of this request was to insure that banks included in this study utilized the same accounting period.

Income Reconciliations. The methodology of this study requires earnings for the test year to be recomputed on the basis of the reporting procedures in effect before the test year. Such income

reconciliations were requested from the banks for three reasons: (1) to permit a test of the reasonableness of the procedures utilized to estimate the recomputed earnings for banks which did not provide usable reconciliations, (2) to help pinpoint changes in accounting procedures during the test year (other than the changes in reporting procedures under investigation), and (3) to obtain the most accurate data possible on earnings for the test year as recomputed on the basis that there was no change in the reporting procedures for the test year.

Accounting Changes During the Base Years. Banks were requested to identify accounting changes during the base years. This information was used to insure that adequate consideration was given to all the accounting changes made during the period of study.

Request for Stock Price Quotations. Banks were requested to furnish stock price quotations which were unavailable from The Wall Street Journals. An alternative source of this information was the National Quotation Bureau in New York.

Annual Reports. Annual reports were requested for all years included in this study plus the two succeeding years. These reports provided insights into actual reporting procedures utilized by the banks and provided secondary sources of information about accounting changes and other financial statement data utilized in the study.

Responses to Data Requests. Initial data requests were mailed to 153 banks. Second requests were mailed to 106 banks. To expedite replies, the data requests were forwarded under cover letters containing Oklahoma State University letterhead and were addressed to the person in

the bank believed to have responsibility for the data requested. Pre-addressed and stamped return envelopes were provided.

Table V summarizes responses by the banks to Question 2 on the data request at Appendix F. Seventy eight usable responses were received in reply to 153 requests, yielding a percentage usable response rate of 51.0%.

TABLE V

RESULTS OF REQUESTS FOR EARNINGS RECONCILIATIONS

	Number of Banks Included in This Study	Number of Banks Excluded from This Study	Totals	Percentage of Grand Total
Number of banks which returned usable reconciliations for which data to estimate NOE was previously:				
Available	41	26	67	43.8%
Not available . .	5	6	11	7.2
Subtotals . . .	46	32	78	51.0%
Number of banks which did not return usable reconciliations . .	36	39	75	49.0
Totals	82	71	153	100.0%

As indicated in Table VI, 56.2% of the 153 banks furnished one or more annual reports.

TABLE VI

RESULTS OF REQUESTS FOR ANNUAL REPORTS

	Number of Banks Included in This Study	Number of Banks Excluded from This Study	Totals	Percentage of Grand Total
Number of banks which furnished one or more annual report(s) . .	46	40	86	56.2%
Number of banks which did not furnish an annual report . . .	36	31	67	43.8
Totals	82	71	153	100.0%

Pilot Study

A pilot study was conducted to test the feasibility of the main methodology of this study. Ten large banks in New York City were included in the pilot study. These banks were selected with an intuitive expectation that price-earnings ratios of these banks were highly correlated. Therefore, failure of the matching procedures to provide good results in the pilot study would have thrown into serious question the worth of proceeding with this study.

Eight banks qualified as test banks, and the remaining two banks qualified as control banks. Price-earnings ratios for the ten banks were developed for the 1961 through 1968 base years and for the 1969 test year. Regression procedures described earlier in this chapter were used to establish the prediction intervals with which the actual price-earnings ratio for the test bank was compared.

Tests were made by matching each test bank with each control bank. Results from the 16 matchings are shown in Figure 4. Twelve of the 16 results were in Decision Matrix Blocks 1a,2a, 1b,2a, and 1c,2a, which suggested that the changes in reporting procedures did not furnish information to the investors. The remaining four results were inconclusive.

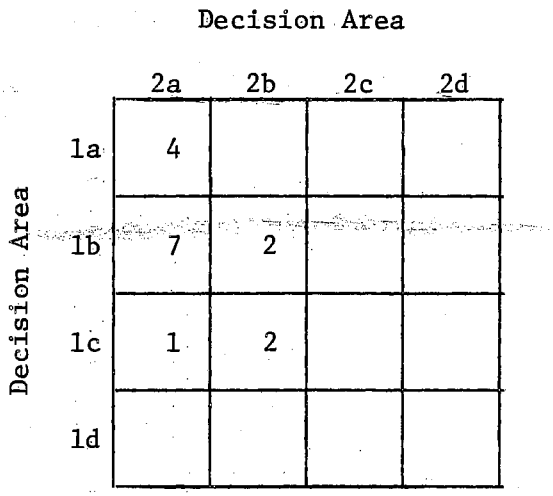

Figure 4. Decision Matrix - Pilot Study

The pilot study shed insights into bank screening procedures that needed to be developed, types of data that needed to be accumulated, and sources and availability of those data. In particular, information was obtained on types of data that were needed directly from the banks, and the data request in Appendix F was developed.

Personal interviews were conducted in Oklahoma City, Oklahoma, with Mr. Sidney Barnes, Vice President, Accounting and Auditing Division, First Oklahoma Bancorporation, Inc., and Mr. George Hammonds, Controller, Liberty National Bank and Trust Company, to obtain reactions of bankers to the proposed research, insights into the nature of information that bankers may be expected to furnish, and suggestions for improvement of the data request format. Comments of these gentlemen were very enlightening and helpful.

Results from the pilot study were extremely encouraging. In particular, the very high correlations between price-earnings ratios of the test and control banks over the base years suggested that the basic methodology of the study was able to provide definitive conclusions. Ample justification was provided by the pilot study for proceeding with the development of the methodology of this study.

CHAPTER VII

EMPIRICAL FINDINGS

Bank Matchings

Initial screening excluded non-homogeneous banks from this study. For the remaining banks (which are listed in Appendix G), the methodology matches test and control banks by correlating base years price-earnings ratios of each of the 23 test banks with each of the 59 control banks. Thus, 59 correlations are made for each test bank, making a cumulative total of 1,357 correlations.

A matching of a test bank with a control bank is eliminated from this study if one or more of three conditions applies: (1) the coefficient of correlation is equal to or less than .7067, (2) the Kolmogorov-Smirnov test of goodness of fit (which is described in Appendix H) indicates a significant departure from normality at the .05 level of significance, or (3) the serial correlation test (which is described in Appendix I) indicates a significant positive serial correlation exists at the .05 level of significance between the price-earnings ratios of the test and control banks.

A coefficient of correlation equal to or less than .7067 between base years price-earnings ratios of the test and control banks may be attributed to random fluctuations at the .05 level of significance. Thus, banks with such low correlations are considered to be inadequately matched, and such matchings are eliminated from this study.

The goodness of fit test and the serial correlation test are made to determine the adequacy of the linear correlational model. As discussed in Chapter VI, the correlational model is powerful enough so that minor violations of the assumptions underlying the model will normally not result in serious erroneous conclusions. However, to make the conclusions of this study as strong as possible, all matchings of banks which violate the assumptions of the linear correlational model at the .05 level of significance are excluded from this study.

Results from the tests of the bank matchings for each test bank are presented in Appendix J. Table VII summarizes the results for all the test banks.

TABLE VII

CUMULATIVE RESULTS FOR TESTS OF BANK MATCHINGS FOR ALL TEST BANKS

	Number of Matchings	
Total number of possible matchings		1,357
Number of matchings excluded due to:		
Inadequate correlation	340	
Serial correlation test	163	(503)
Total number of matchings for which results are accumulated in this study		854

Main Tests

Matchings of the banks remaining after application of the foregoing procedures provide the basis for accumulation of data from which conclusions are drawn as to whether or not the changes in reporting procedures made in 1969 annual reports of commercial banks provided information to investors. The research methodology is described in Chapter VI. Where the actual price-earnings ratio for the test bank for the test year falls in relation to Prediction Intervals 1 and 2, as described in Figure 1 in Chapter VI, is determined for each pairwise matching of each test bank with each control bank. The result for each such test falls into one of the blocks in the decision matrix, as described in Figure 3 in Chapter VI. The numbers of test results in each block of the decision matrix are accumulated for each test bank and for all test banks. The primary level of significance for the main tests is .05. Results of the main tests for each test bank at the .05 level of significance are presented and discussed in Appendix J. Cumulative results are presented in Figure 5.

Observations on Cumulative Results at .05 Level of Significance

From the 1,357 total matchings of banks, only 340 were eliminated from this study due to inadequate correlations. Therefore, 1,017 matchings were sufficiently correlated. That such a high percentage of matchings (approximately 3 out of 4, or 75%) were retained for further testing is very favorable because a large number of matchings provides a broader base from which conclusions are drawn.

Decision Area	2a	2b	2c	2d	Total
1a	47				47
1b	232	160			392
1c	51	281	72		404
1d	1	2	8		11
Totals	331	443	80	0	854

Figure 5. Decision Matrix: Cumulative Results From Main Tests for All Test Banks at the .05 Level of Significance

As previously discussed, the correlational model is strong so that minor violations of its underlying assumptions will generally not result in serious erroneous conclusions. Only 163 matchings were eliminated by the serial correlation test, and no matching was eliminated due to the goodness of fit test. It appears that the assumptions of the model are adequately met. Nevertheless, to eliminate possibly questionable results, matchings found to violate the assumptions of the linear correlational model were eliminated.

After these eliminations, 854 matchings remained for which results were accumulated, and the cumulative results at the .05 level of significance are shown in Figure 5. The research methodology used

is discussed in Chapter VI, and the decisions drawn from the decision matrix are discussed in Figure 3 in Chapter VI. The 330 results in Figure 5 Decision Matrix Blocks 1a,2a, 1b,2a, and 1c,2a suggest that no significant amount of information was provided to investors by the changes in reporting procedures. The 10 results in Decision Matrix Blocks 1d,2b, 1d,2c, and 1d,2d suggest that information was provided to investors by the changes in reporting procedures. No conclusion is drawn from results in the other decision matrix blocks. Therefore, the cumulative results suggest very strongly that investors were not provided a significant amount of information by the reporting changes.

Sensitivity of the Results to the Level of Significance Utilized for Main Tests

To permit an assessment of the sensitivity of results to the level of significance used for the main tests, tests were made at five different levels of significance: .001, .01, .05, .10, and .20. Results reported in the preceding section are based on the .05 level of significance. Decision matrices containing cumulative results for all the test banks at the other levels of significance follow.

Table VIII summarizes the cumulative results for all test banks at all five levels of significance tested. For each level of significance, the numbers of results in Decision Matrix Blocks 1a,2a, 1b,2a, and 1c,2a (which indicate that investors were not provided information by the changes in reporting procedures) overwhelm the numbers of results in Decision Blocks 1d,2b, 1d,2c, and 1d,2d (which indicate that investors were provided information). Thus, the conclusions of this study are not sensitive to the level of significance used for the main tests.

Decision Area

Decision Area	2a	2b	2c	2d	Totals
1a	3				3
1b	47	389			436
1c	4	331	80		415
1d					0
Totals	54	720	80	0	854

Figure 6. Decision Matrix: Cumulative Results From Main Tests for All Test Banks at the .001 Level of Significance

Decision Area

Decision Area	2a	2b	2c	2d	Totals
1a	10				10
1b	146	283			429
1c	16	319	78		413
1d			2		2
Totals	172	602	80	0	854

Figure 7. Decision Matrix: Cumulative Results From Main Tests for All Test Banks at the .01 Level of Significance

Decision Area

Decision Areas	2a	2b	2c	2d	Total
1a	107				107
1b	233	99			332
1c	69	256	68		393
1d	2	8	11	1	22
Totals	411	363	79	1	854

Figure 8. Decision Matrix: Cumulative Results From Main Tests for All Test Banks at the .10 Level of Significance

Decision Area

Decision Areas	2a	2b	2c	2d	Total
1a	162				162
1b	226	51			277
1c	100	191	49		340
1d	14	30	28	3	75
Totals	502	272	77	3	854

Figure 9. Decision Matrix: Cumulative Results From Main Tests for All Test Banks at the .20 Level of Significance

TABLE VIII

SUMMARY OF RESULTS FROM MAIN TESTS ON A CUMULATIVE BASIS FOR ALL TEST BANKS AT FIVE LEVELS OF SIGNIFICANCE

	Level of Significance				
	.001	.01	.05	.10	.20
Number of results in Decision Blocks 1a,2a, 1b,2a, and 1c,2a	54	172	330	409	488
Number of results in Decision Blocks 1d,2b, 1d,2c, and 1d,2d	0	2	10	20	61

CHAPTER VIII

SUMMARY, ASSUMPTIONS AND LIMITATIONS, CONCLUSIONS, AND SUGGESTIONS FOR FURTHER RESEARCH

Background on the Problem

The purpose of financial statements is to communicate relevant financial information about the enterprise and about operations of the enterprise to users of the financial statements. Attempts are continually being made to improve that communication process. Changes in financial statements are proposed with a view toward increasing the effectiveness of the financial statements in communicating data about the enterprise and its operations.

With that goal in mind, the American Institute of Certified Public Accountants (AICPA) proposed that commercial banks change their reporting practices and procedures to report a net income figure in their income statements. The proposed net income figure was basically computed under the all-inclusive concept which holds that all items of revenues and expenses, including material extraordinary items, should be reflected in the income statement.

At the time of the proposal by the AICPA, most banks reported net operating earnings as the final income figure. Net operating earnings excluded provisions for loan losses and also excluded gains and losses on sales or exchanges of securities. Under the reporting changes

recommended by the AICPA, these items are to be reflected in the income statement. By so doing, it is felt that investors in particular will be provided more useful and better information about operations of banks and, in addition, the net income figure will be more comparable with data in income statements of non-bank companies so that investors can make more reliable comparisons between investment alternatives. Many bankers felt that reporting net operating earnings, with other data disclosed elsewhere in the financial statements, provided the information needed by investors. Net operating earnings basically reflected the concept that earnings should include results only from regular and recurring transactions and events involved with normal operations of the bank and should exclude material extraordinary items.

A controversy developed between bankers and the AICPA over the proposed changes in reporting procedures. That the controversy arose and became very heated reflects the beliefs by both bankers and accountants that the proposed changes in reporting procedures would have material impacts on investors. Whether or not the changes in reporting procedures had material impacts on investors is a critical question. The answer to that question provides significant implication to the preparers of financial statements in their attempts to provide relevant information to investors.

The proposed reporting changes were implemented by the larger banks in 1969 annual reports. Data are available to assess whether or not the changes in reporting procedures had significant impacts on investors.

Purpose of Study

This study determined whether or not the changes in reporting procedures made by banks in their 1969 annual reports provided significant information to investors. Information was deemed to be provided if the changes in reporting procedures altered expectations of investors about the banks, thereby resulting in changes in stock prices. Stock prices were viewed as equilibrium values determined by actions of many investors. Therefore, this study tested the effects on investors in the aggregate rather than the effects on individual investors.

Approach of Study

A review of the literature was conducted to add perspective on financial reporting by commercial banks, on the bankers-accountants controversy over the reporting changes, and on the items involved in that controversy. Chapter II reported results from the literature survey.

Prior research was also examined to provide background information on results of studies which have investigated effects of accounting data on investors. In addition, prior research on factors that influence stock prices was reviewed to provide a basis for determining which factors needed to be given special consideration since this study attempted to isolate influences on stock prices attributable to the changes in reporting procedures. Chapter IV reported results from these literature surveys.

A basic assumption of this study was that there existed a significant relationship between reported earnings and stock prices. Without such a relationship, an attempt to isolate effects on stock prices

attributable to changes in income statement reporting procedures would be futile. Reviews of the literature provided justification for that assumption. Additional support for the assumption was provided through a theoretical framework for stock price determination and for investor decision-making presented in Chapter III.

Research Methodology

The methodology was developed on the basis of the above-mentioned theoretical constructs and results of prior research. Since the changes in reporting procedures affected the determination of income and since reported earnings were assumed to have material influences on stock prices, the methodology recognized the significant relationships between earnings and stock prices through the use of price-earnings ratios. To reduce effects on the conclusions due to influences on stock prices of factors other than reported earnings, initial screening of the banks was conducted to eliminate from this study banks having material changes (during the period covered by the study) in factors other than reported earnings that were shown by prior research to significantly affect stock prices. Banks found to be non-homogeneous with the other banks were also eliminated from the study. One hundred and sixty-two banks were considered for inclusion in the study. For reasons presented in Table II in Chapter VI, 80 of these banks were eliminated, so that main testing was conducted using data for 82 banks. All of the 82 banks were large banks.

Banks which had material changes in reporting procedures were classified as test banks, and banks which had immaterial changes in

reporting procedures were classified as control banks. Twenty-three test banks and 59 control banks were included in this study.

Price-earnings ratios of the test and control banks for eight years (1961 through 1968, inclusive) prior to the year of the reporting changes were matched through the use of statistical correlations. Matchings which were not adequately correlated or which were found to violate assumptions underlying the linear correlational model were eliminated. If the ratios were sufficiently correlated, the relationships established in the base years and the actual price-earnings ratio for the control bank for the test year (1969) were used to predict the 1969 price-earnings ratio for the test bank had there been no changes in reporting procedures. The prediction interval was determined through use of statistics and was shown as Prediction Interval 2 in Figure 1 in Chapter VI.

If the changes in reporting procedures did not provide additional useful information to investors, there should be no change in stock prices attributable to the reporting changes. Because the stock price would not be affected in this situation and because the reporting changes reduced reported earnings for the test banks in this study, the price-earnings ratio for the test banks computed on the final reported earnings figure should increase (reduction in the denominator of a ratio while holding the numerator constant increases the value of the ratio) from the above-described prediction levels which were based on the assumption that there were no reporting changes. Adjustments were made to the values in Prediction Interval 2 (see Figure 1 in Chapter VI) to arrive at values for Prediction Interval 1. The price-earnings ratios for the test banks in the test year should be distributed in

and about Prediction Interval 1 if the reporting changes did not provide information to the investors.

If the reporting changes provided information to investors, the stock price for the test bank was expected to fall because the reporting changes reduced reported earnings (and investor expectations based on these earnings would be reduced) and increased variability of the reported earnings which likely adversely affected investors through increasing perceived risk attributable to stock of that bank). With complete adjustment of stock prices to the reporting changes, the price-earnings ratio for the test bank should be distributed in and about Prediction Interval 2. Thus, distributions of actual price-earnings ratios based on the final reported earnings figure for the test banks in the test years were examined in relation to Prediction Interval 1 (no information provided by the reporting changes) and Prediction Interval 2 (information was provided by the reporting changes) to arrive at the conclusion on whether or not the reporting changes provided information to investors.

For accumulation of results, areas in and outside the prediction intervals were designated as follows: 'a' was for a value that was above the upper bound of the prediction interval, 'b' was for a value between the midpoint of the prediction interval and the upper bound of the prediction interval, 'c' was for a value between the midpoint of the prediction interval and the lower bound of the prediction interval, and 'd' was for a value below the lower bound of the prediction interval. Areas for Prediction Intervals 1 and 2 were thus designated: 1a, 1b, 1c, and 1d for Interval 1; and 2a, 2b, 2c, and 2d for Interval 2. Results were accumulated in a decision matrix (see Figure 3, Chapter VI).

Conclusions

Results for each test bank using the .05 level of significance for the main tests were presented in Appendix J for the individual test banks and were presented in Chapter VII on a cumulative basis for all test banks using five different levels of significance (.001, .01, .05, .10, and .20). The strongest conclusions result when the actual price-earnings ratios of the test banks were distributed in and around one of the prediction intervals but were outside the other prediction interval. These results were in Areas 1a,2a, 1b,2a, and 1c,2a for a conclusion that information was not provided, and in Areas 1d,2b, 1d,2c, and 1d,2d for a conclusion that information was provided by the changes. It should be noted that Prediction Intervals 1 and 2 normally overlap so Decision Areas 1a,2a, 1b,2a, 1c,2a, 1d,2b, 1d,2c, and 1d,2d often represent extremes. As a result, it was expected that the numbers of test results in those areas would be small in comparison with the total number of test results. Table IX summarizes conclusions for the individual test banks. Findings for each test bank were presented in Appendix J.

Results for 13 test banks suggested that the reporting changes did not provide information. Results for seven of those 13 banks were very strong in that respect. Results for only one test bank suggested that the reporting changes provided information, and the basis for that suggestion was weak.

Another approach to arriving at an overall conclusion is to assess results on a cumulative basis for all the test banks. These results are presented in Table X. The numbers of results in the information-not-

TABLE IX

SUMMARY OF CONCLUSIONS FOR
INDIVIDUAL TEST BANKS

	Numbers of Test Banks	
Conclusion that the changes in reporting procedures did not provide information:		
Very strong conclusion	7	
Strong conclusion	3	
Weak conclusion	3	13
Conclusion that the changes in reporting procedures provided information:		
Weak conclusion		1
Little or no basis for drawing a conclusion		9
Total test banks		23

TABLE X

SUMMARY OF RESULTS FROM MAIN TESTS ON A
CUMULATIVE BASIS FOR ALL TEST BANKS
AT THE .05 LEVEL OF SIGNIFICANCE

	Numbers of Matchings
Numbers of results in Decision Blocks 1a,2a, 1b,2a, and 1c,2a (results in these decision blocks suggest that investors were not provided information by the changes in reporting procedures)	330
Numbers of results in Decision Blocks 1d,2b, 1d,2c, and 1d,2d (results in these decision blocks suggest that investors were provided information by the changes in reporting procedures)	10

provided categories greatly outweigh the numbers of results in the information-provided categories. These results were found not to be sensitive to the level of significance used for the main testing.

Further examination of the results is appropriate. It is possible that actual price-earnings ratios are within Prediction Interval 1 (which suggests that information was not provided) but are massed at the lower end of that prediction interval. Such a result would suggest that the changes in reporting procedures furnished 'some' information to investors. That is, stock prices were reduced in response to the changes in reporting procedures but were not reduced to a level which would yield conclusions from the statistical tests that no information was provided to the investors.

An assessment of the materiality of the effects on investors due to the changes in reporting procedures may be made by observing the distributions of results in and around the prediction intervals. Based on a normal distribution, it was expected that 5% of the results would be outside (2½% of the results on each side) of the prediction interval at the .05 level of significance and that 95% of the results would be inside the prediction interval (47½% of the results between the midpoint of the prediction interval and the upper bound and 47½% of the results between the midpoint of the prediction interval and the lower bound). Table XI accumulates total results in each decision area in relation to the expected numbers of results. Data on actual results were obtained from Figure 5 in Chapter VII which presented cumulative results for all the test banks at the .05 level of significance.

Actual results were basically distributed as expected in and around Prediction Interval 1. Prediction Interval 1 suggests that

TABLE XI

COMPARISON OF NUMBERS OF RESULTS FROM MAIN TESTS AT THE .05 LEVEL OF SIGNIFICANCE ON A CUMULATIVE BASIS FOR ALL TEST BANKS WITH EXPECTED NUMBERS OF RESULTS IN EACH DECISION AREA

	Prediction Interval 1			Prediction Interval 2		
Decision Area Designation	Expected	Actual	Actual Over (Under) Expected	Expected	Actual	Actual Over (Under) Expected
a	21	47	26	21	331	310
b	406	392	(14)	406	443	37
c	406	404	(2)	406	80	(326)
d	21	11	(10)	21	0	(21)
Totals	854	854	0	854	854	0

information was not provided by the changes in reporting procedures. In relation to Prediction Interval 2, which suggests that information was provided by the changes in reporting procedures, the actual results are much higher than expected. This very strongly suggests that the stock prices did not fall due to the changes in reporting procedures.

The null hypothesis that changes in reporting procedures in annual statements of commercial banks for 1969 did not provide information to investors in common stocks of those banks is not rejected. Evidence strongly suggests that investors in stocks of the test banks were not provided significant information by the 1969 reporting changes.

Assumptions and Limitations

Assumptions underlying the correlational model used in this study were discussed in Chapter VI. Tests were conducted on the assumptions. The total number of possible matchings in this study was 1,357. One hundred and sixty three matchings were eliminated from this study due to violations of the assumptions underlying the linear correlational model. The linear correlational model is sufficiently strong that minor violations of its underlying assumptions will normally not significantly affect results. Assumptions of the model do not appear to be seriously violated for purposes of this study.

The methodology was developed for this study by relying on results of prior research on the behavior of stock prices. For example, results from prior research on factors which affect bank stock prices were relied on in determining the items which were given special consideration and examination for the purpose of eliminating non-homogeneous banks. Also, prior research and theoretical arguments were relied on to support a basic assumption of this study that there was a significant relationship between the reported earnings data and stock prices. Particular reliance was placed on the efficient market hypothesis by assuming that effects of the changes in reporting procedures, if any, were reflected in stock prices of the banks in this study by the dates for which stock prices utilized in this study were determined. Prior research has strongly and consistently supported the efficient market hypothesis.

Since many factors affect stock prices and since this study analyzed stock price relatives to isolate effects on investors attributable to changes in reporting procedures, it was assumed that

effects of factors other than the changes in reporting procedures were adequately considered in the research methodology. Explicit efforts were made to eliminate from this study non-homogeneous banks and banks which had occurrences which could reasonably have materially distorted the trends in the price-earnings ratios. Other influences on the stock price relatives were considered implicitly through the use of the correlational model whereby price-earnings ratios of the test and control banks were related.

An assumption was made that the stock values were adequately measured by prices per share. This is a common assumption underlying many research studies. Although no empirical research has been conducted in this area, the theoretical framework developed in Chapter III provided support for the proposition that stock prices reflected valuations of shareholders in the aggregate.

Results of this study were limited due to the relatively small percentage of banks included. However, the banks included were large banks for which the results are interesting and important. This study included consideration of all banks for which data were felt to be reliable for the purposes of the tests made. For example, the efficient market hypothesis is applicable to stocks widely traded in active markets. Stocks of a bulk of the medium-sized and small banks were not traded in such markets.

The time period covered by this research study was restricted to nine years. A reason for this is that many banks in the not-too-distant past furnished limited amounts of financial information to investors. Also, only in the recent past have large numbers of bank stocks become traded in the major established markets. Stock price data from other

sources were considered less reliable. Due to the limited number of years data, small sample statistical procedures were necessary. While such procedures were considered reliable, they were less desirable than procedures for larger volumes of data.

Effects on investors were measured in this study through the use of stock prices. These prices reflect results of investor behavior in the aggregate. Results of this study are therefore limited to aggregate considerations and are not necessarily applicable to individual investors.

Results of this study are limited to the banks studied, the time period studied, and the changes in reporting procedures studied. Caution should be exercised in extending the results to other industries, other time periods, or other accounting changes.

Implications From Study

While caution must be exercised in extrapolating results from an empirical study such as this one, it should be noted that the test banks on which the tests were made are those banks whose earnings were most significantly affected by the changes in reporting procedures. Since tests for those banks suggested that stock prices did not significantly adjust in response to the accounting changes, it appears reasonable to assume A PRIORI and on the average that stock prices of other banks having similar or smaller changes did not significantly adjust to the reporting changes by those banks.

To the extent that the results may be generalized, this study suggests that justification for requiring changes in reporting procedures to achieve uniformity, particularly in situations where adequate

disclosure is otherwise provided and where a few significant items are involved, will have to be found elsewhere than by a contention that the changes in reporting procedures will provide information to investors. Support is provided for the full-disclosure concept, and the results of the study are consistent with the efficient market hypothesis in the semi-strong form.

Suggestions for Further Research

Additional research is needed to apply the methodology developed in this study to other time periods, other reporting changes, and companies in industries other than the banking industry. Also, since this study investigates the effects of the changes in reporting procedures at the aggregate level, additional research is in order to test those effects on an individual investor level.

The implication from this study that uniform accounting procedures do not necessarily provide more information to investors than do non-uniform procedures with adequate disclosure emphasizes that the area of accounting disclosures should be thoroughly investigated and explored. For example, do accounting disclosures provide information to investors? If so, what types of disclosure are most effective in providing that information? Also, since additional disclosures increase the amount of information that investors must assimilate, a major question arises as to the point at which additional disclosures overburden the investor so that he is no longer provided information by the disclosures. The area of informational overloads is considered prime for intensive investigations because of the inclinations of accounting policy-making groups to utilize the additional disclosure procedure in response to problems facing the accounting profession.

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APPENDIXES

APPENDIX A

DEFINITIONS OF TERMS

Base Years

Base years are years 1961 through 1968, inclusive.

Change in Reporting Procedure

Changes in reporting procedures occur when all or part of items which were reported in financial statements for prior periods but were not included in the earnings computation are included in computation of the final reported earnings figure for the period of change. See the example on Page 2.

Control Bank

A control bank is a bank with data includible in this study for which 1969 changes in reporting procedures had an immaterial impact on the final reported earnings figure.

Earnings

This term is used as a synonym for income.

Immaterial

Changes in income statement data which are 10% or less of the final reported earnings figure are considered too small to appreciably affect investors' decisions and are thus considered immaterial. See the discussion of materiality in Chapter VI.

Information

Following Beaver, an item is said to have informational content if it leads to a change in investors' assessments of the probability

distribution of future returns (or prices) resulting in a change in the equilibrium value of the current market price of the stock.[1]

Investor

An investor is an owner or prospective owner of one or more shares of common stock.

Large Bank

Banks with deposits of $200 million or more are considered large.

Market Model

Markowitz[2] developed a model, subsequently refined by Sharpe,[3,4] which expressed individual security returns as a linear function of general market returns. This model, and adaptations thereof, is referred to as the market model.

Materiality

Changes in income statement data which are 20% or more of the final reported earnings figure are considered substantial enough to

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[1]Beaver, "The Information Content of Annual Earnings Announcements," pp. 67-85.

[2]Markowitz, pp. 96-101.

[3]William F. Sharpe, "A Simplified Model for Portfolio Analysis," Management Science, IX, No. 2 (Jan., 1963), pp. 277-293.

[4]William F. Sharpe, "Capital Assets Prices: A Theory of Market Equilibrium under Conditions of Risk," The Journal of Finance, XIX, No. 3 (Sept., 1964), pp. 425-442.

appreciably affect investors' decisions and are thus considered to be material. See the discussion of materiality in Chapter VI.

Medium-sized Bank

Medium-sized banks are those with deposits of over $50 million but less than $200 million.

Net Income (NI)

Net income is the final reported earnings figure and is computed in accordance with generally accepted accounting principles. For banks, net income, computed as illustrated in Appendix C, is the final reported earnings figure in 1969 annual reports.

Net Operating Earnings (NOE)

Net operating earnings, computed as illustrated in Appendix B, is the final reported earnings figure of the banks prior to 1969.

Prediction Interval

Prediction intervals are used in the main tests (see Figure 1 in Chapter VI) as the base for analysis of data to ascertain whether or not the reporting changes provided information to investors.

Price-earnings Ratio (P/E)

The price-earnings ratio is the market price for a share of common stock divided by an earnings-per-share of common stock figure. Unless noted otherwise, the earnings-per-share used in computation of the price-earnings ratios are based on the final reported earnings figures.

Reclassification

A reclassification constitutes a change in categorization of items presented within the income statement. Reclassifications have no impact on the final reported earnings figure.

Single-figure Fixation

Following Hoyt, single figure fixation occurs when investors focus on the final reported earnings or earnings-per-share figure for decision-making purposes, without analysis of the financial statements to discover items which perhaps should be used to modify the final reported earnings or earnings-per-share figure. The term as used relates only to data in the financial statements and not to other factors such as forecasts of general market conditions, industry conditions, and other factors which may influence investors' decisions.[5]

Small Banks

Banks with deposits up to and including $50 million are considered small.

Stock Price Relative

See price-earnings ratio, for which this term is a synonym.

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[5]Hoyt, pp. 34-35.

Test Bank

A test bank is a bank with data includible in this study for which the 1969 changes in reporting procedures had a material impact on the final reported earnings figure.

Test Year

The test year is 1969, the year for which the changes in reporting procedures were first required.

APPENDIX B

INCOME STATEMENT FORMAT USED BY MOST LARGE PUBLICLY-HELD BANKS BY THE END OF 1968

Statement of Income

For the Years Ended December 31, 19__ and 19__

	Current Year	Preceding Year
Operating Income:		
Interest on loans	$1,240,000	$1,142,000
Interest and dividends on:		
U. S. Government securities	190,000	210,000
Other securities	70,000	68,000
Other operating income	200,000	180,000
Total	$1,700,000	$1,600,000
Operating Expenses:		
Salaries	$ 230,000	$ 210,000
Other employee benefits	25,000	25,000
Interest	460,000	440,000
Other operating expenses	145,000	125,000
Total	$ 860,000	$ 800,000
Operating earnings before income taxes	$ 840,000	$ 800,000
Less applicable income taxes*	336,000	320,000
Net operating earnings	$ 504,000	$ 480,000
Net operating earnings per share	$ 5.04	$ 4.80
Nonoperating additions and (deductions):		
Securities gains (losses), less related income tax effect of $40,000 in 19__ and $48,000 in 19__*	$ (60,000)	$ (72,000)
Provision for loan losses, less income tax reduction of $16,000 in 19__ and $8,000 in 19__*	(24,000)	(12,000)
Other, less income tax reduction of $12,000*	(18,000)	--
Total	$ (102,000)	$ (84,000)
Transferred to undivided profits	$ 402,000	$ 396,000

*Assumes the income tax rate was a flat 40%

(Emphasis added)

Source (with minor modifications and excluding amounts): Hugh A. Hoyt, "The Relative Predictive Capacity of Two Bank Earnings Measures: An Empirical Evaluation" (unpub. Ph.D. dissertation, Michigan State University, 1970), p. 3.

APPENDIX C

INCOME STATEMENT FORMAT SUITABLE FOR INCLUSION IN ANNUAL REPORTS BY BANKS UNDER 1969 FEDERAL BANK REGULATORY AGENCIES REQUIREMENTS

Statement of Income

For the Years Ended December 31, 19__ and 19__

	Current Year	Preceding Year
Operating Income:		
Interest on loans	$1,240,000	$1,142,000
Interest and dividends on:		
U. S. Government securities	190,000	210,000
Other securities	70,000	68,000
Other operating income	200,000	180,000
Total	$1,700,000	$1,600,000
Operating Expenses:		
Salaries	$ 230,000	$ 210,000
Other employee benefits	25,000	25,000
Interest	460,000	440,000
Loan-loss provisions (Note 1)	10,000	20,000
Other operating expenses	145,000	125,000
Total	$ 870,000	$ 820,000
Income before income taxes and securities gains (losses)	$ 830,000	$ 780,000
Less applicable income taxes:*		
Current	$ 320,000	$ 312,000
Deferred	12,000	--
	$ 332,000	$ 312,000
Income before securities gains (losses)	$ 498,000	$ 468,000
Securities gains (losses), less related income tax effect of $40,000 in 19__ and $48,000 in 19__*	(60,000)	(72,000)
Income before extraordinary item	$ 438,000	$ 396,000
(Loss) on sale of branch bank building, less related reduction in income tax of $12,000*	(18,000)	--
Net income	$ 420,000	$ 396,000
Earnings data per share: **		
Income before extraordinary item	$ 4.38	$ 3.96
Extraordinary item, less related reduction in income tax	(.18)	--
Net income	$ 4.20	$ 3.96

See accompanying Notes to Financial Statements (Emphasis added)

*Assumes the income tax rate was a flat 40%

**The bank may elect to present in this section an additional per-share amount for income before securities gains (losses).

Source (with minor modifications and excluding amounts): Committee on Bank Accounting and Auditing of the American Institute of Certified Public Accountants, Audits of Banks: Supplement (New York, 1969), pp. 5 and 7.

Notes to Financial Statements

For the Year Ended December 31, 19__

Note 1: Loan Losses

Transactions in the reserve for loan losses for the year were as follows:

	Current Year	Preceding Year
Balance, January 1	$ 400,000	$ 384,000
Provision charged to operating expenses	10,000	20,000
Transferred from undivided profits	18,000	--
Deferred tax charged against income	12,000	--
	$ 440,000	$ 404,000
Less loans charged off, net of recoveries of $3,000 and $5,000	5,000	4,000
Balance, December 31	$ 435,000	$ 400,000

The loan-loss provision charged to operating expenses is based on the bank's past loan-loss experience and such other factors which, in management's judgment, deserve current recognition in estimating possible loan losses. The amount so provided during the current year exceeds by $2,000 the minimum provision required by the regulatory authorities. The amount transferred from undivided profits represents a provision for loan losses in addition to the amount charged to operating expenses, less the related tax effect.

The balance in the reserve at year end approximates the maximum allowable for tax purposes.

Additional Comments

Other notes to the financial statements are not reproduced here as they are not pertinent to this study.

APPENDIX D

RECONCILIATION OF DIFFERENCES BETWEEN THE FINAL REPORTED INCOME AMOUNTS UNDER REPORTING FORMATS USED BEFORE THE 1969 CHANGES (APPENDIX B) AND AFTER THE 1969 CHANGES (APPENDIX C)

Reconciliation of the Final Reported Income Figures

for the Current Year in Appendix B

and in Appendix C

	Current Year	
	Total Dollar Amounts	Per Share
Final reported income designated as 'Net operating earnings' under the reporting format used before the 1969 changes (Appendix B)	$ 504,000	$5.04
Adjustments:		
1. Include the normal loan loss provision in the computation of 'Net income'	(10,000)	
2. Reduce income taxes by the tax effect of the loan loss adjustment immediately above. .	4,000	
3. Include securities losses, less the related tax effect of $40,000, in the computation of 'Net income'	(60,000)	
4. Include the loss on the sale of the branch bank building, less related tax effect of $12,000, in the computation of 'Net income' .	(18,000)	
Final reported income designated as 'Net income' under the reporting format used after the 1969 changes (Appendix C)	$ 420,000	$4.20

APPENDIX E

SUMMARY OF MAJOR CHANGES FOR 1969 IN REPORTING PROCEDURES AND IN ACCOUNTING PRACTICES OF COMMERCIAL BANKS UNDER JURISDICTION OF THE FEDERAL RESERVE BOARD

Changes in Reporting Procedures for 1969

Provision for Loan Losses

Income Tax Requirements. For Federal income tax purposes, banks using the reserve method were permitted to compute provision for loan losses as a percentage of total outstanding loans. The resulting amount was normally larger than the actual rate of losses which the banks were experiencing. Thus, the tax formula provided for a contingency, and, for banks to be allowed the tax deduction for amounts in excess of their experienced rate of losses, the total amount deductible for income tax purposes was required to be recorded on the books of the banks.

Prior Practice. Banks included the total amount of the tax-deductible provision for loan losses (net of income tax effect) in nonoperating transactions.

New Procedure. Banks on the reserve basis are required to charge, in computing operating income, a reasonable amount to cover losses that may be expected in the current loan portfolio. This normal provision for loan losses is based on a five-year average of loan losses or an amount representing actual net loan losses for the current year. Excesses of loan loss provisions over the normal amounts are treated as provisions for contingencies and are therefore chargeable directly against Undivided Profits, with deferred income taxes provided, if appropriate.

Securities Gains or Losses

Prior Practice. Banks included securities gains or losses (net of income tax effect) in nonoperating deductions.

New Procedure. Securities gains or losses (net of income tax effect) are reported as a separate item in the computation of net income.

Extraordinary Charges or Credits

Prior Practice. Extraordinary charges or credits (net of income tax effect) were reported in nonoperating transactions.

New Procedure. Extraordinary charges or credits (net of income tax effect) are reported as a separate item in the computation of net income. Miscellaneous but recurring losses and recoveries are reflected in operating income or expense accounts.

Interest on Capital Notes and Debentures

Prior Practice. Interest on capital notes and debentures was included with dividends on preferred stock and shown as a distribution of earnings.

New Procedure. The interest is deducted as an operating expense.

Changes in Accounting Practices for 1969

Use of Accrual Accounting

Prior Practice. Most large banks had been reporting on the accrual basis for some time. There were, however, some banks still reporting on the cash basis.

New Procedure. Accrual accounting is required for significant accounts in calendar year 1969 for all banks with total resources of $50 million or more and in calendar year 1970 for all banks with total resources of $25 million or more.

Consolidated Income Statement

Prior Practice. Many larger banks had been reporting on a consolidated basis for some time. There were, however, some banks still reporting on an unconsolidated basis.

New Procedure. Consolidated statements are required.

Discount on Securities Purchased Below Par or Face Value

Prior Practice. The discount was most commonly shown as profit when the related securities were sold or exchanged; in some cases, the discount was systematically amortized and recognized as income during the period the security was held.

New Procedure. Accretion of discount in current income is encouraged but not required. Deferred income taxes applicable to the amount accreted are to be provided for currently.

Income Tax Accounting

Prior Practice. Most large banks were already reporting income taxes on an accrual basis. There were, however, some banks still reporting on the cash basis.

New Procedure. All banks must accrue income taxes. Reported taxes must be allocated between operating income before taxes, securities gains or losses, and extraordinary charges or credits.

Source (with modifications): Federal Reserve Bulletin, LVI, No. 7 (Jul., 1970), pp. 565-566.

APPENDIX F

SAMPLE DATA REQUEST

Oklahoma State University

COLLEGE OF BUSINESS ADMINISTRATION

STILLWATER, OKLAHOMA 74074
(405) 372-6211, EXT. 258

June 21, 1972

Mr. Ernest M. Zollers, Comptroller
American Bank & Trust Company of Pennsylvania
35 North Sixth Street
Reading, Pennsylvania 19601

Dear Mr. Zollers:

I am engaged in research investigating effects on investors (as measured by adjustments in stock prices) of changes in reporting procedures by commercial banks. Knowledge of these effects should be useful to bankers and accountants in designing effective financial statements.

To enable me to conduct this research, please furnish me the data requested on the attached sheets.

The attached sheets are prepared in the formats of 'inter-office communications' to facilitate routing within your organization to persons who will complete the data request.

Your favorable, prompt consideration will be appreciated.

Sincerely,

John B. Barrack
Researcher

Approved:

Dr. Dale E. Armstrong
Associate Professor
Director of Research

AMERICAN BANK & TRUST COMPANY OF PENNSYLVANIA

INTER-OFFICE COMMUNICATION Page 1 of 2

June 26, 1972

TO: _____

_____

_____

THEN MAIL TO: Mr. John B. Barrack
College of Business Administration
Oklahoma State University
Stillwater, Oklahoma 74074

FROM: Mr. Ernest M. Zollers, Comptroller

Complete the following requested data for the above named company (including its major predecessor company for prior years, if applicable) and then mail this form to Mr. John B. Barrack at the above address (a stamped, addressed envelope is attached for your use):

1. On what date does the company's accounting period end? _____
Was this date changed during years 1961-1969, inclusive? _____
Yes or No

2. Reconciliation of incomes for 1969:

Net Income for 1969, computed under banking authority regulations and procedures used for 1969			Consolidated $5,696,598
Add:	Losses on Sales of Securities:	Net of tax	
	Provision for Loan Losses:	Gross	
		Less tax	
	Others (describe):		
Less:	Gains on Sales of Securities:	Net of tax	
	Others (describe):		
Net Operating Earnings After Income Taxes for 1969, computed under banking authority regulations and procedures used for 1968			$ _____

3. Was there any change(s) in accounting method(s) (Examples below) used by the company during years ended in 1961-1968, inclusive, which increased or decreased 'Net Operating Earnings After Income Taxes' and/or 'Book Value Per Share of Common Stock' by 5% or more?

_____
Yes or No

If the above answer is 'No,' skip the remainder of this question.
If the above answer is 'Yes,' state:
Year of change(s): _____ (Describe change(s) for each year separately. Attach additional sheets if needed)

Describe the change(s):	Check if applicable
Adopt accrual method of accounting for all accounts when another method was used in prior years . . .	_____
Adopt accrual method of accounting for income taxes when another method was used in prior years . . .	_____
Begin amortizing premiums or discounts on loans when this was not done in prior years	_____
Begin accretion of discount on securities purchased below par or face value in current income when this was not done in prior years	_____
Prepare consolidated financial statements to include subsidiary companies when data for eligible subsidiaries owned in prior years were not included in consolidated prior year statements .	_____
Others (describe):	

Dollar amount of increase (decrease) in 'Net Operating Earnings After Income Taxes' in year of change(s) and attributable to the change(s) was: $_____

Dollar amount of increase (decrease) in 'Book Value Per Share of Common Stock' in year of change(s) and attributable to the change(s) was: $_____

4. The market prices for a share of common stock of Berks County Trust Co. (predecessor to American Bank and Trust Company of Pennsylvania) on the following dates, or the first date thereafter that the stock was traded, were:

	Bid	Ask	or	High	Low
March 2, 1964	___	___		___	___
March 11, 1963	___	___		___	___
March 26, 1962	___	___		___	___

AMERICAN BANK & TRUST COMPANY OF PENNSYLVANIA

INTER-OFFICE COMMUNICATION

TO: _____ June 26, 1972

_____

_____

FROM: Mr. Ernest M. Zollers, Comptroller

Mail one copy of the 'Annual Report to Stockholders' of the above named company for each year ended in 1961 through 1972, inclusive, to:

Mr. John B. Barrack
College of Business Administration
Oklahoma State University
Stillwater, Oklahoma 74074

For the year(s) during 1961-1972 which the above named company was not in existence, if any, furnish the 'Annual Report to Stockholders' of the major predecessor company(ies) for that(those) year(s). If the annual reports for the predecessor company(ies) are not available at your office, forward a copy of this letter to the office which can supply those annual reports or send Mr. Barrack the name and address of the person to contact for those annual reports.

If annual reports are not available for all years requested, send a copy of the ones which are available.

APPENDIX G

BANKS IN THIS STUDY

Large Banks

Test Banks

1. American Fletcher Corporation, Indianapolis, Indiana
2. The Bank of California, San Francisco, California
3. Bank of Delaware, Wilmington, Delaware
4. Bankers Trust New York Corporation, New York, New York
5. Central National Bank of Cleveland, Cleveland, Ohio
6. Central National Chicago Corporation, Chicago, Illinois
7. The Chase Manhattan Corporation, New York, New York
8. The Citizens & Southern National Bank, Savannah, Georgia
9. City National Corporation, Beverly Hills, California
10. Fidelity Corporation of Pennsylvania, Philadelphia, Pennsylvania
11. First National Bank in Dallas, Dallas, Texas
12. First Security Corporation, Salt Lake City, Utah
13. First Union National Bancorporation, Inc., Charlotte, North Carolina
14. Industrial Valley Bank and Trust Company, Philadelphia, Pennsylvania
15. Liberty National Corporation, Oklahoma City, Oklahoma
16. J. P. Morgan & Co., Inc., New York, New York
17. National City Bank of Cleveland, Cleveland, Ohio
18. National Commercial Bank & Trust Company, Albany, New York
19. The Northern Trust Company, Chicago, Illinois
20. Republic National Bank of Dallas, Dallas, Texas
21. Southern California First National Corporation, San Diego, California
22. Texas Bank & Trust Company, Dallas, Texas
23. Union Planters National Bank of Memphis, Memphis, Tennessee

Control Banks

1. American Bank & Trust Company of Philadelphia, Reading, Pennsylvania
2. American National Corporation, Chicago, Illinois
3. American Security & Trust Company, Washington, D.C.
4. The Arizona Bank, Phoenix, Arizona
5. Bank of the Southwest N.A., Houston, Texas
6. Bankamerica Corporation, San Francisco, California
7. Baystate Corporation, Boston, Massachusetts
8. Boatmen's Bancshares Inc., St. Louis, Missouri
9. CBT Corporation, Hartford, Connecticut
10. Central Bancorporation, Inc., Cincinnati, Ohio
11. Central Banking System, Inc., Oakland, California
12. Central National Corporation, Richmond, Virginia
13. Commerce Bancshares, Inc., Kansas City, Missouri
14. The Connecticut National Bank, Bridgeport, Connecticut
15. CP Financial Corporation, Bala-Cynwyd, Pennsylvania
16. Crocker National Corporation, San Francisco, California
17. Detroit Bank & Trust Company, Detroit, Michigan
18. Equitable Trust Company, Baltimore, Maryland

19. Fidelity Union Trust Company, Newark, New Jersey
20. Fifth Third Bank, Cincinnati, Ohio
21. First Bankshares Corporation of South Carolina, Columbia, South Carolina
22. First Bank System, Inc., Minneapolis, Minnesota
23. First Chicago Corporation, Chicago, Illinois
24. First & Merchants Corporation, Richmond, Virginia
25. First National Bank of New Jersey, Totowa, New Jersey
26. First National State Bancorporation, Newark, New Jersey
27. First Oklahoma Bancorporation, Inc., Oklahoma City, Oklahoma
28. First at Orlando Corporation, Orlando, Florida
29. First Pennsylvania Corporation, Philadelphia, Pennsylvania
30. First Union, Incorporated, St. Louis, Missouri
31. First Virginia Bankshares Corporation, Arlington, Virginia
32. Franklin New York Corporation, New York, New York
33. Girard Company, Philadelphia, Pennsylvania
34. Harris Trust and Savings Bank, Chicago, Illinois
35. Hartford National Corporation, Hartford, Connecticut
36. Industrial National Corporation, Providence, Rhode Island
37. Marine Bancorporation, Seattle, Washington
38. Marine Midland Banks, Inc., New York, New York
39. Mercantile National Bank at Dallas, Dallas, Texas
40. Mercantile Trust Company N.A., St. Louis, Missouri
41. National Bank of Detroit, Detroit, Michigan
42. NCNB Corporation, Charlotte, North Carolina
43. Northwest Bancorporation, Minneapolis, Minnesota
44. PNB Corporation, Philadelphia, Pennsylvania
45. Provident National Corporation, Philadelphia, Pennsylvania
46. Seattle First National Bank, Seattle, Washington
47. Shawmut Association, Inc., Boston, Massachusetts
48. Southeast Bancorporation, Inc., Miami, Florida
49. State Bank of Albany, Albany, New York
50. State Street Bank & Trust Company, Boston, Massachusetts
51. Texas Bank, N.A., Houston, Texas
52. Unionamerica, Inc., Los Angeles, California
53. Union Trust Company of Maryland, Baltimore, Maryland
54. United States Trust Company of New York, New York, New York
55. Valley National Bank of Arizona, Phoenix, Arizona
56. Virginia National Bank, Norfolk, Virginia
57. Wells Fargo & Co., San Francisco, California
58. Western Bancorporation, Los Angeles, California
59. WPNB Corporation, Pittsburgh, Pennsylvania

APPENDIX H

KOLMOGOROV-SMIRNOV TEST OF GOODNESS OF FIT

The Kolmogorov-Smirnov Test of Goodness of Fit utilized in this study was described by Ostle as follows:

(1) Let $F(x)$ be the completely specified theoretical cumulative distribution function under the null hypothesis.

(2) Let $S_n(x)$ be the sample cumulative distribution function based on n observations. For any observed x, $S_n(x) = k/n$ where k is the number of observations less than or equal to x.

(3) Determine the maximum deviation, D, defined by

$$D = \text{Max} \left| F(x) - S_n(x) \right|$$

(4) If, for the chosen significance level, the observed value of D is greater than or equal to the critical table value, the hypothesis will be rejected.[1]

The theoretical cumulative distribution function appropriate for this research was described by Fama.[2] The formula, described in terms of the above symbology, is:

$$F(x_i) = \frac{3i - 1}{3i + 1}$$

where $i = 1, 2, \ldots n$
and n = Number of observations in the sample

The sample cumulative distribution function was obtained by computing the ordered unit normal deviate of the residuals from the correlational analysis and utilizing resulting values to derive the cumulative distribution function using Hastings' approximation as described by the U. S. Department of Commerce, National Bureau of Standards as follows:

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[1]Ostle, p. 471.

[2]Eugene Fama, "Behavior of Stock Prices," Journal of Business, XXXVIII, No. 1 (Jan., 1965), p. 52.

Formula 26.2.19:

$$P(x) = 1 - \tfrac{1}{2}\left(1 + d_1x + d_2x^2 + d_3x^3 + d_4x^4 + d_5x^5 + d_6x^6\right)^{-16} + e(x)$$

$$|e(x)| = (2.7)(10^{-7})$$

where $d_1 = .04986\ 73470$, $d_2 = .02114\ 10061$, $d_3 = .00327\ 76263$, $d_4 = .00003\ 80036$, $d_5 = .00004\ 88906$, $d_6 = .00000\ 53830$

and x = ordered unit normal deviates of the residuals from the correlation.[3]

As discussed in Chapter VI, the Kolmogorov-Smirnov Test of Goodness of Fit was used to test the normality assumption underlying the method of least squares which was applied when matching the test and control banks. Matchings of banks reflecting significant departures from normality at the .05 level of significance were eliminated from this study.

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[3]U. S. Department of Commerce, National Bureau of Standards, Handbook of Mathematical Functions, eds. Milton Abramowitz and Irene Stegun (Washington, 1970), p. 932.

APPENDIX I

SERIAL CORRELATION TEST

The formula for the non-circular definition of serial correlation is based on tests developed by Anderson[1] and is described by Tintner[2] as follows:

$$r_L = \frac{\sum_{t=1}^{N-L} X_t X_{t+L} - \left(\sum_{t=1}^{N-L} X_t\right)\left(\sum_{t=L+1}^{N} X_t\right)/(N-L)}{\left[\sum_{t=1}^{N-L} X_t^2 - \left(\sum_{t=1}^{N-L} X_t\right)^2/(N-L)\right]^{\frac{1}{2}} \left[\sum_{t=L+1}^{N} X_t^2 - \left(\sum_{t=L+1}^{N} X_t\right)^2/(N-L)\right]^{\frac{1}{2}}}$$

where $t = 1, 2, 3, \ldots N$
N = Number of observations in the sample
L = Number of time periods between terms being compared in the time series. Orders greater than 1 test for lags. For this study, $L = 1$.
X = Residuals from the correlation
and r_L = The serial correlation coefficient

Calculated values for r_L are significant for purposes of this study if they equal or exceed the table values for the positive tail.

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[1]R. L. Anderson, "Serial Correlation in the Analysis of Time Series" (unpub. Ph.D. dissertation, The Iowa State University, 1941).

[2]Gerhard Tintner, Econometrics (New York, 1952), p. 243.

APPENDIX J

CUMULATIVE RESULTS FROM MAIN TESTS FOR EACH TEST BANK AT THE .05 LEVEL OF SIGNIFICANCE

Decision Matrix Blocks	American Fletcher Corporation	The Bank of California	Bank of Delaware	Bankers Trust New York Corporation	Central National Bank of Cleveland	Central National Chicago Corporation	The Chase Manhattan Corporation	The Citizens & Southern National Bank	City National Corporation	Fidelity Corporation of Pennsylvania	First National Bank in Dallas	First Security Corporation
1a,2a	-	9	-	8	-	-	-	-	1	-	3	-
1b,2a	1	23	1	35	10	2	42	1	1	11	13	15
1c,2a	-	-	-	-	4	-	3	1	-	26	-	14
1d,2a	-	-	-	-	-	-	-	-	-	1	-	-
1a,2b	-	-	-	-	-	-	-	-	-	-	-	-
1b,2b	2	14	4	2	8	18	-	-	9	2	18	1
1c,2b	35	1	19	1	21	5	3	-	10	12	7	9
1d,2b	-	-	-	-	-	-	-	-	-	-	-	-
1a,2c	-	-	-	-	-	-	-	-	-	-	-	-
1b,2c	-	-	-	-	-	-	-	-	-	-	-	-
1c,2c	4	-	-	-	1	14	-	-	2	-	1	1
1d,2c	1	-	-	-	-	-	-	-	1	-	-	-
1a,2d	-	-	-	-	-	-	-	-	-	-	-	-
1b,2d	-	-	-	-	-	-	-	-	-	-	-	-
1c,2d	-	-	-	-	-	-	-	-	-	-	-	-
1d,2d	-	-	-	-	-	-	-	-	-	-	-	-
Totals	43	47	24	46	44	39	48	2	24	52	42	40

Summary of Results -

Decision Matrix Blocks

1a,2a, 1b,2a, and 1c,2a	1	32	1	43	14	2	45	2	2	37	16	29
1d,2b, 1d,2c, and 1d,2d	1	0	0	0	0	0	0	0	1	0	0	0

Analysis of Bank Matchings

Total Number of Control Banks	59	59	59	59	59	59	59	59	59	59	59	59
Number of Matchings Excluded due to:												
Inadequate Correlation	(8)	(8)	(22)	(8)	(9)	(5)	(10)	(57)	(14)	(4)	(6)	(9)
Serial Correlation Test	(8)	(4)	(13)	(5)	(6)	(15)	(1)	(0)	(21)	(3)	(11)	(10)
Total Number of Matchings For Which Results Are Accumulated	43	47	24	46	44	39	48	2	24	52	42	40

Decision Matrix Blocks	First Union National Bancorporation, Inc.	Industrial Valley Bank and Trust Company	Liberty National Corporation	J.P. Morgan & Co., Inc.	National City Bank of Cleveland	National Commercial Bank & Trust Company	The Northern Trust Company	Republic National Bank of Dallas	Southern California First National Corporation	Texas Bank & Trust Company	Union Planters National Bank of Memphis	Cumulative For All Test Banks
1a,2a	-	-	-	8	-	-	-	-	-	18	-	47
1b,2a	-	1	-	22	7	-	13	1	4	28	1	232
1c,2a	1	-	-	-	2	-	-	-	-	-	-	51
1d,2a	-	-	-	-	-	-	-	-	-	-	-	1
1a,2b	-	-	-	-	-	-	-	-	-	-	-	-
1b,2b	3	8	-	8	6	3	8	18	18	-	10	160
1c,2b	37	19	3	2	25	7	23	19	8	-	15	281
1d,2b	1	-	-	-	1	-	-	-	-	-	-	2
1a,2c	-	-	-	-	-	-	-	-	-	-	-	-
1b,2c	-	-	-	-	-	-	-	-	-	-	-	-
1c,2c	-	11	10	-	-	23	1	3	-	-	1	72
1d,2c	3	2	-	-	-	1	-	-	-	-	-	8
1a,2d	-	-	-	-	-	-	-	-	-	-	-	-
1b,2d	-	-	-	-	-	-	-	-	-	-	-	-
1c,2d	-	-	-	-	-	-	-	-	-	-	-	-
1d,2d	-	-	-	-	-	-	-	-	-	-	-	-
Totals	45	41	13	40	41	34	45	41	30	46	27	854
Summary of Results -												
Decision Matrix Blocks												
1a,2a, 1b,2a, and 1c,2a	1	1	0	30	9	0	13	1	4	46	1	330
1d,2b, 1d,2c, and 1d,2d	4	2	0	0	1	1	0	0	0	0	0	10
Analysis of Bank Matchings												
Total Number of Control Banks	59	59	59	59	59	59	59	59	59	59	59	1,357
Number of Matchings Excluded due to:												
Inadequate Correlation	(13)	(6)	(46)	(11)	(5)	(17)	(8)	(15)	(28)	(7)	(24)	(340)
Serial Correlation Test	(1)	(12)	(0)	(8)	(13)	(8)	(6)	(3)	(1)	(6)	(8)	(163)
Total Number of Matchings For Which Results Are Accumulated	45	41	13	40	41	34	45	41	30	46	27	854

American Fletcher Corporation

Price-earnings ratios for American Fletcher Corporation correlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 47 matchings remaining, one test suggested that the changes in reporting procedures did not provide information to investors. Likewise, one test suggested that the changes provided information to investors. These results suggest no basis for drawing a conclusion as to whether or not investors in common stock of American Fletcher Corporation were provided information by the bank's 1969 changes in reporting procedures.

The Bank of California

Price-earnings ratios for The Bank of California correlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the linear correlational model were eliminated.

For the 47 matchings remaining, 32 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that investors in common stock of The Bank of California were not provided information by the bank's 1969 changes in reporting procedures.

Bank of Delaware

Price-earnings ratios for the Bank of Delaware failed to correlate well with those of the control banks. Comparisons with 22 control banks were eliminated due to inadequate correlations. Thirteen matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the 24 matchings remaining, one test suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest little basis for drawing a conclusion as to whether or not investors in common stock of the Bank of Delaware were provided information by the bank's 1969 changes in reporting procedures.

Bankers Trust New York Corporation

Price-earnings ratios for Bankers Trust New York Corporation correlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 46 matchings remaining, 43 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that investors in common stock of Bankers Trust New York Corporation were not provided information by the bank's 1969 changes in reporting procedures.

Central National Bank of Cleveland

Price-earnings ratios for the Central National Bank of Cleveland correlated well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 44 matchings remaining, 14 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a strong conclusion that investors in common stock of the Central National Bank of Cleveland were not provided information by the bank's 1969 changes in reporting procedures.

Central National Chicago Corporation

Price-earnings ratios for Central National Chicago Corporation correlated very well with those of the control banks. Only 5 of the matchings with control banks were eliminated due to inadequate correlations. Fifteen of the matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the 39 matchings remaining, two tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest little basis for drawing a conclusion as to whether or not investors in common stock of Central National Chicago Corporation were provided information by the bank's 1969 changes in reporting procedures.

The Chase Manhattan Corporation

Price-earnings ratios for The Chase Manhattan Corporation correlated well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 48 matchings remaining, 45 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that investors in common stock of The Chase Manhattan Corporation were not provided information by the bank's 1969 changes in reporting procedures.

The Citizens & Southern National Bank

Price-earnings ratios for The Citizens & Southern National Bank correlated very poorly with those of the control banks. Fifty-seven of the 59 matchings were eliminated due to inadequate correlations. For the remaining two matchings, tests of the linear correlational model suggested that assumptions of the model were not seriously violated.

After the above eliminations, only two matchings remained in this study. Both of these tests suggested that the changes in reporting procedures did not provide information to investors. This being the case, a conclusion may be drawn that investors in common stock of The Citizens & Southern National Bank were not provided information by the bank's 1969 changes in reporting procedures. However, such a conclusion must be viewed as weak due to the small number of tests on which is is based.

City National Corporation

Price-earnings ratios for City National Corporation adequately correlated with those of the control banks. Fourteen matchings were eliminated due to inadequate correlations. Twenty-one matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the 24 matchings remaining, 2 tests suggested that the changes in reporting procedures did not provide information to investors. One test suggested that the changes provided information to investors. These results suggest little basis for drawing a conclusion as to whether or not investors in common stock of City National Corporation were provided information by the bank's 1969 changes in reporting procedures.

Fidelity Corporation of Pennsylvania

Price-earnings ratios for Fidelity Corporation of Pennsylvania corrlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 52 matchings remaining, 37 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that investors in common stock of Fidelity Corporation of Pennsylvania were not provided information by the bank's 1969 changes in reporting procedures.

First National Bank in Dallas

Price-earnings ratios for First National Bank in Dallas correlated very well with those of the control banks. Only six matchings were eliminated due to inadequate correlations. Eleven matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the remaining 42 matchings, 16 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a strong conclusion that investors in common stock of the First National Bank in Dallas were not provided information by the bank's 1969 changes in reporting procedures.

First Security Corporation

Price-earnings ratios for First Security Corporation correlated well with those of the control banks. Nine matchings were eliminated due to inadequate correlations. Ten matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the remaining 40 matchings, 29 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that investors in common stock of First Security Corporation were not provided information by the bank's 1969 changes in reporting procedures.

First Union National Bancorporation, Inc.

Price-earnings ratios for First Union National Bancorporation, Inc. correlated well with those of the control banks. Thirteen matchings were eliminated due to inadequate correlations. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, the matching which did not adequately fit the model was eliminated.

For the remaining 45 matchings, one test suggested that the changes in reporting procedures did not provide information to investors. Four tests suggested that the changes provided information to investors. A conclusion may be drawn that investors in common stock of First Union National Bancorporation, Inc. were provided information by the bank's 1969 changes in reporting procedures. However, such a conclusion must be viewed as weak due to the small number of tests on which it is based.

Industrial Valley Bank and Trust Company

Price-earnings ratios for Industrial Valley Bank and Trust Company correlated very well with those of the control banks. Only six matchings were eliminated due to inadequate correlations. Twelve matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the remaining 41 matchings, one test suggested that the changes in reporting procedures did not provide information to investors. Two tests suggested that the changes provided information to investors. These results suggest little basis for drawing a conclusion as to whether or not investors in common stock of Industrial Valley Bank and Trust Company were provided information by the bank's 1969 changes.

Liberty National Corporation

Price-earnings ratios for Liberty National Corporation correlated poorly with those of the control banks. Forty-six of the 59 matchings were eliminated due to inadequate correlations. For the remaining 13 matchings, tests of the linear correlational model suggested that assumptions of the model were not seriously violated.

For all 13 of the remaining matchings, tests yielded results in decision matrix blocks for which no conclusion may be drawn. Thus, the results suggest no basis for drawing a conclusion as to whether or not investors in common stock of Liberty National Corporation were provided information by the bank's 1969 changes in reporting procedures.

J. P. Morgan & Co., Inc.

Price-earnings ratios for J. P. Morgan & Co., Inc. correlated well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 40 remaining matchings, 30 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a very strong conclusion that the changes in reporting procedures in the banks's 1969 financial statements did not provide information to investors in the common stock of J. P. Morgan & Co., Inc.

National City Bank of Cleveland

Price-earnings ratios for National City Bank of Cleveland correlated very well with those of the control banks. Only five of the matchings with control banks were eliminated due to inadequate correlations. Thirteen matchings were eliminated due to violations of assumptions underlying the linear correlational model.

For the remaining 41 matchings, nine tests suggested that the changes in reporting procedures did not provide information to investors. Only one test suggested that the changes provided information to investors. A conclusion may be drawn that investors in common stock of National City Bank of Cleveland were not provided information by the bank's 1969 changes in reporting procedures. However, such a conclusion should be viewed as weak due to the small number of tests on which it is based.

National Commercial Bank & Trust Company

Price-earnings ratios for National Commercial Bank & Trust Company adequately correlated with those of the control banks. Seventeen matchings were eliminated due to inadequate correlations. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which did not adequately fit the model were eliminated.

For the 34 remaining matchings, no test suggested that the changes in reporting procedures did not provide information to investors. One test suggested that the changes provided information to investors. These results suggest little basis for drawing a conclusion as to whether or not investors were provided information by the 1969 changes.

The Northern Trust Company

Price-earnings ratios for The Northern Trust Company correlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

For the 45 remaining matchings, 13 tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. These results suggest a strong conclusion that investors in common stock of The Northern Trust Company were not provided information by the bank's 1969 changes in reporting procedures.

Republic National Bank of Dallas

Price-earnings ratios for Republic National Bank of Dallas adequately correlated with those of the control banks. Fifteen matchings were eliminated due to inadequate correlations. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which did not adequately fit the model were eliminated.

For the 41 remaining matchings, one test suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. Due to the small number of tests on which a conclusion would be based, the results suggest little basis for reaching a conclusion as to whether or not investors in common stock of Republic National Bank of Dallas were provided information by the bank's 1969 changes in reporting procedures.

Southern California First National Corporation

Price-earnings ratios for Southern California First National Corporation failed to correlate well with those of the control banks. Comparisons with 28 control banks were eliminated due to inadequate correlations. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which did not adequately fit the model were eliminated.

For the 30 remaining matchings, four tests suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. A conclusion may be drawn that investors in common stock of Southern California First National Corporation were not provided information by the bank's 1969 changes in reporting procedures. However, such a conclusion must be viewed as weak due to the small number of tests on which it is based.

Texas Bank & Trust Company

Price-earnings ratios for Texas Bank & Trust Company correlated very well with those of the control banks. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which were not adequately correlated and which did not adequately fit the model were eliminated.

Tests for all 46 of the remaining matchings suggested that the changes in reporting procedures did not provide information to investors. These results suggest a very strong conclusion that investors in common stock of Texas Bank & Trust Company were not provided information by the bank's 1969 changes in reporting procedures.

Union Planters National Bank of Memphis

Price-earnings ratios for Union Planters National Bank of Memphis failed to correlate well with those of the control banks. Comparisons with 24 control banks were eliminated due to inadequate correlations. Tests of the linear correlational model suggested that assumptions of the model were not seriously violated. Even so, matchings which did not adequately fit the model were eliminated.

For the remaining 27 matchings, one test suggested that the changes in reporting procedures did not provide information to investors. No test suggested that the changes provided information to investors. Due to the small number of tests on which a conclusion may be based, the results suggest little basis for reaching a conclusion as to whether or not investors in common stock of Union Planters National Bank of Memphis were provided information by the bank's 1969 changes in reporting procedures.

VITA

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Doctor of Philosophy

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