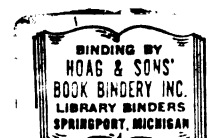


A STUDY OF THE EFFECTS OF
ALTERNATIVE METHODS OF ACCOUNTING
FOR INCOME TAXES ON TERM
LOAN DECISIONS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
TRIBHOWAN NATH JAIN
1970

THESIS



2356

ABSTRACT

A STUDY OF THE EFFECTS OF ALTERNATIVE METHODS OF ACCOUNTING FOR INCOME TAXES ON TERM LOAN DECISIONS

By

Tribhowan Nath Jain

This dissertation studies the effects of alternative methods of accounting for income taxes used in the preparation of financial statements on term loan decisions by commercial banks.

Reporting income taxes in financial statements is one of the significant areas of corporate accounting. The most important and difficult question in accounting for income taxes today stems from timing differences between taxable income and accounting income. They give rise to the problem of allocation of taxes.

The tax allocation issue has generated controversy. The Accounting Principles Board supports the comprehensive allocation of income taxes, but the controversy continues and the profession is divided over the question.

The matter can be decided best by reference to the users' needs. Before this can be done it is necessary to

determine whether or not the debated alternative methods affect the decisions of the users. Credit grantors are important users of financial statements, and term loans represent a significant proportion of commercial loans. This study investigates whether or not the alternative methods of accounting influence the decisions to grant term loans by commercial banks.

Discussion of allocation of income taxes and term loans is presented to set a stage for discussing the effects of different methods of allocation on decision making in granting term loans. In the financial analysis, the effects of different methods of allocation of income taxes on the financial variables are discussed. The effects of various financial measures on the interest rate and other lending terms are discussed in the economic analysis of the effects of different accounting methods.

An interdisciplinary approach is taken in the behavioral analysis. It utilizes information from the disciplines of accounting, communication, linguistics, management, psychology, and psycholinguistics. It is based on the following propositions: (a) accounting is communication, (b) accounting is the language of business, and (c) accounting principles are a kind of financial grammar. It is reasoned deductively that different accounting principles affect the behavior of the users of accounting information in ways similar to the effect of the rules of grammar on linguistics.

The theoretical discussion leads to the conclusion that the alternative methods of accounting for income taxes affect the decisions of the loan officers. For empirical study, an experimental investigation was conducted. Two models were developed. The two model companies are similar except for their methods of accounting for income taxes. The result of using different methods of accounting for income taxes showed that the financial measures were different under the alternative methods. Loan officers in various banks were asked to evaluate these companies for term loans. Since the companies are similar in all respects except the tax accounting procedures, the data provides evidence on how the accounting procedures affect the decisions relating to term loans.

The results of the study indicate that the differences in accounting methods influence the decisions of the loan officers. The difference in methods result in differences in the financial variables considered in decision making. The loan officers use surrogated data and they usually rely on the auditor's opinion for the applicability of generally accepted accounting principles. The auditor has no reason to give a qualified opinion whichever of the several generally accepted accounting principles are used by the corporation.

The alternative accounting methods affect the financial variables considered by the loan officers and

hence their decisions. However, the influence is not reflected significantly in all the individual lending terms. This may be due to the difference in emphasis placed by different officers on basic factors. They may indicate the influence in any one or more lending terms. They have collected information from various sources. Therefore the influence of individual variables decreases and may sometime counteract one another. Competition in the banking industry or standard procedures, or adjustment of financial data may be the other reasons for this lack of significant influence on all the individual lending terms.

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A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Accounting and
Financial Administration

1970

G 61541
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ACKNOWLEDGMENTS

I am indebted to Dr. B. C. Lemke, Chairman, and Drs. A. C. Olson and D. Gilliland, members of my dissertation committee for their able advice, assistance and guidance.

I express my sincere gratitude to Dean Alfred L. Seelye of the Graduate School of Business Administration and Dr. James Don Edwards, Chairman, Department of Accounting and Financial Administration for the financial support provided to me throughout my studies at Michigan State University.

I am grateful to Mr. Edward P. Minich, President, Michigan Chapter, Robert Morris Associates for assistance in my project. I thank all the bank officers who assisted me in this project.

Words cannot express my feelings of appreciation for my wife Pam for her support and encouragement and for my little son Andy for endurance throughout these studies.

Any shortcomings that remain are of course mine.

TABLE OF CONTENTS

Chapter	Page
I. PRELIMINARY CONSIDERATIONS	1
Introduction.	1
A Behavioral Approach to Accounting	5
Need for Research	10
The Present Study	14
Hypothesis	17
Research Methodology	18
Library Research on Alternative Accounting Methods.	18
Library Research on Term Loans.	18
Library Research on the Effects of Alternative Methods of Accounting.	19
Field Research	20
Questionnaire Survey	21
Limitations	24
Organization of the Dissertation	24
II. VARIATIONS IN THE METHODS OF ACCOUNTING.	26
Introduction.	26
Alternative Methods of Accounting.	26
Choice Among Alternative Methods	26
Available Alternative Methods	27
Nature and Development of Allocation of Income Taxes.	33
Problem of Accounting for Income Taxes	33
Nature of the Tax Allocation Problem.	34
Different Objectives	35
Historical Background.	39
Illustration of Tax Allocation.	43

Chapter	Page
Different Views on Tax Allocation . . .	50
The Case for Interperiod Allocation of Income Taxes	53
The Case Against Interperiod Allocation of Income Taxes	56
Summary and Conclusion.	64
Problem of Accounting for Income Taxes	64
Nature of Tax Allocation Problem . .	64
Historical Background	65
Illustration of Tax Allocation . . .	65
Different Views on Tax Allocation . .	65
Arguments Against Allocation. . . .	65
III. TERM LOANS.	67
Introduction	67
Nature and Development of Term Loans . .	67
Nature	67
The Evolution of Bank Term Lending. .	68
Reasons for the Development of Term Loans	69
Need for a Term Loan	71
Processing a Term Loan Application. . .	72
Receiving the Loan Application . . .	73
Determining the Status of the Firm's Bank-customer Relationship	74
Evaluating the Customer Relationship .	74
Investigating the Credit Worthiness of the Requested Loan	75
Determining the Feasibility of the Loan Within Legal and Policy Requirements	83
Making Detailed Appraisal of the Loan.	84
Making Detailed Recommendations. . .	86
Recording the Analysis and Loan Agreement	89
Servicing the Loan	89
Reviewing and Updating the Credit File.	89

Chapter	Page
Summary and Conclusion	89
Nature	90
Evolution of Bank Term Loans	90
Reasons for Development of Term Loans	90
Need for a Term Loan.	91
IV. THE EFFECTS OF ALTERNATIVE METHODS OF ACCOUNTING	94
Introduction	94
Financial Analysis	94
Inventories.	95
Depreciation	98
Allocation of Income Taxes.	105
A Mathematical Formulation.	106
Economic Analysis.	113
Lending Terms	113
Analysis of Relationship Between Availability and Interest Rates	120
Behavioral Analysis	123
Decision Making	124
Role of Accounting Process in a Decision Process	129
Effect of Accounting on Behavior of Decision Maker.	134
Summary and Conclusion	145
Financial Analysis	145
Economic Analysis.	145
Behavioral Analysis	146
V. DESCRIPTION AND RESULTS OF THE EXPERIMENTAL MODELS	148
Introduction	148
Description of the Models	150
Results of the Experimental Models	152
Variations in Income Tax Expense, Net Income and Net Worth	153
Analytical Ratios.	167
Summary and Conclusion	174

Chapter	Page
VI. ANALYSIS OF THE QUESTIONNAIRE SURVEY RESPONSES AND FIELD STUDIES	176
Introduction.	176
Participants.	176
Analysis of the Questionnaire	177
Analysis of Part I of the Questionnaire.	178
Statistical Analysis of Part I.	191
Analysis of Part II of the Question- naire	200
Statistical Analysis of Part II	221
Field Studies	228
Discussion of Study in Bank A	230
Discussion of Study in Bank B	234
Discussion of Study in Bank C	238
Discussion of Study in Bank D	240
Summary and Conclusion	244
Analysis of Part I.	245
Analysis of Part II	246
VII. EVALUATION IMPLICATIONS AND SUGGESTIONS.	249
Introduction.	249
Evaluation of the Results of the Question- naire Survey and Field Studies.	249
Effects on Financial Variables.	249
Effects on Decision Making	250
Behavioral Explanation	250
Effects on Lending Terms.	252
Implications and Suggestions	256
Effects of Different Methods of Accounting	256
Uniformity in Accounting.	257
Conversion Statements.	260
Cost of Implementation	262
Budgetary Data	262
Summary and Conclusion	265

Chapter	Page
VIII. SUMMARY AND CONCLUSIONS	266
Allocation of Income Taxes	267
Nature and Processing of a Term Loan.	268
Effects of Alternative Methods of Accounting	268
Description and Results of the Experi- mental Models	270
Results of the Questionnaire Survey and Field Studies	270
Analysis of Part I of the Question- naire	271
Analysis of Part II of the Question- naire	271
Field Studies	271
Evaluation Implications and Suggestions.	272
SELECTED BIBLIOGRAPHY	274
APPENDICES	
Appendix	
A. Cover Letters and Data Sent to Participants	285
B. Tail Probabilities of Sample Proportion as Function of Population Proportion [$r = 25,$ $31, 34, 42, 43, 45]$	302
C. Derivation of Representation	303
D. Tabulated Data from Questionnaire Responses Under Normal Conditions	306
E. Tabulated Data from Questionnaire Responses Under Existing Conditions	310
F. Tail Probabilities of Sample Proportion as Function of Population Proportion [$r = 1, 2,$ $3, 4, 6, 7, 9, 10, 11, 16, 18]$	315

LIST OF TABLES

Table	Page
1. Amount of Income Taxes Using Sum-of-Years'- Digits Method for Depreciation	45
2. Net Income Using Sum-of-Years'-Digits Method for Income Tax Purposes and Straight Line Method for Reporting Pur- poses Without Tax Allocation.	46
3. Net Income Using Straight Line Depreciation for Both Reporting and Tax Purposes	47
4. Deferred Income Taxes in Balance Sheet Under Comprehensive Allocation of Taxes	48
5. Depreciation Using Straight Line Method	100
6. Depreciation Using Sum-of-Years'-Digits Method	101
7. Depreciation Charges of a Static Firm.	102
8. Depreciation Charges of a Firm Growing at the Rate of 10 Per Cent Per Annum	104
9. Comparative Figures for Financial Measures-- Jaytee Bakeries, Inc.	154
10. Comparative Figures for Financial Measures-- Roysons Bakeries, Inc.	155
11. Reasons For and Degrees of Preference Under Normal Conditions	182
12. Reasons For and Degrees of Preference Under Existing Conditions.	188
13. Number of Respondee's Giving Different Answers in Response to Individual Questions in the Light of Normal Conditions	218

Table	Page
14. Number of Questions Answered Differently by Respondees in the Light of Normal Conditions	219
15. Number of Respondees Giving Different Answers to Individual Questions Under Existing Conditions	219
16. Number of Questions Answered Differently by Number of Respondees Under Existing Conditions	220
17. Variances, Standard Deviation and Confidence Limits for Individual Observations Under Normal Conditions.	224
18. Variances, Standard Deviation and Confidence Limits for Individual Observations Under Existing Conditions	224
B-1. Tail Probabilities of Sample Proportion as Function of Population Proportion [$r =$ 25, 31, 34, 42, 43, 45].	302
D-1. Number of Responses and Floating Interest Rates.	306
D-2. Number of Responses and Flat Interest Rates .	306
D-3. Number of Responses and Difference in Interest Rates.	307
D-4. Number of Responses and Compensating Balance Requirements	307
D-5. Number of Responses and Working Capital Requirements	308
D-6. Number of Responses and Amounts of Further Debt	308
D-7. Number of Responses and Permitted Amounts of Dividend.	309
D-8. Number of Responses and Further Issue of Equity	309
D-9. Number of Responses and Differences in Issue of Equity	309

Table	Page
E-1. Number of Responses and Floating Interest Rates	310
E-2. Number of Responses and Flat Interest Rates .	310
E-3. Number of Responses and Difference in Interest Rates	311
E-4. Number of Responses and Compensatory Balance Requirements.	311
E-5. Number of Responses and Working Capital Requirements.	312
E-6. Number of Responses and Amount of Further Debt	312
E-7. Number of Responses and Permitted Amounts of Dividend	313
E-8. Number of Responses and Issue of Further Equity.	313
E-9. Number of Responses and Differences in the Issue of Further Equity	314
F-1. Tail Probabilities of Sample Proportion as Function of Population Proportion [$r = 1, 2, 3, 4, 6, 7, 9, 10, 11, 16, 18$]. . . .	315

LIST OF FIGURES

Figure	Page
1. Income Tax Expense--Jaytee Bakeries, Inc.	157
2. Income Tax Expense--Roysons Bakeries, Inc.	158
3. Net Income--Jaytee Bakeries, Inc.	161
4. Net Income--Roysons Bakeries, Inc.	162
5. Rate of Change in Net Income--Jaytee Bakeries, Inc.	163
6. Rate of Change in Net Income--Roysons Bakeries, Inc.	163
7. Change of Net Worth--Jaytee Bakeries, Inc.	165
8. Rate of Change of Net Worth--Jaytee Bakeries, Inc.	165
9. Change of Net Worth--Roysons Bakeries, Inc.	166
10. Rate of Change of Net Worth--Roysons Bakeries, Inc.	166
11. Total Liabilities to Net Worth--Jaytee Bakeries, Inc.	168
12. Total Liabilities to Net Worth--Roysons Bakeries, Inc.	168
13. Fixed Assets to Net Worth--Jaytee Bakeries, Inc.	170
14. Fixed Assets to Net Worth--Roysons Bakeries, Inc.	170
15. Net Sales to Net Worth--Jaytee Bakeries, Inc.	172

Figure	Page
16. Net Sales to Net Worth--Roysons Bakeries, Inc.	172
17. Net Income to Net Worth--Jaytee Bakeries, Inc.	173
18. Net Income to Net Worth--Roysons Bakeries, Inc.	173
19. Tail Probabilities of Sample Proportion as Function of Population Proportion [r = 42, 43].	195
20. Tail Probabilities of Sample Proportion as Function of Population Proportion [r = 25, 31].	225
21. Tail Probabilities of Sample Proportion as Function of Population Proportion [r = 34, 45].	227

CHAPTER I

PRELIMINARY CONSIDERATIONS

Introduction

In the preparation of financial information for external users, accountants often have several alternative procedures available to them for processing a particular type of financial data. The choice among the alternative procedures usually can result in different measurements of the financial position and operating results of the same corporation for any given moment or period of time. Persons familiar with accounting are not surprised, because they very well understand that this is possible (although not desirable) under "generally accepted accounting principles." In fact, Chambers¹ calculated that it is possible to measure a given firm's income as any one of thirty million figures all determined according to "generally accepted accounting principles."

As a result accountants now have a choice among a multiplicity of generally accepted practices. The use of

¹Raymond J. Chambers, "A Matter of Principles," The Accounting Review, XLI (July, 1966), 443-457.

different methods causes confusion among the readers of financial statements and prevents meaningful comparisons of statements of different companies.²

The availability of alternative accounting methods can be inferred from the definition of accounting by the committee appointed by the American Accounting Association to prepare A Statement of Basic Accounting Theory:

The process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information. The concept of economic referred to in the preceding sentence holds that economics is concerned with any situation in which a choice must be made involving scarce resources. The term "measurement" includes the choice of an accounting method, as last-in, first-out to measure inventory or deferral of federal income taxes to measure income.³

Note the words "choice must be made," "the choice of an accounting method." Choice involves comparisons, but such comparisons cannot be made without comparability of financial information. Therefore lack of comparability becomes a crucial problem of accounting.

Recognizing the seriousness of the problem, accountants have been devoting considerable attention towards its solution. Special mention may be made of the activities of the Accounting Principles Board of the

²Reed K. Storey, The Search for Accounting Principles (New York: American Institute of Certified Public Accountants, 1964), p. 53.

³A Statement of Basic Accounting Theory (American Accounting Association, 1966), p. 1.

American Institute of Certified Public Accountants and the American Accounting Association. Some others who indicate the need for comparability of financial information are Anreder,⁴ Anthony,⁵ Gordon,⁶ Grady,⁷ Greer,⁸ Hepworth,⁹ Ladd,¹⁰ Littleton,¹¹ and Spacek.¹² We may conclude that

⁴Steven S. Anreder, "Pitfalls for the Unwary," Barrons, XXV (December 24, 1962), 3, 8, 10 and 13.

⁵Robert N. Anthony, "Showdown on Accounting Principles," Harvard Business Review, XLI (May-June, 1963), 99-106.

⁶Myron J. Gordon, "Postulates, Principles and Research in Accounting," Accounting Review, XXXIX (April, 1964), 251-263.

⁷Paul Grady, "Quest for Accounting Principles," Journal of Accountancy, CXIII (May, 1962), 45-50.

⁸Howard C. Greer, "Application of Accounting Rules to Financial Statements," Accounting Review, XIII (September, 1938), 333-345; "How to Succeed in Confusing People Without Really Trying," Journal of Accountancy, CXV (March, 1963), 61-65.

⁹Samuel R. Hepworth, "Smoothing Periodic Income," Accounting Review, XXVIII (January, 1953), 32-39.

¹⁰Dwight R. Ladd, Contemporary Corporate Accounting and the Public (Homewood, Illinois: Richard D. Irwin, Inc., 1963), pp. 25-34.

¹¹A. C. Littleton, "Choice Among Alternatives," Accounting Review, XXXI (July, 1956), 363-370.

¹²Leonard Spacek, "The Need for An Accounting Court," Accounting Review, XXXIII (July, 1958), 368-379; "Are Accounting Principles Generally Accepted?" Journal of Accountancy, CXI (April, 1961), 41-46; "A Suggested Solution to the Principles Dilemma," Accounting Review, XXXIX (April, 1964), 275-284.

there has been a strong support among the profession for narrowing the area of differences in accounting. This view may be interpreted in many ways, but adequate communication techniques may not be available to make these interpretations effective.

The most obvious interpretation is that financial data should lead to more comparability of some kind. Comparisons, it may be asserted, are made by people who are armed with attitudes, special orientations and various behavioral sets.¹³ Usually, assumptions are made that these attitudes may be changed or in other words that users can be educated; therefore the important part of the problem is to determine the proper mix of long run influence of different methods and short run processing rules.

Second, reduction in the number of alternatives or the removal of confusion between classes may narrow the differences and thus lead to more comparability. However the optimum number of alternatives must be based on the diversity of the input data, the variety of objectives of the users of the data, and the dissimilarity in the attitude of individuals who relate the reported data to the objectives.¹⁴ With this diversity in attitudes, the

¹³Carl T. Devine, "Development of Accounting Principles--Discussion," Berkeley Symposium on The Foundation of Financial Accounting (Berkeley: University of California, 1967), p. 17.

¹⁴Ibid., p. 18.

decision making by the users may also be influenced by the apparent differences attributable to the alternative methods in which reported data such as income and inventories are measured, as opposed to the real differences.

It may be clear now that the Accounting Principles Board (or its predecessor "Committee on Accounting Procedures"), the American Accounting Association and other notable contributors to the development of accounting theory, could have begun their work with an investigation of objectives and the prevailing attitudes of the users of the financial information. This process could have associated changes in attitudes with changes in measuring and reporting techniques and thus would have studied the influence of the alternative methods of accounting on the decision making by the users. With such information the Accounting Principles Board, the American Accounting Association and others might have been in a better position to influence the activities of the accounting profession more constructively through appropriate educational programs and operating rules and methods.

A Behavioral Approach to Accounting

The treatment of the behavioral aspect of accounting is conspicuous by its absence in most of the past research in the development of accounting theory. Not much consideration has been given to the interaction between accounting and decision making in seeking solutions

to accounting problems, and whenever consideration is given to the behavioral aspect, the tendency has been to insert oversimplified assumptions for the behavioral function.

Carl Devine chides accountants for their neglect of these behavioral aspects:

On balance it seems fair to conclude that accountants seem to have waded through their relationships to the intricate psychological network of human activity with a heavy-handed crudity that is beyond belief. Some degree of crudity may be excused in a new discipline, but failure to recognize that much of what passes as accounting theory is hopelessly entwined with unsupported behavior assumptions is unforgiveable. Consider the following questions:

1. How do we decide which events are to be recorded and reported and which are not?
2. To what extent, if any, are potential embezzlers deterred by the necessity for collusion? (How can a system of internal controls be "reviewed" without some knowledge or assumptions at this point?)
3. How do employees react to idealized standards as opposed to attainable ordinary measure standards or to no standards?
4. To what extent are owners influenced by reported income in making: withdrawals? investments? labor commitments? (How can we discuss LIFO, appraisals, revenue recognition, and price-level accounting without first examining such matters?)
5. What are typical reactions to reports of liquidity and cash position? Markup and turnover?
6. To what degree are businessmen willing to substitute maintenance of control, stability of management groups, prestige from size or physical properties for incremental profits?
7. What influence on accuracy in recording and reporting do the techniques of internal control exert?

8. How do we decide on limits for the entity?¹⁵

Professor Yuji Ijiri emphasizes the same point:

Until recently, discussions of alternative accounting methods have been directed primarily toward how outputs from accounting systems differ when different accounting methods are used. We know that in many cases, FIFO and LIFO result in different inventory values and hence produce different profit figures even though the firms operate in an identical business environment. But a more important question is whether these different profit figures affect manager's decisions and, if so under what conditions. Unless we can show that the different figures (or more precisely different pattern 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.¹⁶

Recently an awareness of the need for understanding the relationship between accounting and decision making has increased. This is shown by the variety of studies published within the last few years.

The effects of budget methods were studied by Stedry¹⁷ in his laboratory research. His findings were that the performance of the task was significantly influenced by: (a) the type of budget used, (b) the manner in which the budget was administered, and (c) the performance expectations formed by the participants.

¹⁵Carl T. Devine, "Research Methodology and Accounting Theory Formulation," The Accounting Review, XXXV (July, 1960), 394.

¹⁶Yuji Ijiri, The Foundations of Accounting Measurements, A Mathematical, Economic and Behavioral Inquiry (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), p. 150.

¹⁷Andrew Stedry, Budget Control and Cost Behavior (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1960), p. 89.

Bonini¹⁸ developed a simulation model of management behavior in a business firm and then set up an experimental design to analyze the effect of changes in eight factors. His findings were that under LIFO inventory methods as compared to the average cost methods (a) prices were lower, (b) pressure within the organization was higher, and (c) profits were higher.

Dyckman¹⁹ conducted his experimental research on the impact that different inventory cost flow assumptions had on the stock investment decisions of individuals. He found that the significant differences which occurred in the individual decisions apparently reflected the different cost flow assumptions used to report the firm's results.

In his second study Dyckman²⁰ investigated the impact of alternative accounting techniques on certain management decisions. The results of this study, in sharp contrast with those of his first study, indicated that the alternatives used in the study did not influence those decisions.

¹⁸Charles P. Bonini, Simulation of Information and Decision Systems in the Firm (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), p. 105.

¹⁹Thomas R. Dyckman, "On the Investment Decisions," The Accounting Review, XXXIX (April, 1964), 285-295.

²⁰Thomas R. Dyckman, "The Effects of Alternative Accounting Techniques on Certain Management Decisions," Journal of Accounting Research, II (Spring, 1964), 91-107.

In his third study, Dyckman²¹ studied the effects of earnings trend, size, and inventory valuation procedures in evaluating a business. The basic data underlying the financial information were developed through use of a computer-simulated business situation. Two types of subjects, businessmen and students, were chosen to determine what valuation differences might exist between the two groups. The results suggested that the decisions of both groups were influenced by the earning trend factor but not by the size factor, and that the cost flow assumption of inventory did influence the evaluation.

Bruns²² developed a business game based upon a simple model that required only three decisions of the participants each period. His findings agreed with those reached by Dyckman²³ in his second study. John L. O'Donnell²⁴ studied the relationship between reported

²¹Thomas R. Dyckman, "On the Effects of Earnings-Trend, Size and Inventory Valuation Procedures in Evaluating a Business Firm," Research in Accounting Measurement, ed. by Robert K. Jaedickie, Yuji Ijiri and Oswald Nielson (American Accounting Association, 1966), pp. 175-185.

²²William J. Bruns, "Inventory Valuation and Management Decision," The Accounting Review, XL (April, 1965), 345-357.

²³Dyckman, "The Effects of Alternative Accounting Techniques on Certain Management Decisions," op. cit.

²⁴John L. O'Donnell, "Relationships Between Reported Earnings and Stock Prices in Electric Utility Industry," The Accounting Review, XL (January, 1965), 135-143.

earnings and stock prices in the electric utility industry. He found that raising earnings by altering accounting procedures will not necessarily result in higher stock prices, even in the short run.

Jensen²⁵ investigated the effect of alternative accounting methods on security analysis and portfolio selection under fairly realistic operating conditions. He concluded that accounting variations seemed to give rise to substantial differences in various financial variables such as earnings per share. As opposed to real differences apparent differences, attributable to the way in which reported events such as inventory and depreciation are measured, were found to affect security evaluation and portfolio decisions.

Need for Research

Research of the kind discussed above is of fundamental importance. It deals with the hitherto ignored but important behavioral aspect of accounting. If alternative accounting methods are found not to affect certain decisions under certain conditions, then the whole discussion of which method is appropriate under those conditions and for those decisions may indeed be interesting but irrelevant. On the other hand, if the use of different

²⁵Robert E. Jensen, "A Study of Effects of Alternate Accounting Systems on Security Analysis and Portfolio Selection Decisions" (unpublished Ph.D. dissertation, Stanford University, 1966), p. 180.

accounting methods does affect decisions, then it may be possible to develop more meaningful criteria to choose among alternative accounting methods and thus provide users with better and more useful financial information. Both, the concern for the user's understanding and the need for studying the behavioral aspect can be very well inferred from the following observations made by Marvin L. Stone, President of the American Institute of Certified Public Accountants,

Our present efforts to communicate financial data to users are grossly ineffective. I do not know what can be done about it. I am not sure whether we are at fault. . . . A new look is in order. Perhaps the accounting profession should call on specialists in other fields--behavioral scientists, marketing experts, commercial artists to help design the new look.²⁶

Regarding the need for more research in the area of information and decision he further observes:

Most of the subject matter in this area was entirely unknown twenty years ago. Consequently there are untold opportunities for fruitful study. Basic research on the impact of accounting communication on behavior and motivation of personnel is high on the list. . . . There are also countless opportunities for applied research in this new field.²⁷

The studies mentioned above depict the efforts made by accountants to understand the behavioral aspects of accounting. While they are valuable, their results do not

²⁶Marvin L. Stone, "Problems in Search of Solution Through Research," Empirical Research in Accounting: Selected Studies, 1968 (Chicago: University of Chicago, 1968), pp. 63-64.

²⁷Ibid., p. 64.

yet make it possible to generalize the effects that alternative accounting procedures have on decision making.

There are many accounting variations and several areas of decision making which have not been investigated. Ijiri states:

. . . We cannot conclude from Bonini's study that the LIFO method should be preferred to the average cost method of inventory valuation because the former tends to generate higher levels of profits; nor can we conclude from Bruns's study or Dyckman's study that inventory valuation methods have no effect on business decisions. Accounting variations may have significant effects under some conditions and may have no effects under other conditions.²⁸

Questions have also been raised over the extent of applicability of findings of some of the simulation studies to real world phenomena. For instance, Dyckman²⁹ selected students as his subjects and has observed that the results applied to a particular group of students only. In another study³⁰ he observed that the subjects did not represent a sample of businessmen who were responsible for actual decisions.

The American Accounting Associations Committee on Managerial Decision Models reports:

²⁸Ijiri, op. cit., p. 150.

²⁹Dyckman, "On the Investment Decisions," op. cit., p. 294.

³⁰Dyckman, "On the Effects of Earnings-trend, Size and Inventory Valuation Procedures in Evaluating a Business Firm," op. cit., pp. 179-182.

The most widely used decision models are rooted in the tools and assumptions of economics. Their implementation, however, is apt to be affected by behavioral complications which sometimes are so complex that the original economic decision models must be drastically altered before they are used. Although we are aware of the cardinal importance of these behavioral considerations, we can do little here beyond underscoring the need for more research and stressing that an overwhelming amount of research on decision models and accounting is based on the flimsy assumption that the user is an economic man. The latter assumption is often necessary for productive analysis that supplies normative answers which must then either be implemented or modified in light of attempts at implementation.

Implementation is frequently a behavioral problem. Economic analysis, then, is not wrong or undesirable; it is simply incomplete. In his role as a supplier of information, the accountant must be concerned with both the economic decision models and their implementation as an entire package.

The trouble at this point is that our knowledge of behavioral effects is too fragmented. The information produced by decision models and accounting systems is supposed to "exert influence or have the potential for exerting influence on the designated actions" (Statement, p. 9). Little systematic evidence is available concerning the complex effects of decision models and accounting information on user behavior. Instead, the relationship is either overlooked or it is described by over-simplified assertions. Too often, the assertions or generalizations seem to be valid in one organization but not in another, usually because they are not based on any rigorously compiled evidence that permits prediction rather than explanation.

Because accounting information is aimed at users (external users as well as internal), hardly any major accounting issue can be resolved without making some assumptions about behavior. We need more evidence to find out which assumptions are valid. Behavioral considerations need intensive research of a fundamental kind.³¹

From the above discussion it can be emphasized that more studies are needed of this dimension of accounting since repeated studies and investigations may enable us to

³¹American Accounting Association, "Report of Committee on Managerial Decision Models," The Accounting Review, Supplement to Vol. XLIV (1969), 46.

develop more meaningful criteria to choose among the various alternative accounting methods and thus provide the users of accounting information with better and more useful data.

The confirmation of an empirical assertion, it should be remembered, is never absolute and final. Repeated tests can add to its probability.³²

The Present Study

This study deals with the behavioral aspects of accounting. It is concerned with the study of the effects of certain alternative accounting methods used in the preparation of financial statements upon some decision making. In general, the investigation is concerned with whether or not the various alternative accounting methods available to the accountants in the measurement of financial data could have an effect on the decision making of the users of those data.

As mentioned above, there have been some studies investigating the relationship between alternative accounting procedures and management decision making and also some investigation has been conducted into the relationship between the use of alternative accounting methods and investors' decision making. However, so far there seems to be no study investigating the effect of alternative accounting methods on the decision making by the group of users

³²S. S. Stevens, "Mathematics, Measurement, and Psychophysics," Handbook of Experimental Psychology, ed. by S. S. Stevens (New York: John Wiley & Sons, Inc., 1951), p. 3.

which has had a considerable influence in shaping the accounting and reporting of corporations and also has direct access to the corporation and can arrange for the information needed, namely large commercial banks.

Historically, creditors--particularly commercial banks and other lending institutions--have been a strong influence in shaping both the accounting and reporting of corporations. As long as banks have been lending, they have quite naturally desired, and obtained information about borrowers, relevant to their relationship including financial position and operating results.³³

Specifically, the present study investigates whether or not the different treatment of the tax effects of timing differences arising out of the use of accelerated depreciation method for tax purposes and straight line for financial accounting has any effect on the term lending decisions made by the large commercial banks.

The importance of term lending is illustrated by the following data. The total amount of term loans outstanding on May 28, 1969 at large commercial banks was \$30,883 million, while the total amount of commercial and industrial loans on the same date at these banks was \$76,636 million. In other words, term loans accounted for 40.2 per cent of the total commercial and industrial loans of large commercial banks which send weekly reports to the Federal Reserve Banks as noted in the following:

³³Herman W. Bevis, Corporate Financial Reporting in a Competitive Economy (New York: The Macmillan Company, 1965), pp. 79-80.

Note.--About 160 weekly reporting banks are included in this series; these banks classify by industry, commercial and industrial loans amounting to about 90 per cent of such loans held by all weekly reporting banks and about 70 per cent of those held by all commercial banks.

For description of series see article "Revised Series on Commercial and Industrial Loans by Industry," Feb. 1967 Bulletin, p. 209.³⁴

A limited survey of term loans by the ten largest commercial banks in New York City indicated that term lending played a more important role at large city banks than at smaller institutions. In 1960 term lending constituted more than one-half of all business loan volume of the large city banks while at smaller banks they were approximately one-third the volume of all loans.³⁵

As for the future importance of term lending, it is observed

Precise figures on term lending throughout the United States are unfortunately not available, but it is reliably reported that the volume of term loans at New York City banks has more than doubled since 1960 and, as a percentage of total business loans, has appreciably increased. Other money market center banks have reported similar rates of increase. The tremendous growth of time deposits in the commercial banking system has caused bankers everywhere to offer this special type of credit assistance to the increasing numbers of companies who have been requesting such services. As I mentioned earlier, if bankers would only be honest about the type of credit they are offering, we would find that the proportion of term

³⁴"Business Loans of Banks," Federal Reserve Bulletin, LV (June, 1969), 30.

³⁵"Term Lending by New York City Bank," Monthly Review, Federal Reserve Bank of New York, XLIII (February, 1961), 27-31.

loans in the nation's banks is even greater than we might surmise from a casual observation.³⁶

From the above, we can appreciate the importance of term loans in the banking system of the nation in general, and in the large commercial banks in the large cities, in particular. The importance of term loans is enhanced when it is recognized that these large city banks provide the major part of commercial and industrial financing in the country. It is in this context that the interaction between accounting procedures and decision making will be investigated.

Hypothesis

This dissertation examines the hypothesis that alternative methods of accounting for income taxes, when timing differences between taxable income and pre-tax accounting income exist, influence decisions relating to the granting of term loans by large commercial banks. The null hypothesis states that alternative methods of accounting for income taxes, when timing differences between taxable income and pre-tax accounting income exist, do not affect decisions relating to grant of term loans by large commercial banks.

³⁶J. W. Middleton, "Term Lending--Practical and Profitable," The Journal of Commercial Bank Lending, 1 (August, 1968), 42-43.

Research Methodology

This dissertation is based on the research efforts given below:

Library Research on Alternative Accounting Methods

The purpose of this phase of library research was to study the several alternative methods of accounting. Special emphasis was given to the study of alternative methods of accounting for income taxes.

1. Reasons for the difference between accounting income and taxable income. This difference gives rise to the problem of interperiod allocation of income taxes.
2. Nature of interperiod allocation of income taxes.
3. The different methods of allocation of income taxes.
4. Arguments for and against the comprehensive allocation of income taxes.

Library Research on Term Loans

This included the study of:

1. Nature of term loans.
2. Importance of the term loans.
3. Process of making term loans by banks.

Library Research on the Effects
of Alternative Methods
of Accounting

In this phase of the library research the study included:

1. Financial Analysis of the Effects of Alternative Methods of Accounting

This included an investigation into the effects of alternative methods of accounting on the different measurements of the financial position and operating results of a corporation for any given moment or period of time. The greatest emphasis was on the study of the effects of alternative methods of accounting for income taxes.

2. Economic Analysis of the Effects of Alternative Methods of Accounting for Income Taxes

The investigation was conducted into the economic effects of the different measurements of financial position and operating results of a corporation for a given moment or period of time, on terms of loans.

3. Behavioral Analysis of the Effects of Alternative Methods of Accounting

The investigation was conducted in the fields of accounting, communication, linguistics, management, psychology and psycholinguistics. This was based on the following propositions: (a) accounting is communication, (b) accounting is the language of business, and (c) accounting principles are a kind of financial grammar.

Further, it is recognized that the products of an accounting system are always surrogates; they are useful only because they represent principals. The principal-surrogate relationships used in accounting were investigated.

A detailed study was made of the different approaches to decision making. These have developed along two major lines: (a) management science research, and (b) studies of organizational decision making. Major emphasis was placed on the organizational decision making, because it is primarily concerned with how administrators actually do make decisions.

Field Research

The purpose of the field research was to study the actual processing of term loan applications by large banks and to observe the various factors affecting decisions on such loans. This was accomplished by contacting various loan officers and credit men in different banks. The detailed working of the credit departments of four banks was studied. Eight actual credit files in six banks were studied. Each file contained details regarding total credit, including term loans granted to one firm in each case.

The other part of the field research was based on studies by four banks of the two term loan cases. In these studies discussions were held with the loan officers and credit men of these banks. The purpose of this part of the

research was to study the decisions made by loan officers while they were processing the two cases in their usual routine. In these cases the writer received the reviews, including financial analyses, and proposals or recommendations made by the credit departments on the term loan applications. The writer also received the recommendations made by the loan officers on these applications.

During the follow-up of the questionnaire, the writer also had the opportunity of looking at a few term loan files at some banks.

Questionnaire Survey

The purpose of the questionnaire survey was to study the relationship between the alternative methods of accounting for income taxes and the decisions made by loan officers.

Accounting data was generated for two similar hypothetical corporations named Jaytee Bakeries, Inc. and Roysons Bakeries, Inc. The two companies were assumed to use two different methods of allocation for income taxes. Based on these data the following statements were developed:

1. Income statements, balance sheets and cash flow statements for the previous four years and for the half year ending June 30, 1969.
2. Income statements, balance sheets and cash flow statements projected for the half year ending December 31, 1969 and four years

thereafter. Analytical data for the two companies was also computed.

Similar information concerning the nature of the loan request, history of the company, its business, management, selling and distribution, competition within the industry, employees, inventories, fixed assets, income taxes, capitalization, bank's relationship, and credit agencies reports was compiled for each company.

Participants.--Participants are loan officers or credit men from large banks in Chicago, Cleveland, Detroit, Indianapolis and Milwaukee. These banks are among the 300 largest banks in the United States as listed in Moody's Bank and Financial Manual in order of amount of deposits on December 31, 1967. All these banks are members of the Robert Morris Associates. One hundred and ten participants were selected at random from the 285 bank representatives listed in the Member Roster 1968-69 of the Robert Morris Associates.

Each participant was sent the financial and other data for the two companies along with a return questionnaire. These are given in Appendix A. An introductory letter from Mr. Edward P. Minich, President, Michigan Chapter of the Robert Morris Associates, and a cover letter from the writer accompanied the above mentioned data.

These two letters are also given in Appendix A.

To reduce non-response the writer visited all these banks in Chicago, Detroit, Indianapolis and Milwaukee. Attempts were made to contact personally all the participants in these banks. Dr. Sahni, an old colleague of the writer, and presently residing in Cleveland, contacted the participants there. Seven participants could not be contacted because they had left their respective banks. Four could not be contacted because of illness. Ten were on vacation, two of them in Europe. Another nine could not be contacted for other reasons.

About four weeks after the visits to the banks, follow-up letters were written to the non-respondes, except to those in Detroit where the non-respondes were approached again for reply. Dr. Sahni followed up in Cleveland. Then telephone calls were made to Indianapolis, Detroit and Chicago. Dr. Sahni contacted the participants in Cleveland again several times.

Of 110 participants, 74 have responded. This represents over 67 per cent of the participants. (However, four of the responses were not considered because they were improperly completed.) The credit for this high degree of response goes to Mr. Minich, whose introductory letter and personal messages to some of the participants made this possible.

Limitations

There are two major limitations related to this study. The first one is inherent in any behavioral study. The empirical part of the study depends upon the attitudes, views and opinions of the participants.

The second limitation concerns the extent of generalization of the results. The sample was drawn from a limited population. This facilitated follow up and thus minimized non-response. The results are, therefore, strictly applicable to the population from which the random sample was drawn. However, it is believed that this population is a fairly good representative of the total number of large commercial banks. There is no reason to think that the loan officers in other banks will have characteristics different from those of the population considered in this study. Based on this assumption the results of the study can be generalized to all commercial banks.

Organization of the Dissertation

Chapter II describes the variations in the methods of accounting in different areas with a discussion of interperiod allocation of income taxes.

Chapter III discusses term loans including the nature, development, reasons for making term loans and the processing of term loans by large banks.

Chapter IV presents the theoretical discussion of financial, economic and behavioral analyses of the effects of alternative methods of accounting.

Chapter V describes the models used in the investigation. The results of the use of the alternative methods of allocation of income taxes on the financial variables of these two models are discussed.

Chapter VI provides a complete presentation and analysis of the data collected in response to the questionnaire survey and field studies.

Chapter VII presents the evaluation of the results of the questionnaire survey and the field studies. This is followed by implications and suggestions.

Summary and conclusions are given in the final chapter.

CHAPTER II

VARIATIONS IN THE METHODS OF ACCOUNTING

Introduction

In this chapter the alternative methods of accounting in different areas are described with a detailed discussion of interperiod allocation of income taxes.

Alternative Methods of Accounting

Choice Among Alternative Methods

Accounting has been defined as:

. . . the process of identifying, measuring, and communicating economic information to permit informed judgments and decisions by users of the information. The concept of economic referred to in the preceding sentence holds that economics is concerned with any situation in which a choice must be made involving scarce resources. The term measurement includes the choice of an accounting method. . . .¹

The choice among the alternative methods of accounting makes it possible to report different measurements of the financial position and operating results of the same corporation at any given point of time or for a period of time. These different measurements and the alternative

¹A Statement of Basic Accounting Theory, op. cit.,
p. 1.

methods of presentation and disclosure may affect the decisions of the users of the financial statements. To make correct decisions, the users should know how the alternative methods affect the variables they are considering in making these decisions. If a company does not report the method it uses, the users cannot determine that variation exists. Or, the user may be aware of the method used but the information provided is so meager or the method of presentation is such that the user cannot do anything about it. He may not be able to compute the effect of the variations or understand the extent of the effect on the various variables he is considering.

Available Alternative Methods

An early published listing of alternative methods of accounting appeared in "A Statement of Accounting Principles"² in 1938. There are two other listings of alternative methods of accounting. One of these is a memorandum prepared by the chief accountant of the Securities and Exchange Commission for a House of Representative

²Thomas Henry Sanders, Henry Rand Hatfield, and Underhill Moore, A Statement of Accounting Principles (New York: American Institute of Accounting, 1938; Reprinted, American Accounting Association, 1959).

Sub-Committee.³ The other is found in Accounting Research Study No. 7.⁴

The SEC memorandum gives eight areas where the use of alternative methods can produce different measures of the variables in financial position and operating statement. These are: (1) valuation of inventories, (2) depreciation and depletion, (3) income tax allocation, (4) pensions, (5) research and development costs, (6) goodwill, (7) when is income realized, and (8) "all-inclusive" versus "current operating performance" profit and loss or income statement.

Accounting Research Study No. 7 contains a long list of alternative methods of accounting in addition to those listed in the SEC memorandum. The list is not claimed to be all-inclusive. Some of these are available to the management without any restriction, while in other cases the management can choose only under certain conditions. The additional areas included in Grady's⁵ listing along with the number of alternatives considered acceptable are: (1) cash discount of sales : 2, (2) excise taxes : 2,

³Memorandum prepared by the Office of the Chief Accountant, Securities and Exchange Commission in Response to Request of the Subcommittee on Commerce and Finance of the Committee on Interstate and Foreign Commerce, House of Representative on H.R. 6793, reprinted in Paul Grady, "Inventory of Generally Accepted Accounting Principles for Business Enterprises," Accounting Research Study No. 7 (New York: American Institute of Certified Public Accountants, 1965), pp. 385-397.

⁴Ibid., pp. 373-379.

⁵Ibid.

(3) real and personal property taxes : 8, (4) dividends on common shares payable in common shares : 2, (5) investment in unconsolidated subsidiaries : 2, (6) bases at which plant assets are recorded when acquired : 4, (7) bases of recording self constructed assets : 3, (8) losses on plant assets : 2, (9) development cost in extractive industries : 3, (10) leases : 2, (11) fire losses : 2, and (12) business combinations : 2.

Thus Grady reports thirty-one areas with eighty-two recognized alternatives. However, this does not include the listing of other methods nor include all the combinations of various methods. We can get a further idea of the methods in practice if we refer to the information presented in the "Accounting Trends and Techniques 1967."⁶

Inventories.--Taking the inventories first, it is discovered from Table 10,⁷ that there are twelve bases of inventory pricing specifically mentioned, besides an unknown number included under the heading "various other bases." Similarly, under the Methods of Determining Cost there are twelve bases specifically mentioned and an unknown number under the heading "Other Methods."

Depreciation.--Turning to depreciation, the situation is no better. As can be seen from the tabulation⁸

⁶American Institute of Certified Public Accountants, Accounting Trends and Techniques (21st ed.; New York: American Institute of Certified Public Accountants, 1967).

⁷Ibid., p. 55.

⁸Ibid., p. 186.

the number of methods or combination of methods adopted total up to forty-six. Accounting Trends and Techniques 1967⁹ notes that all the 600 companies surveyed disclose depreciation, but in two companies the disclosure is limited to the accumulated depreciation reported in the balance sheet. Further,

. . . yearly comparisons as to the number of companies using certain methods of depreciation could not be made as it appears that often companies disclose new methods adopted during the year but thereafter make no further reference thereto.¹⁰

Disclosure of long-term leases by lessees.--Out of the 600 companies surveyed only 265 set forth the details of long-term leases. Others either do not refer to or do not give details, if referred to or indicated. Disclosure of leases also varied among the companies surveyed as can be observed from Table 19 that out of the 763 disclosures, details for 37 were set forth in the letter to the stockholders and in 726 the details were set forth in footnotes.¹¹

Cash flow.--Out of the 600 companies surveyed only 168 refer¹² to cash flow; and 432 did not make such a reference. Of the 168, 95 presented information in dollar amount, 11 in per share and 62 presented both in total and per share.

⁹Ibid., p. 185.

¹⁰Ibid., p. 187.

¹¹Ibid., p. 75.

¹²Ibid., p. 217.

Tax allocation and deferment of income taxes.--

. . . The problem of allocation of income taxes arises in those cases where there are material and extraordinary differences between the taxable income upon which such income taxes are computed and the income for the period determined in accordance with generally accepted accounting principles. . . . Deferment of income taxes arising from variations in the treatment for income tax purposes as opposed to financial reporting purposes, of the investment tax credit, depreciation and installment sales, are not considered allocation of taxes in Table 9. Such deferments of income taxes are shown separately in Table 9.¹³

The table (9) shows that there were extraordinary items shown net of related tax and extraordinary items shown in full amount. Also only the tax effect of extraordinary items were shown. On deferments: there were 253 income tax deferment items of the 251 survey companies, which consisted of 219 deferred items applicable to 1966 income tax provision and 34 items representing reduction in deferred income tax changes applicable to prior years.

Existence of variations in accounting are pointed out by Robert N. Anthony as follows:

The long list of gaps and inconsistencies as well as the absence of standards cited in the article by Carman G. Blough in the Journal of Accountancy* (and the evidence given in some of Leonard Spacek's articles and addresses)* should be enough to convince almost

*Carmon G. Blough, "Challenge to the Accounting Profession," Journal of Accountancy, CVIII (December, 1959), 37; Leonard Spacek, "Are Accounting Principles Generally Accepted?" Journal of Accountancy, CXI (April, 1961), 41; Leonard Spacek, Business Success Requires an Understanding of Unsolved Problems of Accounting and Financial Reporting (New York: Arthur Andersen & Co., 1959).

¹³Ibid., p. 198.

anyone. As Blough, Spacek, and others point out, there are a variety of "equally convincing" opinions and "equally acceptable" practices with respect to accounting for such matters as pension funds, income tax allocation, research development costs, exploration costs, stock options, mergers, inventory valuation, depreciation, revenue from long-term contracts, stock dividends, installment revenue, treasury stock transactions, bond discount, depreciation methods and so on.¹⁴

Specific examples of the variations in accounting are pointed out in Forbes:

Sun Oil, for example, elects to charge off its drilling costs for new wells right away, while competitor Continental Oil capitalizes the costs of successful wells and writes them off gradually. U.S. Steel takes the 7% investment tax credit on its capital expenditures into income over a period of years, while Lukens Steel takes all of its tax credits immediately. Litton Industries and other acquisition-minded companies have the option of treating an acquisition as either an outright purchase or a pooling of interests. Delta Air Lines depreciates its planes over ten years, while United Air Lines, at the other end of the spectrum, writes off its 727 jets over as long as 16 years. Douglas Aircraft elects to record some of its aircraft development costs as assets, while competitors may charge similar expenditures against current income.

Industry is shot through with such accounting variations. They are all perfectly acceptable under present accounting rules and they allow managements the kind of freedom the CPAs believe they ought to have.¹⁵

Thus we see that alternative accounting methods are available and are used in various areas. One of the areas mentioned briefly above is that of tax allocation. Since

¹⁴Robert N. Anthony, "Showdown on Accounting Principles," Harvard Business Review, XLI (May-June, 1963), 99-106, reproduced in Thomas T. Burns and Harvey S. Hendrickson, ed., The Accounting Sampler, An Introduction (New York: McGraw-Hill Book Company, 1967), p. 276.

¹⁵"What Are Earnings? The Growing Credibility Gap," Forbes, May 15, 1967, p. 30.

the present study is designed to investigate the question of whether or not the alternative methods of allocation of taxes affect the decisions of the users, the subject of tax allocation is discussed at some length in the following section.

Nature and Development of Allocation of Income Taxes

Problem of Accounting for Income Taxes

Reporting income taxes in financial statements is one of the significant areas of corporate accounting because of the high rates of income taxes and the impact they have on both the business and national economy. Corporate income taxes in the United States began with the corporate excise tax law in 1909 which provided for a franchise tax on corporation net income. Since that time the corporate income taxes have created problems.

Under the 1909 Excise Tax, the net income was measured by cash receipts and cash disbursements. Reasonable compliance with the cash receipt and disbursement was not practicable, and it was never enforced. The Treasury Department issued regulations under which the corporation paid taxes on the basis of accrual income and expenses which had been the accepted accounting procedure for many years before 1909.

The Revenue Act of 1913 also provided for the computation of the net income on the basis of cash receipts

and disbursements and was also unworkable. The 1918 Act abandoned the cash basis approach and set forth the principle which remains in the code today. It was the first to recognize accepted accounting procedures in the determination of taxable income. Section 212 (b) of the act stated in part:

The net income shall be computed upon the basis of the taxpayer's annual accounting period (fiscal year or calendar year, as the case may be) in accordance with the method of accounting regularly employed in keeping the books of such taxpayer; but if no such method of accounting has been so employed, or if the method employed does not clearly reflect the income, the computation shall be made upon such basis and in such manner as in the opinion of the Commissioner does reflect the income.

While this policy has been reflected in each of the acts since 1918, major differences have been created between the taxable income and accounting (financial) income due to the exceptions in the policy stated in the act and the administration of the act.

Nature of the Tax Allocation Problem

The most important and difficult question in accounting for income taxes today stems from differences in reporting income for tax purposes and for financial statement purposes. Corporate pre-tax income reported in financial statements and taxable income reported in the federal tax return for the same period often differ significantly. This gives rise to the problem which simply stated is: Where there is a difference between the taxable

income as reported in the federal tax return and the net income before income taxes as determined under the generally accepted accounting principles, should the amount of income taxes estimated to be payable under the rules and regulations of the governmental unit for the period be the amount of income taxes reported in the corporation income statement?

We are here concerned with the Federal Income Taxes primarily. But before going into this problem it may be worthwhile to see why the taxable income and pre-tax accounting income differ.

As already stated the 1918 Act was the first to recognize accepted accounting procedures in the determination of taxable income. Since then there have developed many differences between the taxable income and pre-tax accounting income through differences in the code and the interpretation of the courts and tax administration. These differences stem from the differences in the objectives of the two concepts and from the problems in the administration of tax law.

Different Objectives

The main purpose of enacting the Revenue Act of 1913 was to obtain revenue to meet the needs of the government. With this objective it could be argued that the income as determined by the accountant under the generally accepted accounting principles would seem to be the best

basis for determining the amount of tax due from the corporation because the accountant is concerned with the measurement and communication of the accomplishment of the period in terms of the monetary unit.

However, with the passage of time other objectives of the governmental tax policy have evolved and some assumed more importance than the obtaining of revenue.¹⁶ These objectives sometimes conflict with one another.

To achieve these objectives government has designed procedures to be followed for computing the tax liability. Investment credit was added to encourage capital investment at a time when the economy was sagging. Accelerated depreciation was also designed to encourage capital investment. Issuance of certificate of necessity was provided under the Revenue Act of 1950 to encourage investment in certain facilities.

Thus the government has objectives beyond the mere obtaining of revenue. It has designed procedures for obtaining revenue while attaining these other objectives, and here we see the beginning of the difference between taxable income and pre-tax accounting income. The accountant determines the net income of the business, under the generally accepted accounting principles, while the

¹⁶Harold E. Arnett, "Taxable Income vs. Financial Income: How Much Uniformity Can We Stand?" The Accounting Review, XLIV (July, 1969), 482-494.

government determines the income for tax purposes within the constraints of the procedures established to achieve its objectives while obtaining the revenue.

Sometimes these objectives seem more important than obtaining the revenue. Taxes were cut in 1962, even though there was an increase in budget deficit due to these cuts. These procedures of obtaining revenues are controlled by the social, political and economic goals of taxation rather than the needs of obtaining revenues in the simplest, least expensive, most fair and equitable manner.

Another factor that controls the procedures in the Income Tax Code is the concept of cash availability. Rents received in advance must be reported as taxable income in the year of receipt, even though the taxpayer is on accrual basis. This concept of cash availability simply says, "Pay the tax when you have the capacity to pay" even though the income has been realized in some instances and not in others. Such procedures cannot be reckoned as good accounting by the profession. The objective of preparation of financial statements is to provide the users with the data about the financial position of the business entity at a point of time and also about the accomplishment of the entity over a period of time.

Thus, the primary function of accounting is to collect, record, test and summarize certain financial data related to specific business enterprise. . . . The entity is the focal point of attention, not society in general, or industries in particular, as

is usually true in establishing taxation policy. In sum, accounting is micro-economic oriented; taxation policy is macro-economic oriented.¹⁷

Under these circumstances, therefore, there cannot be any uniformity in the procedures for computing income between the accountant and the taxation authorities, and the problem of reporting income tax on the financial statement remains.

These differences may be classified as (1) permanent differences, and (2) timing differences. Permanent differences have not been a source of concern to the accountant in his financial reporting. The amount of income tax shown on the income statement approximates the amount shown on the tax return even though this may result in the reporting of only \$300,000 of income taxes on \$1,000,000 of pre-tax income for a period in which the tax rate is 48 per cent. Since these permanent differences do not give rise to tax allocation problem, they are not being discussed in this study.

The term timing differences is applied to all differences between pre-tax accounting income and taxable income of a period which are caused by the elements of expense, revenue, gain and loss which will be included in arriving at both taxable and pre-tax accounting income, but which are or will be recognized in different periods. These give rise to the problem of tax allocation.

¹⁷Ibid., p. 487.

Historical Background

Before World War II the major concern of the accountants in the area of accounting for taxes related to the essential character of income tax payment. The major point under discussion was whether these payments were expenses or a distribution of income.

In December, 1944 the Committee on Accounting Procedure of the American Institute of Certified Public Accountants issued Accounting Research Bulletin No. 23 which described income taxes as expenses: "Income taxes are an expense which should be allocated, when necessary and practicable, to income and other accounts as other expenses are allocated."¹⁸

Two years earlier in December, 1942, The Committee on Accounting Procedures issued two bulletins dealing with allocation of taxes. The first, Accounting Research Bulletin No. 17 (Post-war Refund of Excess Profit Tax) concurred with the SEC Accounting Series Release No. 38. Anticipated refunds of excess profits tax were to be shown as an asset, the amount of tax to be paid as a liability, and the expense as the difference between the amount to be paid and the anticipated refund. The second, APB No. 18 (Unamortized Discount and Redemption Premium on Bonds

¹⁸American Institute of Certified Public Accountants, Committee on Accounting Procedure, "Accounting for Income Taxes," Accounting Research Bulletin No. 23 (New York: American Institute of Certified Public Accountants, December, 1944), p. 183.

Refunded [Supplement]), advocated intraperiod and inter-period allocation.

Thus we note that the concern for allocation of income taxes dates from the early 1940's. This concern was the natural result of the following factors: (1) income statement became the statement of primary importance to the users of the financial statements, (2) income tax rates had increased and an excess profit tax was imposed during the World War II, and (3) the number of timing differences had increased, largely due to the special provision in the tax law relating to the amortization of emergency war facilities.

ARB No. 23 (1944) dealt with material differences between taxable and financial income that would not recur regularly over a comparatively long period of time and were reflected in: (a) surplus account, (b) deferred charge account, or (c) reserve account.

In 1952 ARB No. 42 (Emergency Facilities-Depreciation Amortization and Income Taxes) carried the committee's opinion that the tax differential due to emergency facility amortization should be charged to the income statement as a tax provision adjustment "to recognize the income tax to be paid in the future." The adjustment of accelerated depreciation for the tax differential was considered acceptable but less desirable than crediting a tax liability.

Accelerated depreciation methods were allowed for tax purposes in the Internal Revenue Act of 1954. The American Institute of Certified Public Accountants issued ARB No. 44 (Declining Balance Depreciation) in October, 1954. Allocation was to be effected only if the tax deferment was to be for a relatively few years. This limited endorsement was changed by ARB 44 (revised) in July, 1958: " . . . accounting recognition should be given to deferred income taxes, if the amounts there of are material. . . . "¹⁹

The Committee in Bulletin No. 44 (Revised) allowed an alternative to the deferred tax account if the difference in tax and financial income would exist for a long or indefinite period. It recognized the tax effect as additional amortization or depreciation applicable to such assets in recognition of loss of future deductability for income tax purposes.

The SEC agreed with the Committee on Accounting Procedure as can be noted from the Accounting Series Release No. 85, issued in April, 1960. Comparable recognition of tax deferment should be made in all cases in which there is a tax reduction resulting from deducting cost for tax purposes at faster rates than for financial statement

¹⁹American Institute of Certified Public Accountants, Committee on Accounting Procedure, "Declining Balance Depreciation," Accounting Research Bulletin No. 44 (Revised) (New York: American Institute of Certified Public Accountants, July, 1958), pp. 1A-2A.

purposes. This latter phrase was interpreted in ASR No. 86 to mean that deferred tax accounting was not required beyond generally accepted accounting principles.

The next significant pronouncement on the subject of accounting for income tax was Opinion No. 2 issued by the Accounting Principles Board, a successor to the Committee on Accounting Procedures. The opinion related to investment tax credit. Tax reduction resulting from the credit should be spread over the life of the asset.

There was great dissent from this opinion, and in 1964 the Board issued Opinion No. 4 which recognized the flow through of the investment credit although it preferred the method advocated in Accounting Principle Board's Opinion No. 2. The investment credit is not so significant as other items involved in tax allocation, but is mentioned here to illustrate that an opinion which does not take into consideration the reaction of the users cannot be enforced simply by the pronouncement of the Accounting Principles Board.

After the Accounting Principles Board Opinion No. 4 there came the Accounting Research Study No. 9. In this research study the Director of Research makes the statement:

The factual situation is that income tax allocation has been accepted, and most accountants and businessmen now concede the need for income tax allocation

in at least some instances. The question is no longer allocation versus non-allocation. . . .²⁰

That is an assumption which is completely out of place in a research study. It is difficult to see how one can give weight to research that starts out by avoiding the real issue which is accepted in the very statement by the Director of Accounting Research.

The study does not answer fundamental questions about the nature of the income tax and the validity of the concept of interperiod income tax allocation. Whether income taxes are conceptually expenses or distribution of income has not really been resolved by the profession. Similarly, whether taxes should be allocated or whether the taxes currently payable should be income tax expense for a period has never been adequately studied.²¹

And finally this research study was a prelude to APBO #11. This opinion supports comprehensive allocation--that is that taxes be allocated for all material differences between taxable income and reported income before tax regardless of what period might elapse before the differences are reversed. There is a great dissent of opinion from the APBO No. 11.

Illustration of Tax Allocation

The possible effect of timing differences on the reported net income should be illustrated. Assume that:

²⁰Homer A. Black, "Interperiod Allocation of Corporate Income Taxes," Accounting Research Study No. 9 (New York: American Institute of Certified Public Accountants, 1966), p. vii.

²¹Ibid., p. viii.

(a) the company has acquired \$300,000 worth of equipment, having a life of five years with no expected salvage value, (b) the company has income of \$150,000 per year before providing for depreciation, (c) sum-of-years' digits method is used for income tax purposes and straight line method for reporting purposes, (d) the rate of income tax is 50 per cent, and (e) no other timing difference between the taxable income and pre-tax accounting income exists.

Under these circumstances the actual taxes levied for each year and for the total five years would be as shown in Table 1.

Without tax allocation the reported income after income tax would be as indicated in Table 2. The reported income declines from \$65,000 in the first year to \$25,000 in the fifth year.

Table 3 illustrates the position as it would be using the straight line depreciation for both reporting and tax purposes. Using different methods of depreciation for tax and reporting purposes gives rise to differences between the income tax actually payable and income tax computed on the basis of reported income before tax. Under comprehensive allocation as recommended by the Accounting Principles Board in its Opinion No. 11, this gives rise to an account called "Deferred Income Taxes" which appears in Table 4.

TABLE 1.--Amount of income taxes using sum-of-years'-digits method for depreciation.

Years	1	2	3	4	5	Total
Income before taxes and depreciation	150,000	150,000	150,000	150,000	150,000	750,000
Depreciation	100,000	80,000	60,000	40,000	20,000	300,000
Taxable income	50,000	70,000	90,000	110,000	130,000	450,000
Income tax @ 50 per cent	25,000	35,000	45,000	55,000	65,000	225,000

TABLE 2.--Net income using sum-of-years'-digits method for income tax purposes and straight line method for reporting purposes without tax allocation.

Years	1	2	3	4	5	Total
Income before taxes and depreciation	150,000	150,000	150,000	150,000	150,000	750,000
Depreciation	60,000	60,000	60,000	60,000	60,000	300,000
Income before tax	90,000	90,000	90,000	90,000	90,000	450,000
Income tax	25,000	35,000	45,000	55,000	65,000	225,000
Net income	65,000	55,000	45,000	35,000	25,000	225,000

TABLE 3.--Net income using straight line depreciation for both reporting and tax purposes.

Year	1	2	3	4	5	Total
Income before tax and depreciation	150,000	150,000	150,000	150,000	150,000	750,000
Depreciation	60,000	60,000	60,000	60,000	60,000	300,000
Income before tax	90,000	90,000	90,000	90,000	90,000	450,000
Tax provision	45,000	45,000	45,000	45,000	45,000	225,000
Net income	45,000	45,000	45,000	45,000	45,000	225,000

TABLE 4.--Deferred income taxes in balance sheet under comprehensive allocation of taxes.

Year	1	2	3	4	5	Total
Income tax provision	45,000	45,000	45,000	45,000	45,000	225,000
Actual liability for the period	25,000	35,000	45,000	55,000	65,000	225,000
Difference in actual tax liability and provision	20,000	10,000	0	(10,000)	(20,000)	0
Deferred tax in balance sheet	20,000	30,000	30,000	20,000	0	0

In the illustration on page 46 reported net income in Table 2 is reduced from \$65,000 in the first year to \$25,000 in the fifth year, even though the income before tax as well as the tax rate remained unchanged. Do these statements provide a meaningful presentation of the results of operation? Many accountants conclude that this is not a realistic presentation.

If the company has used the straight line depreciation for tax purposes also the result would have been as given in Table 3 which reports a constant income of \$45,000 each year. The net income over the five year period is the same and so is the income tax. The adoption of accelerated depreciation for tax purposes had deferred the payment of portion of taxes as could be seen from Table 4. In years 1 and 2 the payments deferred amounted to \$20,000 and \$10,000 respectively while in years 4 and 5 they are reversed so that in five years the total payment remains unaltered. Thus we see that the life time net income is the same, whether it is measured for tax purposes or for reporting purposes. Similarly the total income tax payments over the life time of the business is the same, namely \$225,000.

The problem is, how is it to be reported for each year? What are the tax expenses each year? And when the tax expense for the period is different from the actual amount paid on account of tax, what is the nature of the

difference? These questions divide accountants into different groups.

Different Views on Tax Allocation

The manner in which income taxes were allocated in Table 4 in the illustration given above is referred to as comprehensive allocation. This position has the support of the Accounting Principles Board as enunciated in its Opinion No. 11:

The Board has considered the various concepts of accounting for income taxes and has concluded that comprehensive interperiod tax allocation is an integral part of the determination of income tax expense.²²

Under comprehensive allocation, the income tax expense includes the tax effects of every element of revenue, expense, gain or loss which are included in the determination of the pre-tax accounting income, in the same period in which the element is included in the pre-tax accounting income even though it may affect the determination of the actual tax liability in a different period. Or stated briefly, let the tax effect follow the item.

But in actual business circumstances, the balance in the deferred tax account is rarely reduced to zero as in Table 4 in the above illustration. The reduction in income taxes payable in the initial and early years of certain timing differences are not followed by increased

²²Accounting Principles Board, "Accounting for Income Taxes," Opinion No. 11 (New York: American Institute of Certified Public Accountants, 1967), p. 169.

tax payments in later years when these differences reverse. Invariably, events such as additional investments in depreciable assets occur, which give rise to new timing differences whose tax effects offset the reversed tax effects of previous timing differences. The result is that while timing differences may reverse for individual items, they do not reverse in total--that is, the balance in the deferred tax account continues to grow.

Emphasizing the same point for accelerated depreciation Dan Throop Smith observes:

In later years of the life of depreciable property, depreciation would be less and income taxes more if straight line depreciation had been used. Continuous purchase and depreciation of new property, will, typically at least offset this effect of lower depreciation in later years. With increasing total investment in depreciable property for both individual firms and the entire economy, the advantage of faster depreciation will expand over the years.²³

Contrary to the situation under temporary war-time acceleration of depreciation, the differential between declining balance and straight line is presumably permanent. The saving in taxes in the early years of use is real; the higher taxes in the later years of use of specific items of property will be offset by simultaneous savings in what will be the early years of use of newly acquired property so long as the total dollar investment in depreciable property is maintained; and the process continues ad infinitum.²⁴

Thus we observe that the facts support the contention that certain timing differences are, in effect,

²³Dan Throop Smith, Tax Factors in Business Decisions (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968), p. 176.

²⁴Ibid., p. 190.

permanent and therefore do not call for allocation of taxes. This position is referred to as partial allocation. Under this position, income taxes will be allocated only in those cases where the timing differences causing reduction or increase in current tax payments will reverse and actually lead to higher or lower tax payments within a relatively short period not exceeding, say, five years. "Thus, tax allocation is applicable only when the amounts are reasonably certain to affect the flow of resources used to pay taxes in the near future."²⁵

However, there are those who are opposed to the concept of tax allocation in its entirety. "One view holds that interperiod allocation is never appropriate."²⁶ The following comments by the 1957 Revision Committee of the American Accounting Association also oppose the interperiod allocation.

In any given period, some differences may be attributable to the inclusion or exclusion for tax computation of revenue or expired cost recognized under accounting principles as net income determinants in earlier or later periods. . . . Consequently, disclosure by accrual may be more confusing than enlightening and is therefore undesirable.²⁷

²⁵Accounting Principles Board, Opinion No. 11, pp. 165-66.

²⁶Ibid., p. 164.

²⁷Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements (New York: American Accounting Association, 1957), pp. 6-7.

Without allocation, the income statement will show the approximate amount of income taxes determined payable under the rules and regulations of the government for the period. The result is that tax effects of timing differences are permitted to "flow through" into reported net income as illustrated above in Table 2.

Supporters of no allocation apparently include those who question whether income taxes are an expense. The implication is that if they are not expenses they need not be allocated.

In this study, the writer is considering the timing differences which arise out of the use of accelerated depreciation for tax purposes and straight line for reporting purposes. The average life of the depreciable assets is assumed to be fifteen years. The timing differences are assumed to be recurring. Hence there will be no inter-period allocation of taxes under the partial allocation concept. Under these circumstances the partial allocation method is similar to the no allocation method.

The Case for Interperiod Allocation of Income Taxes

Purpose of allocation.--The proponents of inter-period allocation aim at eliminating fluctuations in the net income when the actual tax payable in a period is considered the expense for the period. In many cases there is a substantial difference between the pre-tax

accounting income and taxable income. The result is that no constant or normal relationship appears between the income tax expense, based on taxable income, and the income figure shown in the income statement.

Matching concept.--It is further argued that tax allocation is necessary for a proper matching of revenue and expense. Willard J. Graham in supporting this view writes:

The most convincing case for income tax allocation rests upon its proper matching of expense with revenue, the allocation of income tax expense among periods in relation to the reported income rather than the taxable income. While the income statement does report the results of past operations, its utility to readers depends primarily upon its validity as a basis for appraising the profitability of--or planning the control of--future operations. The failure to give proper recognition to the deferral of credits to income tax expense produces a net income amount that is likely to lead the reader to an overestimate of future earning power: conversely, the non-recognition of deferred charges to income tax expense may lead to an underestimate of future earning power.²⁸

Accrual accounting and allocation.--There is another argument for the allocation of income taxes. Accrual accounting requires that the income shown on the income statement be charged for the income taxes that will result, presently or ultimately, from the income concurrently reported.²⁹

²⁸Willard J. Graham, "Income Tax Allocation," Accounting Review, XXXIV (January, 1959), 15.

²⁹Herbert Miller, "How Much Income Tax Allocation," Journal of Accountancy, CXIV (August, 1962), 47-48.

The legal position.--The crucial question which arises is whether the effect of the law is to provide a tax saving, or merely a deferral. Leonard Spacek makes this point very lucidly.

Congress is the representative of the public, and regardless of how much any of us would like to turn the tax deferral into tax elimination, deferral is a fact of business life, and we cannot reflect in accounting what Congress has prevented by legislation. It was Congress which said that advance deductions of depreciation merely changed the timing of the tax paid but did not change the aggregate amount of tax to be paid except where there was an interim change in tax rates.³⁰

In Accounting Series Release No. 85, issued in February, 1960, the Securities and Exchange Commission held that it is improper to designate any part of the credit arising from deferred tax accounting as a part of earned surplus.

Position of the APB.--The Accounting Principles Board Opinion No. 11 supports the allocation of income taxes:

Comprehensive interperiod tax allocation is an integral part of the determination of income tax expense, and income tax expense should include the tax effects of revenue and expense transactions included in the determination of pre-tax accounting income.³¹

³⁰ Leonard Spacek, "The Case for Income Tax Deferral," New York Certified Public Accountant, XXXVIII (April, 1968), 271-272.

³¹ Accounting Principles Board, Opinion No. 11, p. 169.

The Case Against Interperiod
Allocation of Income Taxes

It has already been stated that all accountants do not favor tax allocation. Among the prominent opponents are the 1957 Revision Committee of the American Accounting Association. They state:

In any given period, some differences may be attributable to the inclusion or exclusion for tax computation of revenue or expired cost recognized under accounting principles as net income determinants in earlier or later periods. Since such differences are often significant, and since they may give rise to expectations of wholly or partially offsetting differences in later periods, they should be disclosed.

Disclosure is sometimes accomplished by recording the differences as prepayments (given an expectation of future tax savings) or accruals (given the opposing prospect). However, these items do not present the usual characteristics of assets or liabilities; the possible future offsets are often subject to unusual uncertainties; and treatment on an accrual basis is in many cases unduly complicated. Consequently, disclosure by accrual may be more confusing than enlightening and is therefore undesirable.³²

Income taxes as an expense.--The advocates of tax allocation argue that income taxes should be allocated in the same manner as all other expenses of doing business are allocated. But expenses are recorded when incurred and therefore become subject to allocation. It is admitted that expenses are recorded even when the amount may not be definite and precisely determined, but the vital consideration is that the expense must be incurred before it is recorded.

³²Accounting and Reporting Standards for Corporate Financial Statements and Preceding Statements and Supplements, op. cit., pp. 6-7.

No other expenses are recorded before they are incurred, yet advocates recommend that income taxes be recorded before they have been incurred.³³

The opponent's view is thus summed up in the words of Ralph C. Johns:

. . . income taxes are an expense of doing business only to the extent assessed. Income taxes which might be assessed in some future years are not proper charge against income of the current year.³⁴

Income taxes as a cost.--David H. Li describes the taxes as cost and emphasizes that interperiod allocation of taxes cannot improve the usefulness of income statements:

Corporate income taxes are taxes imposed upon a corporation in return for the right to conduct its business as a separate entity. They are imposed without considering who the beneficiaries of a corporation are or upon whom the incidence of such taxes falls. Income taxes under the entity concept are a cost, a cost of being a separate entity.

As a cost, matching income taxes as they are with revenue is consistent with the purpose of levying such taxes. It cannot result in mismatching. Furthermore, reporting income taxes as they are in the income statement shows the extent to which the management has exercised control in reducing income taxes as a cost. Inter-period income tax allocation, in other words, cannot improve the matching process, nor can it improve the usefulness of the income statement.³⁵

³³M. Bruce McDonald, "Accounting for Income Taxes," The Federal Accountant, XV (June, 1963), 40-51.

³⁴Ralph C. Johns, "Allocation of Income Taxes," Journal of Accountancy, CVI (September, 1958), 41.

³⁵David H. Li, "Income Taxes and Income Tax Allocation Under the Entity Concept," Accounting Review, XXXVI (April, 1961), 268.

Responsibility of accountants.--Those favoring deferred tax accounting emphasize the responsibility of the professional accountants to the prospective investors and conclude that it is necessary to record deferred income taxes. In doing so they seem to overlook the fact that the interests of the present stockholders are equally involved in the approach to deferral of taxes. Deferred tax accounting, to the extent it is employed today, may fail to provide the means for equality of treatment to both the present and the prospective investors. It generally favors the prospective investors to the possible detriment of the present stockholders.³⁶ Besides the question of responsible to whom, is the question of responsible for what?

Simply stated, accountants are responsible for seeing that corporate management reports the financial facts as they have occurred. Deferred tax accounting is not restricted to a reporting of what has happened, but extends to a forecast of what will happen in the future. Any assumption of responsibility of forecasting goes against custom and usage. Rule 2.04 of the Code of Professional Ethics of the American Institute of Certified Public Accountants states:

A member or associate shall not permit his name to be used in conjunction with an estimate of earnings contingent upon future transactions in a manner which

³⁶McDonald, "Accounting for Income Taxes," op. cit., p. 47.

may lead to the belief that the member or associate vouches for the accuracy of the forecast.

Allocation of income taxes and objectivity.--

Further, the proposal to allocate taxes replaces objectivity with subjective judgment. This may be misleading:

It appears that the kinds of forecasts necessary to implement the "allocation" doctrine of necessity depend heavily on the subjective judgments of the forecaster. Substitution of the accountant's or management's interpretations for the historical facts is undesirable stewardship accounting practice for the same reason that editorialized news reporting is poor journalism; it inevitably reduces, and sometimes distorts, the informational content of the report. If such essentially subjective measurements are rigidly systematized to obtain "objective subjectivity," as is to some extent the practice with respect to depreciation, the original purpose in making them is largely obviated.³⁷

The views of the Treasury Department.--The views of the Treasury Department also go against the comprehensive allocation of the income taxes as could be inferred from the following:

. . . The accounting approach suggested in the proposed APB Opinion would however, in the aggregate, substantially overstate the current tax liability of American business and present an inaccurate picture of our tax system. Since tax liability would be substantially overstated in the aggregate, it would obviously also be overstated individually for the vast majority of United States corporations.³⁸

³⁷Thomas Hill, "Some Arguments Against the Inter-period Allocation of Income Taxes," The Accounting Review, XXXII (July, 1957), 361.

³⁸Stanley S. Surrey, "The United States Income Tax System--The Need for a Full Accounting," Journal of Accountancy, CXXVI (January, 1968), 57-61.

Allocation as an unsupportable theory.--Further, the opponents of comprehensive allocation consider this as an unsupportable theory.³⁹ They argue that ultimately all business transactions result in the acquisition or disposition of something of value, usually cash. Therefore, to attribute any value to a transaction, it is necessary to be able to determine the nature and time of ultimate settlement. Sometimes, as in the case of debentures or mortgages, the time involved may be long, say thirty to forty years, but it is definite and agreed upon between the parties.

On the other hand, what do we see in the application of comprehensive tax allocation theory to timing differences arising from the use of accelerated depreciation for tax purposes and straight line for reporting purposes. There is no acknowledged debt between the parties involved namely--the business and the government. There is no determinable due date for the payment of the tax. Furthermore, there is no basis for accurately determining the amount of the tax because changes in the law and regulations are not predictable. How can the business incur a deferred tax cost under these circumstances? At the most, an exposure to a contingent liability arises and most

³⁹Brendan J. Meagher, "Practice Versus Theory in Accounting for Taxes," Financial Executive, XXXV (May, 1967), 41-66.

accountants may agree that reserves for contingencies are not appropriate.

As a general rule it is improper to relate the income tax cost to a particular item such as depreciation in the financial statements, or to a particular transaction, because the tax is not levied that way.

If the theory inherent in comprehensive tax allocation is carried to its illogical conclusion, one would assume that the taxpayer pays the government a tax on items of revenue and that the government in turn pays the taxpayer for deductions. The theory does not recognize that income taxes are levied against the excess, if any, of revenues determined according to law and regulations. . . . To attempt to split up the tax bill and relate it to a multitude of particular items is an exercise in futility.⁴⁰

The amount of tax payment depends upon the needs and political requirements of the government on the one hand, and on the other the decisions of management, which attempts to minimize these taxes.

The theory that proposes setting up a liability for deferred taxes runs into trouble when the deferred amount would result in an asset being recorded. This might be the case of a loss carry forward when the company has a claim for refund. Under these conditions it is proposed:

. . . that the tax benefit of loss carry forwards should not be recognized until they are actually realized, except in unusual circumstances when realization is assured beyond any reasonable doubt at the time the loss carry forward arises.⁴¹

⁴⁰Ibid., p. 48.

⁴¹Accounting Principles Board, Opinion No. 11, p. 173.

If this is sound, why should not there be reasonable assurance of payment in the case of the tax deferrals? The same point is made by Messrs. Biegler, Davison and Queenan while dissenting from the APBO #11.

They believe that to the extent that comprehensive allocation deviates from accrual of income tax reasonably expected to be paid or recovered, it would result (1) in accounts carried as assets which have no demonstrable value and which are never expected to be realized, (2) in amounts carried as liabilities which are mere contingencies and (3) in corresponding charges or credits to income for contingent amounts. In their view, comprehensive allocation shifts the burden of distinguishing between real and contingent costs, assets and liabilities from management and the independent auditor who are best qualified to make such distinctions, to the users of financial statements.⁴²

Empirical evidence.--In the study conducted by Price Waterhouse and Company, it was concluded that:

Those investors who do not fully comprehend the impact of deferred tax accounting as practiced today may be in danger of being misled as to the real significance of the amounts of earnings per share, liabilities and stockholders' equity being reported by many corporations.⁴³

This study showed that over a period of twelve years (1954-1965) the 100 corporations, taken as a group, have reduced their earning by \$1.0 billion for this deferred tax accounting. In calculating the reversal of the

⁴²Ibid., p. 181.

⁴³Is Generally Accepted Accounting for Income Taxes Possibly Misleading Investors? (New York: Price Waterhouse & Co., 1967), reported in Financial Executive, XXXV (September, 1967), 72.

deferred tax provision or of tax reduction, the authors computed it at \$20 million dollars or 2 per cent; and 45 per cent of this total of 20 million was accounted for by one retail company. So it was concluded that the pyaback or reversal in the future would be minute as compared to the charge.

On the basis of the study, the authors concluded that the deferred tax accounting does not result in the fair presentation of the financial results of the corporations. They emphasize the need to eliminate the deferred tax accounting.

A survey, conducted by the Financial Executive Institute,⁴⁴ reported that 52 per cent of the responding companies practiced partial allocation; 25 per cent practiced comprehensive allocation; and 23 per cent made no allocation of income taxes. For investment credit, 80 per cent were using flow through method and 20 per cent were using deferred method. Some companies gave the reasons for the practices.

An oil company writes:

We feel that income tax allocation is misleading and unrealistic. We do not intend to adopt any allocation procedure even though qualifying comments are made mandatory upon our public accountant.⁴⁵

⁴⁴"Survey of Current Practices in Accounting for Investment Tax Credit and in Allocating Income Taxes," Financial Executive, XXXV (September, 1967), 88.

⁴⁵Ibid.

A drug company says,

We believe in assignment of costs when the relationship is directly or easily determined. We do not feel that we have a base for allocating income taxes that would not be more or less arbitrary.⁴⁶

Summary and Conclusion

In this chapter the variations in the methods of accounting in different areas have been described with a detailed discussion of interperiod allocation of income taxes. The chapter begins with a general discussion of the availability of alternative methods of accounting. This is followed by a listing of the number of alternatives available in various areas: inventories, depreciation, cash flow, leases and income tax allocation. The detailed discussion of allocation of income taxes includes:

Problem of Accounting for Income Taxes

The origin of the problem of accounting for income taxes is stated.

Nature of Tax Allocation Problem

The difference between taxable income and accounting income is the cause for the accounting problem. The difference is due to the difference in objectives of tax accounting and financial accounting. The two classifications of differences are discussed. It is concluded

⁴⁶Ibid.

that financial accounting is micro-economic oriented while tax policy is macro-economic oriented.

Historical Background

Starting with Accounting Research Bulletin No. 23, Dec. 1944 the section describes the views expressed at various times and also reviews the recommendations of AICPA and SEC from time to time.

Illustration of Tax Allocation

An illustration of the effect on net income of comprehensive allocation and no allocation is given. The timing differences considered arise because of the use of accelerated depreciation methods for tax purposes and straight line for reporting purposes.

Different Views on Tax Allocation

The concept of allocation of income taxes is discussed. The rationale for allocating taxes, and arguments supporting allocation are presented.

Arguments Against Allocation

Arguments against allocation are grouped in the following ways: income taxes as an expense, income taxes as a cost, responsibility of accountants, allocation of income taxes and objectivity, and allocation as an unsupportable theory. Views of the Treasury Department are

discussed. The Price-Waterhouse study of the allocation highlights the understatement of earnings by corporations adopting comprehensive allocation. Finally the opposing views from the survey conducted by the Financial Executive Institute are reported.

If the tax allocation is seen in perspective, it may be concluded that there has been an unabated controversy surrounding the allocation of income taxes. The arguments for and against allocation of income taxes seem logical and rational from different points of views. The Accounting Principles Board recommends comprehensive allocation of income taxes but the controversy is still continuing and the profession is divided on the question. The matter can be best decided by reference to the users' needs. The first step in handling the users' needs, is to determine whether or not the debated alternative methods affect the users' decisions. Bankers use accounting data to make decisions regarding loans to the customers. Term loans constitute a major part of commercial loans by large commercial banks. The next chapter discusses the nature, development, and processing of term loans by commercial banks as a prelude to the study of the effects of alternative accounting methods for allocation of income taxes on term loan decisions.

CHAPTER III

TERM LOANS

Introduction

In the previous chapter, variations in accounting methods were discussed. A detailed study of the problem of allocation of income taxes was conducted. A need for the study of term loans was indicated in order to investigate the effects of alternative methods of allocation of income taxes on users. This chapter discusses the nature of term loans and the development, reasons and need for term loans. Then the chapter discusses the processing of term loans by large commercial banks. Various steps in the process of granting term loans are discussed with special emphasis on the investigation of credit worthiness.

Nature and Development of Term Loans

Nature

Neil H. Jacoby and Raymond J. Sauliner¹ have listed three conditions which define a term loan: (1) that the

¹Neil H. Jacoby and Raymond J. Sauliner, Term Lending to Business (Washington: National Bureau of Economic Research, 1942), p. 9.

credit is extended to a business concern, (2) that there is a direct relationship between the borrower and the lender, (3) that some part of the principal is repayable after the passage of one year.

The first limit means that the bank primarily considers the earning capacity of the business, or the business assets, as the basis for the term loan. The second condition distinguishes bank term loan from open market purchase of corporate bonds, sold by investment houses. The third feature supports a definite schedule of payments, extending for a period in excess of one year.

The term loans are thus business loans with maturity of more than one year, arrived at by direct negotiation between the borrower and the bank, and the credit extension is based on a formal loan agreement that specifies the terms and conditions of the credit extension. The projected means of repayment are from operations of the business.

The Evolution of Bank Term Lending

The history of bank term lending is a relatively short one. In its present form, it did not appear on the American Banking scene before 1934. Banks became term lenders on a significant scale only after 1935. In 1937 term loans at commercial banks amounted to only \$827 million, but their progress since then can be observed from the following:

<u>Year</u>	<u>1946</u>	<u>1955</u>	<u>1957</u>	<u>1969</u> (May 28)
Total amount of term loans (millions of dollars)	4,558	10,457	15,421	30,883
Percentage of total business loans by member banks	34.4	37.9	38.0	40.3

(Source: Federal Reserve Bulletins, April, 1958, pp. 401-402; June, 1969, p. A30).

Term lending has become an important part of business loans, but more so to the large banks than the small ones.

In general large banks in large communities grant term loans more frequently than small banks in a small community. Term loans were reported to make up 50% of the business loans of New York City banks, as compared to 33% at banks outside the city.²

As of August 27, 1969, the total business loans of large commercial banks in the Seventh Reserve District amounted to \$8,875,692,000 and the term loans amounted to \$4,728,429,000. In other words term loans constituted 53.3 per cent of total business loans of these banks.³

Reasons for the Development of Term Loans

These can be analyzed in relation to demand and supply factors as follows:

²Business Week, February 11, 1961, p. 63.

³Source: Research Department, Federal Reserve Bank of Chicago, data based on reports from large commercial banks. Noted personally from Detroit office.

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Demand factors.--(1) Borrowers are certain to have their money over an extended period of time. During the 1929-32 recession demand loans were called by commercial banks, or straight loans were not renewed. Business firms wanted to avoid this situation and therefore longer term financing developed. (2) Regulations of the Securities and Exchange Commission discourage many borrowers by reason of the requiring of detailed reports and the time taken in the registration process. For issues of less than one million, the cost per dollar of funds received is quite high. A term loan requires very little time, particularly, when there are already established relationships with the banks. (3) It is easy to negotiate a modification of the term loan agreement. In the case of a public offering, which is widely held, it is more difficult to modify any term of the indenture. (4) Increased rates of taxation have reduced the amounts that the companies can plough back, thereby necessitating external financing. (5) The post-war period of reconversion and expansion has made term financing necessary.

Supply factors.--(1) The inauguration of deposit insurance by the Federal Deposit Insurance Corporation, following the 1933 bank holiday, served to allay the fears of the depositors and reduced the probability of "runs." Greater stability of deposits has thus made it possible for the banks to make longer-term loans. (2) The change in The Federal Reserve Act, which liberalized the lending

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power of banks and broadened the rediscount and advance base of the system, also served to encourage the banker's interest in term lending. (3) A number of types of securities were eliminated by investment regulations restricting the character of securities which a bank might include in its bond portfolio. (4) In the early 1930's, there was an increase in the excess reserves of commercial banks. This in turn stimulated the granting of term loans to business firms. (5) Pressure on the banks to maintain earnings enhanced grants of term loans by the banks, because the interest rate on term loans could be somewhat higher than on short term loans or current paper.

Need for a Term Loan

The need for a term loan is often found in the following situations:

1. Increase in profitable business has created a need for new plant and equipment capable of producing more volume at a lower cost.
2. Addition of new items to the product line may require addition of some new equipment for producing the added items.
3. Expansion of business, though profitable, has resulted in increased amounts of accounts receivable and inventory, thus severely straining the working capital.

4. Some borrowers may use term loans to provide interim funds, pending a public financing of longer-term financing arrangement.
5. In the current trend to create conglomerates, borrowers may use term loans to provide cash for acquisitions. (At present, when the money market is very tight, the Federal Reserve System does not look favorably on loans made for acquisition purposes.)

Processing a Term Loan Application

The various steps, in processing a term loan application by the bank are:

1. Receiving the loan request.
2. Determining the status of the business firm's bank-customer relationship.
3. Evaluating the customer relationship.
4. Investigating the credit worthiness of the loan requested.
5. Determining the feasibility of the loan within legal and policy requirements.
6. Making detailed appraisal of the loan.
7. Making detailed recommendations, and drawing loan agreement.
8. Recording the analysis and agreement.
9. Servicing the loan.

10. Reviewing and updating the credit file.

Each of these steps will be discussed.

Receiving the Loan Application

This is the first step in processing a loan application. The loan officer receives the request for the loan from the firm. He is contacted by the person looking after the financing. Depending upon the nature and size of the organization, he may be the owner, president, finance officer, controller, or any other person responsible for such function. There is no set form of application. The contents and details to be filled in the form may differ from bank to bank. However, the basic contents are: (a) the name and address of the applicant, (b) the nature of business of the firm, (c) the applicant's relationship with the bank, (d) the amount of the loan requested, (e) the purpose of the loan requested, and (f) the repayment schedule.

Along with the application, the loan officer receives: (a) the financial statements of the firm for three to five past years along with the cash flow for the same periods, (b) the aging schedule of accounts receivable and inventory, and (c) projections of financial statements for three to five periods.

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Determining the Status of the Firm's Bank-customer Relationship

Here the question is whether the applicant is already a customer of the bank or a new account. This information is provided on the application form. If it is a new account, then the next step is the evaluation of the bank-customer relationship followed by a decision about the desirability of the account.

Evaluating the Customer Relationship

The various factors taken into consideration are: (a) the probability of the firm becoming a regular customer, (b) whether the customer relationship will build the bank, and (c) the profitability of the bank-customer relationship with the firm.

The probability of becoming a regular customer.--
The loan officer will determine the nature and duration expected of the various accounts that the applicant may have with the bank. The accounts may be a deposit account, pension trust administration, employees' accounts, or other business which generates commission or fees for the bank.

Whether the customer relationship will build the bank.--This will depend upon the estimated increase in the level of bank's deposits, whether directly or through subsidiaries or correspondents. If the customer-relationship

increases the deposit level significantly, the customer relationship builds the bank.

The profitability of the bank-customer relationship.--Profitability depends upon the expected earning capacity of the various accounts to be maintained by the applicant.

Under the present situation when there is tightness in the money market, the major factor in evaluating a new applicant is the amount of deposits that will be maintained by the applicant with the bank.

Investigating the Credit
Worthiness of the
Requested Loan

Investigation of credit worthiness is conducted in the case of new customers, and also of the old customers if the amount of the loan requires it. Most of the term loans are for a greater amount and for longer periods of time than the short-term loans. The credit analysis of a typical term loan application is more comprehensive and thorough than for a short-term loan, which is payable out of the liquidation of receivables and inventories in the normal course of business. So the short-term lender may look to the liquidity and turnover of current assets. Along with the examination of current assets, the overall working capital position must be related to the working of the company. There must be a review of the cash flow represented by this conversion. The depth of research called

for in the case of a term loan is similar to that performed by the long-term investor who is primarily interested in stability and growth of net earnings. Term lending may be even more demanding than investment in marketable securities. The investor in marketable securities has the opportunity to get out by selling at a limited loss, but the lender must live with his mistakes.

Analysis of credit risk involves three broad factors namely: (a) the financial factor, (b) the personal factor, and (c) the economic factor.

The financial factor.--Like all other lending, financial information on the prospective borrower is the basic requirement. The financial statements provided by the applicant are analyzed and evaluated in the credit department. In the case of term loans, the bank usually asks for financial statements for the previous three to five years along with the projection for three to five years. Requirements regarding this differ. Some banks may not require the projections but do it themselves in their credit department. In other cases they may ask for the customer's projections and check them against their own projections.

After these are analyzed they are put on the spread sheets of the banks to enable the credit analyst and loan officer to compare the sales and financial progress of the company between periods and ask any other questions if so

needed by the loan officer. It has been observed that these analyses and spread sheets differ among the banks.

The operating statements and balance sheets are analyzed. The analysis is compared against the industry averages published in "The Annual Statement Studies" by Robert Morris Associates, the national association of bank loan officers and credit men. The analysis is also compared with those of the competitors if available. In addition, various ratios are computed and compared against the industry averages as given in the Annual Statements Studies⁴ and those of the competitors when available to the bank. Both the balance sheet and income statement are important but in deciding about the term loan more emphasis is given to the income statement.

The basic purpose of this analysis is to make a judgment regarding the bank's share of risk and the solvency and profitability of the firm. The ratio of total debt to net worth gives the bank an idea of the share of risk the bank is taking in making the term loan. In computing this ratio the intangibles are removed from the assets, and the amount of loan desired is included in the debt. If there is a subordinated debt then such debt is included in the net worth and excluded from the debt figures. Current ratio, quick ratio, and the amount of

⁴Annual Statement Studies (Philadelphia: Robert Morris Associates, an annual publication).

working capital as well as inventory turnover and receivable turnover ratios, are considered for the short-term loan, but are not given as much emphasis in the term loan case. The profitability ratios, such as net income to net sales and net income to net worth, are computed. These are given more emphasis than the liquidity ratios.

The personal factor.--It should be recognized that in the evolutionary development of standards by which to measure risk, and in the writings of those who have attempted to describe this development, there is no universally accepted standard by which the major factors involved in credit analysis can be weighed. This question of emphasizing different factors and assigning them weights depends upon the philosophy of the individual loan officer. Even allowing for the individual factor, standards for determining what items should be included in the broad factor and what weights should be given to those items, are not precise.

During the discussions with loan officers, it was observed that some officers were basing their decisions mainly on the personal factor and an acceptable financial position. On the other hand, there were loan officers who primarily based all their decisions on the analysis of the financial statements. Then there were those who liked to have a judicious blend of the two factors along with others.

Regardless of these differences, it could be concluded that the personal factor is meaningful and one of the three basic factors to be considered in the loan decisions. Generally speaking, a reasonable estimate of the personal factor is formed by reviewing the character, ability, resourcefulness and adaptability of the executive management, and the adequacy, temper and skillfulness of subordinate personnel.

However it may be emphasized that generally sound bank credit cannot be extended to business enterprises solely on the basis of managerial integrity, ability and capacity. There must be some asset protection behind an advance, over and above that derived from the advance itself, for a prudent lending. But the quantity of asset protection deemed necessary by the loan officer is directly affected, not only by the quality of the assets, but also by the related personal considerations evidenced by the operating record of the business, such as proven capacity of management, a historic record of ability to tide over adverse economic conditions in the past, and record of straight forwardness and financial responsibility.⁵

In the last analysis, loans are made to people--not to collaterals or financial statements. People operate business successfully and unsuccessfully. Financial statements are important--not for themselves,

⁵ Charles W. William, ed., The Credit Department, A Training Ground for Loan Officers (Philadelphia: Robert Morris Associates, 1955), p. 8.

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but for what they indicate about the manner in which people have conducted their financial affairs. Financial statements are the result of action by people. We cannot properly evaluate people without financial statements.⁶

Other Sources of Information.--Besides the financial data provided by the applicant and personal data collected by the loan officer and/or credit department by a personal visit to the plant and/or from the interview with the applicant, there is other information available from many other sources. The most prominent among these are the reports of the credit agencies on the applicant, for example, Dun & Bradstreet, Inc. In addition to investigating and reporting financial and other information to the subscribers on individuals and firms, it edits and publishes a bi-monthly Dun & Bradstreet Reference Book.

The subscribers receive periodically the requested credit reports on the firms they need. Special reports are also sent to the subscribers when any event takes place which may have a material effect on the business of the firm reported. Besides Dun & Bradstreet, Inc., there are local agencies which supply credit reports. These reports are similar in nature and content. In some cases these may be more up-to-date than Dun & Bradstreet reports.

⁶John B. McCarter, "Investor, Partner or Lender?" Bulletin of Robert Morris Associates, L (September, 1967), 70.

The bank officers also check with competitors, major customers and suppliers to learn more about the firm and its dealings. At times the bank officer checks with the local Better Business Bureau to determine that the applicant is "clean," so to speak, and that there are no complaints from the public concerning its methods of doing business or other detrimental information regarding its products. Many times a search of public records is also made to look for any liens, mortgages or any suits against the applicant. Clippings from newspapers or magazines and circulars have been seen in credit files of customers in some banks.

We may conclude that there are several degrees of credit investigation done by the commercial banks, depending on the firm's general reputation, the amount of the loan, the maturity of the loan, the repayment schedule, and the extent to which collaterals are offered. Attempts are made to weigh the expected benefits of the obtained information against the efforts involved in securing it.

The economic factor.--This factor involves a broad, nebulous, but fertile field for the scrutiny of the financial man. It is important to know whether there is a depression or booming prosperity, because this has a bearing on all forms of business activity and is beyond the control of the bank.

All loans do not work out precisely as anticipated by lenders. Sometimes the borrower turns out to be better

or worse than anticipated. The loan officer knows that the safest loans are those that he can make without hesitation even in the depth of a depression, and the riskiest loans may be those which he might make without concern at the peak of a boom.

The term loans have long maturities. To decide a company's credit worthiness, the bank must consider the present position of the applicant in the industry, the present condition of the industry, and its future prospect in the whole economy. The prevailing conditions in the money market and the outlook in the coming years are assessed. Government finance, taxation, debt policy and monetary management are considered.

At the present time, when the money market is tight, banks give more weight to the cash balances maintained or expected to be maintained with the bank. Further, under the present inflationary conditions, banks must consider that the Federal Reserve Banks do not look favorably on certain types of loans.

All the three factors are blended in proper weights to make a sound and intelligent decision on credit worthiness. Again, deciding what is the proper weight to be given to any one factor depends upon the loan officer. There are no precise standardized percentages of weights to be given to one or the other factor. There is also a trade off between these factors. Strong management and a favorable economic outlook may offset a weakness in

financial statements. On the other hand a mediocre management and an uncertain economic outlook may not outweigh the unquestionable financial strength. For example, a senior vice-president of a leading bank doubted the integrity of the chief executive officer and therefore refused consideration of the loan even though the firm had a strong balance sheet and income statement, and favorable economic conditions. Endless variations and gradations are possible depending upon the philosophy of the loan officer and his bank.

Determining the Feasibility of
the Loan Within Legal and
Policy Requirements

After the loan officer is satisfied about the credit worthiness, the loan application is checked (for the amount) against legal and policy requirements. If the amount asked for exceeds the bank's legal loan limit, the bank arranges participation with its correspondent bank. Terms and conditions for participation vary, but usually the participation is on a "Last-in First-out" basis. This means that the bank who joins in the loan last is the first to get the repayment. The final arrangement depends upon the bargaining position of the banks. They could settle for a proportionate basis, that is, each repayment will be shared in proportion to the share in the amount of the loan.

Another check for the amount of loan is set by the policy of the bank. This amount depends on the total assets and net worth of the applicant. Here, too, there is no set standard among all the banks as to the proportion of loan to total assets or loan to the net worth which is necessary for a loan. Further, the maximum amount of loan that may be granted under the policy of the bank may be determined by the security or collateral offered.

As for the lower limit, banks do not look favorably on term loans too small in relation to the total assets of the borrower, since most firms should be able to provide for small amounts out of funds provided by internal generation or by short-term borrowing.

Banks, then, check the amount of the loan requested against: (1) the cash balances maintained by the applicant in previous years, and (2) cash balances proposed in the projected financial statements. In the tight money market, as at present, banks are not much interested in granting term loans to customers maintaining low cash balances with the bank. If the maturity of the loan exceeds the bank's maximum limit, the loan officer may limit this to the maximum under the policy of the bank.

Making Detailed Appraisal of the Loan

After the question of feasibility is decided, the detailed appraisal of the purpose, the amount, the maturity,

and the repayment schedule of the loan is made. The question of collateral is also considered.

In the majority of cases the purpose of a term loan is to finance the expansion of business through the purchase of new equipment, or by acquisition of an existing firm. The bank investigates whether the applicant will be successful in selling the additional production. Does he have the means and markets for the same? How much will the earnings of the firm increase? Will the increase in earnings justify the investment? Will the amount requested be adequate for the purpose?

In cases where the banks feel otherwise, they have proposed modified amounts for term loans or even a combination of term loan and revolving loan. The bank will not make the loan that will not do the whole job. A prudent bank officer helps the customer to get funds from outside or through other channels besides participation. A loan officer remarked, "If my bank is unable to provide funds at the present time due to tight conditions, I go out to the other financial institutions to get the funds for the customer, so that we retain that customer."

Maturity and repayment schedule.--After the detailed appraisal of the purpose and the amount of the loan, the bank wants to be sure that the borrower has the ability to repay within a reasonable time. The bank estimates this from the projections of cash flows prepared

by the applicant and checked by the bank. The bank prescribes a realistic repayment schedule either monthly or quarterly. In very few cases it might even be semi-annually. The repayment schedule and maturity proposed by the bank may be different from that requested by the customer depending upon the projections as adjusted or modified by the bank.

Security or collateral.--Making an unsecured loan or asking for collateral against the loan again depends upon the judgment made on the applicant's credit worthiness, on the bank's policy, and on the loan officer's philosophy. In discussion with various loan officers and credit men, different views on collateral were observed.

There are those who would like to have collateral right at the time of loan. There are others who would like to put in a negative clause, forbidding loanees from pledging any assets with others. Then there are those who would put a clause in the agreement to the effect that the bank can ask for collateral when it feels insecure. Occasionally loan officers who initially demand collateral will release the collateral later on if the loanee's projections prove to be realistic or perform better than expected.

Making Detailed Recommendations

After the detailed appraisal has been made and a positive decision made to grant the loan, the loan officer

and the applicant negotiate to arrive at a decision regarding the amount, the interest rate, the maturity, the repayment schedule and other conditions governing the loan. The bank's attorney is asked to draw up the loan agreement which is then sent to the applicant for his approval and signature.

Some of the important and common items in a loan agreement are:

Amount of the loan and the purposes of the loan.--

The amount of the loan and the way it will be disbursed to the customer are mentioned in the agreement. The purpose of the loan is also mentioned in the agreement. Sometimes evidence of disbursement of the amount by the customer for that purpose is also required. In several cases banks make direct payment to the equipment suppliers if the loan is for acquisition of equipment.

Rate of interest.--This may be a flat rate or a floating rate tied to the prime rate; it may also have a floor and a ceiling. At present, the majority of the loan officers favor a floating rate tied to the prime rate with a floor and a ceiling. There is a fundamental reason for this. If this is not done, either the borrower or the lender is going to be unhappy when there are relatively large swings in the interest rates. A loan with a six year maturity made four years ago is unpalatable to the lender today. If the rates decline substantially two to

three years from now, no borrower would be very happy with the rate set at today's market. Term loan interest rates are usually 1/2 per cent to 1 per cent higher than the short-term rates.

Repayment schedule--principal and interest.--There may be equal monthly or quarterly payments of principal with interest due to date. Or there may be equal payments of principal with a balloon payment at the end. Or there could be a small payment to begin with and increasing every month or quarter as mutually agreed upon.

Compensatory balances.--This is the amount of deposit balance the customer must maintain with the bank. At the present time it generally ranges from 10 per cent to 20 per cent of the loan though there are cases of higher amounts. For all practical purposes it is an arbitrary way for banks to increase the opportunity for profit. When a business maintains a deposit balance of more than dictated by the needs of the business, this makes the effective rate of interest higher than the one agreed upon.

Collateral.--As already discussed, this may be required at the time the loan is made, or a negative clause may be incorporated in the agreement. Besides the terms already reviewed, there are a number of positive and negative covenants that are incorporated in the agreement to safeguard the interests of the lender.

Recording the Analysis and Loan Agreement

A record of the analysis and the loan agreement is made in the credit file of the customer.

Servicing the Loan

After the loan has been disbursed, the task of billing the borrower for the principal and interest due and of receiving the various reports and documents from the borrower required under the agreement begins. The loan officer keeps in touch with the borrower in order to keep abreast of current development which might not be reflected in the company's financial statements.

Reviewing and Updating the Credit File

The loan is reviewed periodically to spot unfavorable trends which may require action on the outstanding loan. The file is updated for future reference by recording the information on payment performances for previous loans; project experience on previous loans, the quality of the projections, the general reputation, and the firm's bank-customer relationship.

Summary and Conclusion

This chapter discusses the nature and development of term-lending followed by discussion of the various steps in processing a term loan application by the lending bank as follows:

Nature

This section discusses the three conditions that define a term loan. These are: (a) credit is to a business, (b) it is directly negotiated, and (c) the loan is for more than one year.

Evolution of Bank Term Loans

History of the term loan is traced from its appearance in 1934 to 1969. Its importance in commercial bank lending is presented.

Reasons for Development of Term Loans

This question is discussed both from the supply and demand aspects of term loans.

1. Demand for term loans resulted from the bad experience with short-term loans during the recession in 1930 and the SEC's regulations on stock issues and the needs of the business.
2. On the supply side, the inauguration of Federal Deposit Insurance Corporation, the change in Federal Reserve Act, the restriction on a bank's investments, the availability of excess reserves, and the pressure on banks to maintain earnings were the factors responsible for development of term loans.

Need for a Term Loan

Due to expansion of business, term loans were needed to finance purchase of new equipment and to increase working capital.

The various steps in processing a term loan application are:

1. Receiving of the term loan application by a loan officer.
2. Determining the status of the business firm's bank-customer relationship.
3. Evaluating the customer relationship. The questions discussed are: (a) whether the applicant will become a desirable customer, (b) whether the relationship will develop the bank, and (c) whether it will be profitable to the bank.
4. Investigating the credit worthiness of the loan requested. Three basic factors are discussed: (a) the financial factor, (b) the personal factor, and (c) the economic factor. The various sources of information for credit analysis are discussed.
5. Determining the feasibility of the loan within legal and policy requirements. Legal and policy limits on loans and the question of participation with other banks are discussed in this section.

6. Making a detailed appraisal of the loan.

In this section, the discussion centers on the details of the bank's checks and appraisal of the purpose of the loan, its maturity and repayment schedules, and the collateral requirements.

7. Making detailed recommendations and drawing loan agreement. The section deals with officer's recommendations regarding interest rate, maturity and repayment schedule, other positive and negative covenants, and drawing up the loan agreement in legal form.

8. Recording analysis and agreement.

9. Servicing the loan. The bank's procedures in the servicing of the loan made are discussed in this section.

10. Reviewing and updating the credit file.

From the above discussion of the processing of term loans it may be concluded that investigation of credit worthiness is the major step in the process, and financial information on the prospective borrower is the basic requirement in this step. The variations in the methods of accounting for income taxes were discussed in the last chapter. With the discussion of processing of term loans the stage is set to analyze the effects of the alternative

methods of accounting for income taxes which is the subject of discussion in the following chapter.

CHAPTER IV

THE EFFECTS OF ALTERNATIVE METHODS
OF ACCOUNTING

Introduction

With the discussion of term loans in the previous chapter the stage is set for analysis of the effects of alternative methods of accounting. This chapter conducts a theoretical discussion of the effects of alternative methods of accounting under three headings: (a) financial analysis, (b) economic analysis, and (c) behavioral analysis as follows:

Financial Analysis

With all the variations in the accounting methods, whether they appear in the accounting literature, in newspapers or magazine columns, as observed by Cerf,¹ or in the annual survey² of the 600 companies by the AICPA, it is natural that the output from the accounting system would

¹Cerf, Corporate Reporting and Investment Decisions, op. cit.

²American Institute of Certified Public Accountants, Accounting Trends and Techniques (annual publication).

differ when different accounting methods are used. Let us see how these different methods of accounting affect the financial variables.

Inventories

There are several accepted methods of cost determination of inventories. First-in, first-out, last-in, first-out, and average cost are in common use. If prices were always perfectly stable, there would, of course, be no difference in the effects of these several methods of cost determination. Since prices change, the effects of the different methods on the figures for ending inventory, net income, and cost of goods sold are different. A table lists the effects of Fifo, Average cost and Lifo on these figures.

Cost Method	Figures Affected	Effect Under Different Price Movements	
		Rising Prices	Falling Prices
First-in First-out	Ending inventory and net income Cost of goods sold	Highest Lowest	Lowest Highest
Average Cost	Ending Inventory and net income Cost of goods sold	High Low	Low High
Last-in First-out	Ending inventory and net income Cost of goods sold	Lowest Highest	Highest Lowest

It is possible to get mixed effects when prices change direction.

Effects on working capital.--During periods of absolutely stable prices, the choice of method should have no effect on inventory valuation. During periods of changing price levels, the position is different. It can be observed from the table, that when prices are rising, the adoption of Lifo results in the lowest inventory valuation and the adoption of Fifo gives the highest inventory valuation. The reverse is true when prices are falling. The difference in inventory valuation under different methods of cost determination results in different figures for working capital, different current ratios, different inventory turnover, and similar measures of short-run financial stability.

Effects on earnings.--The inventory method in use helps determine the cost of goods sold. When prices are rising, the adoption of Lifo results in the lowest net income, and the adoption of Fifo gives the highest net income. The reverse is true when prices are falling. Income tax figures will also be different. The resulting net income figures after tax will be different and so are the earnings per share. Different reported earnings mean different net worth under different methods of cost determination of inventory. Different figures for net worth will result in different long-run stability measures, namely, debt to net worth ratio, and earnings to net worth ratio.

Income tax implications.--The tax figures will be different when they are based on different income figures. The difference in tax liability will have its effect on working capital, quick ratio, current ratio and other measures of short-run financial stability. The result will be to nullify the effect of difference in inventory valuation on these measures of short-run financial stability. The difference in tax liability will also result in different cash out-flows under different methods of cost determination.

Viewed from this perspective the adoption of Lifo has been dominated by tax considerations. Hendriksen states:

Probably the most impelling reason for the adoption of Lifo has been its acceptance for income tax purposes in 1938 for certain industries and its more general acceptance for tax purposes since 1939 and 1947. Over the business cycle, Lifo permits a smoothing of income and smoothing of tax payments. It also permits the payment of taxes in those years when the income is realized in the form of cash or other liquid assets not required for the replacement of inventories. . . . In general, prices have moved in one direction only, permitting tax savings to corporations that adopted Lifo when prices were at a relatively low level.³

Similar views have been expressed by Maurice Moonitz as follows:

The combined effect of these developments has been to stimulate the adoption of LIFO-adoption which have been dominated by tax considerations. This point is

³Eldon S. Hendriksen, Accounting Theory (Homewood, Illinois: Richard D. Irwin, Inc., 1965), pp. 271-72.

made crystal-clear by an analyst of the LIFO method:*

"Since 1939 few management decisions on LIFO have been made without reference to their tax effects. Decisions as to whether to use LIFO, how to apply it, and even as to the industries in which the method constitutes acceptable accounting practice, have been dominated by tax considerations. It would be difficult to cite other instances in which management considerations on matters of broad policy and general economic significance have been more strongly influenced by tax requirements.

"Undoubtedly the opportunity to reduce tax liabilities has been by far the most powerful motivation leading to the widespread adoption of LIFO during the past decade. The combination of sharply rising prices and high excess profits taxes gave managements in many industries a strong tax incentive to shift to LIFO during the early war years. The large postwar price increase caused some companies to make the shift as late as 1946 and 1947, though the risk of ultimate tax penalties was then greater because of the height to which price levels had already risen."⁴

*J. Keith Butters, Effects of Taxation: Inventory Accounting and Policies (Boston, 1949), pp. 6, 8. See also R. W. Button, "The LIFO Bonanza?" The Balance Sheet, February, 1948, and subsequent articles on LIFO in the March, 1948, and April, 1948 issues of the same journal, published by the Controllers' Congress of the National Retail Dry Goods Association.

Depreciation

There are several accepted methods of depreciation. Those in common use may be divided into two categories: (a) straight line methods, and (b) accelerated depreciation methods. The alternative methods of depreciation result in different amounts of depreciation expense and therefore different figures for income before taxes. An example of

⁴Maurice Moonitz, "The Case Against Lifo as an Inventory-Pricing Formula," Journal of Accountancy, XCV (June, 1953), 685.

the mechanics and the results of two methods is presented below. The first is the straight line method based on expiration of time; the second is the sum-of-the-years'-digits method (see Tables 5 and 6).

Assume that the depreciable asset is purchased for \$30,000 with expected life of five years and no salvage value. Assume that income before depreciation and taxes is \$15,000 per year.

The total amount of depreciation expense over the life of the assets is the same. Both methods give identical net income figures for the five years taken as a whole. In the initial years, the accelerated depreciation method gives a higher figure for depreciation expense and a lower figure for net income and income taxes. The benefits in the initial years are reversed in the later years of the life of the asset. This is the case for one asset only, but in actual situations new assets are acquired and old units of assets retired. In a mature firm, with no marked tendency toward expansion or contraction, straight line depreciation and the sum-of-the-years'-digits method will yield almost identical results (see Table 7).

This may be illustrated as follows: Suppose the firm invests \$30,000 in depreciable assets each year rather than only once. In the initial years, the firm on accelerated depreciation has the benefit of lower income taxes and hence a lower cash out-flow. However, from year five onward there is no difference in a static firm.

TABLE 5.--Depreciation using straight line method.

Years	1	2	3	4	5	Total
Investment in asset at beginning of year	30,000	24,000	18,000	12,000	6,000	
Income before taxes and depreciation	15,000	15,000	15,000	15,000	15,000	\$75,000
Depreciation	6,000	6,000	6,000	6,000	6,000	\$30,000
Income before taxes	9,000	9,000	9,000	9,000	9,000	\$45,000
Income tax @ 50 per cent	4,500	4,500	4,500	4,500	4,500	\$22,500
Net income after taxes	4,500	4,500	4,500	4,500	4,500	\$22,500
Net income as per cent of investment in assets	15.00	18.75	25.00	37.50	75.00	

TABLE 6.--Depreciation using sum-of-years'-digits method.

Years	1	2	3	4	5	Total
Investment in asset at beginning of year	30,000	20,000	12,000	6,000	2,000	
Income before taxes and depreciation	15,000	15,000	15,000	15,000	15,000	\$75,000
Depreciation	10,000	8,000	6,600	4,000	2,000	\$30,000
Income before taxes	5,000	7,000	9,000	11,000	13,000	\$45,000
Income tax @ 50 per cent	2,500	3,500	4,500	5,500	6,500	\$22,500
Net income after taxes	2,500	3,500	4,500	5,500	6,500	\$22,500
Net income as per cent of investment in asset	8.33	17.50	37.50	91.67	325	

TABLE 7.--Depreciation charges of a static firm.

Year	Cost of Asset	Accelerated Depreciation Charge in Year						
		1	2	3	4	5	6	7
1	30,000	10,000	8,000	6,000	4,000	2,000	Retired	
2	30,000		10,000	8,000	6,000	4,000	2,000	Retired
3	30,000			10,000	8,000	6,000	4,000	2,000
4	30,000				10,000	8,000	6,000	4,000
5	30,000					10,000	8,000	6,000
6	30,000						10,000	8,000
7	30,000							10,000
Total Accelerated Depreciation		10,000	18,000	24,000	28,000	30,000	30,000	30,000
Straight Line Depreciation		<u>6,000</u>	<u>12,000</u>	<u>18,000</u>	<u>24,000</u>	<u>30,000</u>	<u>30,000</u>	<u>30,000</u>
Extra Depreciation		4,000	6,000	6,000	4,000	0	0	0

However, if the firm is growing, say at a 10 per cent rate, the situation may be as illustrated in Table 8.

During the initial years, the accelerated depreciation method results in substantially higher amount of depreciation expense compared to the straight line method. At the end of the fifth year the difference drops to a much smaller figure, but grows every year thereafter. If the rate of growth is maintained, the difference not only grows each year but grows by an increasing amount. The formula⁵ for computing the difference in year y is

$$\begin{aligned} \text{Difference} = & \sum \left[X(1+r)^y \left(\frac{n}{\frac{1}{2}n(n+1)} - \frac{1}{n} \right) \right] \\ & + \left[X(1+r)^{y-1} \left(\frac{n-1}{\frac{1}{2}n(n+1)} - \frac{1}{n} \right) \right] \\ & + \dots \left[X(1+r)^{y-(n-1)} \left(\frac{n-(n-1)}{\frac{1}{2}n(n+1)} - \frac{1}{n} \right) \right] \end{aligned}$$

n = uniform service life of assets

r = constant rate of growth

X = initial investment.

⁵Sidney Davidson, "Accelerated Depreciation and the Allocation of Income Taxes," The Accounting Review, XXXIII (April, 1958), 173-180. Reprinted in Stephen Zeff and Thomas F. Keller, eds., Financial Accounting Theory, Issues and Controversies (New York: McGraw-Hill Book Company, 1964), pp. 308-317.

TABLE 8.--Depreciation charges of a firm growing at the rate of 10 per cent per annum.

Year	Cost of Asset	Accelerated Depreciation Charges in Years						
		1	2	3	4	5	6	7
1	30,000	10,000	8,000	6,000	4,000	2,000	Retired	
2	33,000		11,000	8,800	6,600	4,400	2,200	Retired
3	36,300			12,100	9,680	7,260	4,840	2,420
4	39,930				13,310	10,648	7,986	5,324
5	43,923					14,641	11,713	8,785
6	48,315						16,105	12,884
7	53,147							17,716
Total Accelerated Depreciation		10,000	19,000	26,900	33,590	38,949	42,844	47,129
Straight Line Depreciation		<u>6,000</u>	<u>12,600</u>	<u>19,860</u>	<u>27,846</u>	<u>36,631</u>	<u>40,294</u>	<u>44,323</u>
Extra Depreciation		4,000	6,400	7,040	5,744	2,318	2,550	2,806

With a different depreciation expense, the net income, the income tax liability, the cash out-flow, and net worth will be different under the different depreciation methods.

Allocation of Income Taxes

The problem is complicated when different methods are used for tax and for reporting purposes. This gives rise to the problem of the amount to be reported as an expense for the period. As has been illustrated, the difference in methods gives rise to different depreciation expense and therefore different figures for net income. In the case of a growing firm, when it uses accelerated depreciation for tax purposes and straight line for reporting purposes, these differences grow every year from the n th year onward.

The result is that income taxes based on taxable income are always less than those based on accounting income. In other words, the income tax actually payable is less than the income tax computed on the basis of reported income before tax. Under comprehensive allocation, this gives rise to an account called "Deferred Income Taxes." In the case of static firms, the amount in this account will increase in the initial periods when different methods produce differences in depreciation expense. At the end of the n th period, the difference in depreciation expense

and the difference between taxable income and accounting income will vanish. The amount in the deferred income taxes account will remain constant thereafter. In growing firms, the amount in the deferred income taxes account will increase with the years. Taxable income will be lower than accounting income due to the presence of differences in depreciation expenses.

A Mathematical Formulation⁶

The difference in depreciation expense will be $(d'_y - d_y)$ where d'_y is the accelerated depreciation and d_y is the straight line depreciation for the year y . If the rate of income tax is t then there is a saving of income tax $t(d'_y - d_y)$ under the partial and no allocation methods.

⁶Depreciation methods are discussed in the literature and mathematical derivations are given, but there appears to be no such derivation specifically for income taxes. The various references include: Robert Eisner, "Depreciation Under the New Tax Laws," Harvard Business Review, XXXIII (January-February, 1955), 66-74; Robert Eisner, "Depreciation Allowance, Replacement Requirements and Growth," American Economic Review, XLII (October, 1952), 820-831; Sidney Davidson and David F. Drake, "Capital Budgeting and the 'Best Tax Depreciation Method,'" Journal of Business, XXXIV (October, 1961), 442-452; J. L. Meij, ed., Depreciation and Replacement Policy (Chicago: Quadrangle Books, Inc., 1961); David Walker, "Depreciation Problems and Taxation," in Depreciation and Replacement Policy, ed. by J. L. Meij (Chicago: Quadrangle Books, Inc., 1961), pp. 141-185; Edgar O. Edwards, "Depreciation and Maintenance of Real Capital," in Depreciation and Replacement Policy, ed. by J. L. Meij (Chicago: Quadrangle Books, Inc., 1961), pp. 46-140; J. L. Livingstone, "The Effects of Alternative Accounting Methods on Regulatory Rate of Return Decisions in the Electric Utility Industry" (unpublished Ph.D. dissertation, Stanford University, 1966), pp. 91-97.

The savings in income tax can be calculated from the numerical example given earlier. But for generality and analytical precision a mathematical formulation is more appropriate.

In this formulation sum-of-the-years'-digits method is used under accelerated depreciation method.

Let X_y = gross dollar outlay of investment in year y . It is assumed that all outlay is made at the beginning of the year.

d_y = depreciation under straight line method for year y

d'_y = depreciation under sum-of-the-years'-digits method for year y

t = rate of income tax

n = uniform service life of assets

T_y = difference in income tax in year $y \leq n$

$$T_y = t(d'_y - d_y)$$

$$\begin{aligned}
 &= t \left[\frac{n+1-y}{\frac{1}{2}n(n+1)} x_1 + \frac{n+2-y}{\frac{1}{2}n(n+1)} x_2 + \dots + \frac{n+y-y}{\frac{1}{2}n(n+1)} x_y \right. \\
 &\quad \left. - \frac{1}{n} \sum_{i=1}^y x_i \right] \\
 &= t \left[\frac{2}{n(n+1)} \{ (n-y)(x_1 + x_2 + \dots + x_y) \right. \\
 &\quad \left. + 1x_1 + 2x_2 + \dots + yx_y \} - \frac{1}{n} \sum_{i=1}^y x_i \right]
 \end{aligned}$$

$$\begin{aligned}
&= \frac{2t}{n(n+1)} \left[(n-y) \sum_{i=1}^y x_i + \sum_{i=1}^y i x_i - \frac{n+1}{2} \sum_{i=1}^y x_i \right] \\
&= \frac{2t}{n(n+1)} \left[\frac{n-2y-1}{2} \sum_{i=1}^y x_i + \sum_{i=1}^y i x_i \right]
\end{aligned}$$

Let $z_1 = [1 \ 1 \ 1 \ . \ . \ . \ 1]$, a y dimensional vector

$M_1 = [1 \ 2 \ 3 \ . \ . \ . \ y]$, a y dimensional vector

$$x_1 = \begin{bmatrix} x_1 \\ x_2 \\ . \\ . \\ . \\ x_y \end{bmatrix}, \text{ a } y \text{ dimensional vector}$$

$$\begin{aligned}
T_y &= \frac{2t}{n(n+1)} \left[\frac{n-2y-1}{2} z_1 x_1 + M_1 x_1 \right] \\
&= \frac{2t}{n(n+1)} \left[\frac{n-2y-1}{2} z_1 + M_1 \right] x_1 \\
&= \frac{2t}{n(n+1)} \left[\frac{n-2y+1}{2} \ \frac{n-2y+3}{2} \ . \ . \ . \ \frac{n-3}{2} \ \frac{n-1}{2} \right] x_1 \\
&= \frac{t}{n(n+1)} \left[(n-2y+1) (n-2y+3) \ . \ . \ . \ (n-3) (n-1) \right] x_1 \\
&= \frac{t}{n(n+1)} \left[N_1 \ x_1 \right], \text{ where}
\end{aligned}$$

$$N_1 = \left[(n-2y+1) (n-2y+3) \ . \ . \ . \ (n-3) (n-1) \right], \text{ a } y$$

dimensional vector.

If T_y is positive income tax expense will be higher under comprehensive allocation than under partial allocation (or no allocation). It will be lower if T_y is negative and will be equal under both methods if $T_y = 0$.

The gross dollar outlay of investment is never less than zero. Therefore T_y will be positive if N_1 is not negative. The elements of N_1 represent an arithmetic progression with a constant difference of 2. None of the elements of N_1 will be negative if $(n-2y+1) \geq 0$ or $y \leq \frac{n+1}{2}$.

This means that income tax expense under comprehensive allocation will not be less than income tax expense under the partial allocation in any of the first $\frac{n+1}{2}$ years after adopting accelerated depreciation method for income tax purposes and straight line for reporting purposes. In year $y = n$,

$$N_1 = [(1-n)(3-n) \dots (n-3)(n-1)].$$

That is, elements of N_1 form an arithmetic progression that is symmetrical about zero.

If x_y is constant with respect to y , that is the firm is static, $N_1 X_1$ is not negative for any value of $y \leq n$. If the company is growing, x_y is an increasing function of y and $N_1 X_1$ will be positive and an increasing function of y . If the firm is declining that is x_y is a decreasing function of y , $N_1 X_1$ is also a decreasing function of y , but will not become negative until $y > \frac{n+1}{2}$.

In those cases where $y > n$

$$T_y = t(d'y - dy)$$

$$\begin{aligned}
 &= t \left[\frac{1}{\frac{1}{2}n(n+1)} x_{y-(n-1)} + \frac{2}{\frac{1}{2}n(n+1)} x_{y-(n-2)} + \dots \right. \\
 &\quad \left. + \frac{n}{\frac{1}{2}n(n+1)} x_{y-(n-n)} - \frac{1}{n} \sum_{i=1}^n x_{y-(n-i)} \right] \\
 &= \frac{t}{n} \left[\frac{2}{n+1} \left(x_{y-(n-1)} + 2x_{y-(n-2)} + \dots \right. \right. \\
 &\quad \left. \left. + nx_{y-(n-n)} \right) - \sum_{i=1}^n x_{y-(n-i)} \right] \\
 &= \frac{t}{n} \left[\frac{2}{n+1} M_2 x_2 - Z_2 x_2 \right], \text{ where}
 \end{aligned}$$

$Z_2 = [1 \ 1 \ 1 \ \dots \ 1]$, an n dimensional vector

$M_2 = [1 \ 2 \ 3 \ \dots \ n]$, an n dimensional vector

$$x_2 = \begin{bmatrix} x_{y-(n-1)} \\ x_{y-(n-2)} \\ \vdots \\ x_{y-(n-n)} \end{bmatrix}, \text{ an } n \text{ dimensional vector}$$

then

$$\begin{aligned}
T_y &= \frac{t}{n} \left[\frac{2}{n+1} M_2 - Z_2 \right] x_2 \\
&= \frac{t}{n} \left[\frac{1-n}{n+1} \frac{3-n}{n+1} \cdot \cdot \cdot \frac{n-3}{n+1} \frac{n-1}{n+1} \right] x_2 \\
&= \frac{t}{n(n+1)} \left[(1-n)(3-n) \cdot \cdot \cdot (n-3)(n-1) \right] x_2 \\
&= \frac{t}{n(n+1)} \left[N_2 x_2 \right], \text{ where}
\end{aligned}$$

$N_2 = [(1-n)(3-n) \cdot \cdot \cdot (n-3)(n-1)]$, an n dimensional vector.

If x_y is constant and $y > n$

$T_y = 0$ because N_2 is an arithmetic progression which is symmetrical about zero. If x_y is an increasing function of y , then T_y will be both positive and an increasing function of y . If x_y is a decreasing function of y , T_y will be negative and be a decreasing function of y .

Interpretation.--It may be concluded that when the company is growing, net income after taxes is always less under comprehensive allocation than under no allocation or partial allocation. In case of static companies, the income is lower for the first $(n-1)$ year and then becomes equal under the alternative methods of allocation. Retained-earnings and net income ceteris paribus will also be lower by the amount T_y or equal.

The amount represented by T_y will be the amount of deferred income taxes for year y . Total amount of deferred income taxes at the end of year y is

$$T_1 + T_2 + \dots + T_n \dots + T_y = \sum_{i=1}^y T_i .$$

In case of static firms, term T_n and the terms following T_n are zero because $N_1 X_1$ and also $N_2 X_2$ are zero. Therefore the amount under deferred income taxes will increase till year $(n-1)$ and will remain constant thereafter. This will be equal to $\sum_{i=1}^{n-1} T_i$.

In the case of growing firms, all the terms are positive because $N_1 X_1$ and $N_2 X_2$ are always positive. The amount under deferred income taxes will increase year after year.

Net worth will be lower under comprehensive allocation because retained earnings ceteris paribus will be lower by T_y for the year y . At the end of year y , net worth will be lower by $\sum_{i=1}^y T_i$, which is the amount appearing in the balance sheet under deferred income taxes.

Effects on financial measures.--The effect of the different methods of accounting for income taxes will be that the profitability ratios and other measures of long-term stability will be different. Under comprehensive allocation, the following ratios will be lower than under partial allocation or no allocation: (a) net income to sales, (b) net income to total assets, (c) net income to

net worth, (d) net income to debt services, (e) net worth to total liabilities, (f) net worth to sales, (g) net worth to fixed assets, and (h) net worth to net income before taxes.

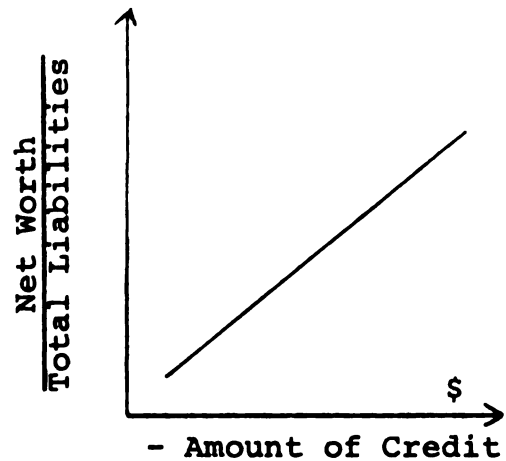
Economic Analysis

Lending Terms

Lending terms may be defined as characteristics of the loan transaction. These include the characteristics of the borrower which have a bearing on the risk of the loan and on the amount of credit the borrower can obtain. Both the demand and supply of credit can be considered functionally related to the lending terms. If the supply of credit is a positive function of a given term, the demand will be a negative function of that term, and vice versa. Specifically, any change in terms that makes it easier for the borrower to qualify for the loan, or that makes it possible for the borrower with given characteristics to obtain more loan ceteris paribus, also increases the risk of the loan. This can be illustrated by considering some important characteristics of the borrower.

Net worth to total liabilities ratio.--This ratio expresses the relative position of creditors to owners. It is of great importance in measuring the long-term solvency of the firm. The ratio represents the borrower's equity that protects the lender against loss from insolvency. It gives the lender an idea of the size of the

cushion of ownership equity available for the absorption of losses. For an unsecured loan, this is very significant. On a secured loan, the significant factor is the margin between the size of the loan and the value of the collateral. This may be



measured as the ratio of the margin to the total loan. The larger the borrower's own equity is, compared to the amount of loan, the less the risk to the lender.

So the supply of credit is a positive function of net worth to total liabilities ratio for unsecured loans. For secured loans, the lender has less risk when there is a higher margin to loan ratio.⁷ For secured loans the supply of credit is a positive function of this ratio.

The demand for credit tends to be a negative function of this ratio because there are marginal borrowers for whom equity or collateral margin represents an effective constraint on borrowing.

Net income to debt services ratio.--This is an important ratio for term lending. Unlike short-term loans, which are paid out of cash flow from the conversion of

⁷Margin means the difference between the value of the security and the amount of the loan.

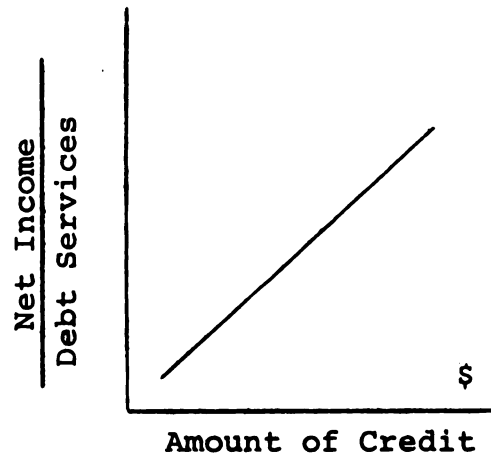
current assets, the term loan payment comes from the earnings of the firm. The higher this ratio is the less the risk the lender takes.

Therefore the supply of credit is a positive func-

tion of this ratio, while the demand for credit is inversely

related to the ratio. This is because marginal demand is exercised by some borrowers, for whom debt service requirements represent an effective constraint on borrowing.

For various reasons, economists believe that the loan market is not cleared by loan interest rates alone, if interest rates on competing assets rise. Some believe that the supply schedule of loans is inelastic with respect to the loan rate of interest.⁸ Others believe that it is the loan interest rates that are not flexible. Thus, even though the interest elasticity of the supply may be appreciable it is not given a chance to work.⁹ Usury ceilings may prevent interest rates from clearing the



⁸ Ira O. Scott, Jr., "The Availability Doctrine," The Canadian Journal of Economics and Political Science, XXIII (November, 1957), 536.

⁹ J. Kareken, "Lenders' Preferences, Credit Rationing, and the Effectiveness of Monetary Policy," The Review of Economics and Statistics, XXXIX (August, 1957), 292-302.

markets. There might be other considerations, depending upon the bank-customer relationship, which may prevent the bank from charging a sufficiently high rate of interest to clear the market. A loan officer of a leading bank gave the following reason for not charging the higher rate that the bank could charge under the loan agreement: the customer might pay the high rate at the present time, but when securing future loans he will shop around. Thus the bank may lose a valuable customer. (In this case the rate was tied to the prime rate. It was 2 per cent above prime rate. When the agreement was written the prime rate was 4 per cent. Now with prime rate at 8 1/2 per cent the bank could charge 10 1/2 per cent but was charging only 9 1/2 per cent.)

Finally, Professor Wallich has observed:

At any time there is a more or less conventional range of rates on loans, negotiable and otherwise, which limits the maximum risk premium that can be arranged for. Banks and investors usually prefer not to become involved in dubious situations even if they believe their actuarial risk to be adequately compensated for.¹⁰

So when banks associate dubious situations with high loan interest rates, regardless of rates on competing assets, the nonprice terms clear the market. There are a number of such nonprice terms in a loan transaction. The application of a number of nonprice terms of a loan transaction

¹⁰ Henry Wallich, "The Changing Significance of the Interest Rate," The American Economic Review, XXXVI (December, 1946), 768.

may be viewed as a process of credit rationing. Under the present tight money market condition such is the case. Lutz¹¹ observes that when the official discount rate goes up, the commercial banks will not only tighten the conditions under which they themselves grant credit to business, but they will also resort to credit rationing.

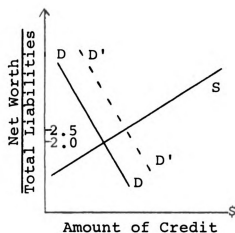
Under the present conditions, then, it could be assumed that one or more lending terms would be relevant to all loan transactions involving commercial banks and borrowers of funds. In this view, in the description of the credit rationing process, all the relevant terms are brought to focus.

This section will concentrate only on the net worth to total liabilities ratio which may be used to represent the net income to debt services ratio as well. The analysis is the same for all other non-interest rate terms of the loans. Thus we assume that both the supply and demand for credit are functionally related only to the net worth to total liabilities ratio and to the interest rate. So the interaction of demand and supply can be said to determine a market net worth to total liabilities ratio just as it determines the interest rate.¹²

¹¹F. A. Lutz, "The Interest Rate and Investment in a Dynamic Economy," The American Economic Review, XXXV (December, 1945), 828-829.

¹²That only one net worth to total liabilities ratio prevails in the market is an assumption even less

Now if we assume the interest rate is fixed, the determination of the ratio can be visualized diagrammatically in a way similar to the determination of the interest rate. Assuming the relevant supply and demand curves are S and D, the



equilibrium net worth to total liabilities ratio is 2.0.

Now assume that the demand curve shifts to the right, so that the net worth to total liabilities ratio is increased to 2.5. This indicates an extra tightness in the money market. The lender could increase the interest rate either in place of or in addition to the increase in the net worth to total liabilities ratio. We must now look at the adjustment in the interest rate relative to the adjustment in the net worth to total liabilities ratio.

Availability of credit.--Before going into that, we may define the availability of credit as the complex of noninterest rate lending terms prevailing in the market at any time.¹³ Since we have taken the net worth to total

realistic but just as necessary and useful as the assumption that there is but one interest rate.

¹³J. M. Guttenberg, "Credit Availability, Interest Rates and Monetary Policy," The Southern Economic Journal, XXVI (January, 1960), 219-228.

liabilities ratio to represent all lending terms (other than interest rate), the prevailing market ratio would be our shorthand expression for credit availability. A change in this ratio indicates a change in credit availability. The restrictiveness of lending terms is an indication of decline in credit availability. Here it is represented by an increase in the net worth to total liabilities ratio or a decline in total liabilities to net worth ratio.

During the period of monetary restraint which extended to May, 1953, the rising interest rates were accompanied by declining availability of credit. Later on there was a reversal to falling interest rates and increasing availability. Again during the 1956-57 period of monetary restraint, there was every indication of rising interest rates being accompanied by declining credit availability.¹⁴

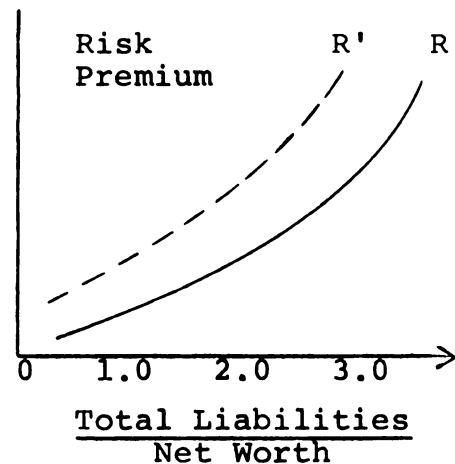
The discussion with the loan officers indicates that at the present time the rising rates of interest are accompanied by declining availability of credit. Loan applications are subject to a more rigorous examination and the noninterest terms also are stricter. One of the so-called nonprice lending terms of prime importance at the present time is the cash balances maintained by the loan applicant. The desirability of a new borrower is judged primarily on the basis of the amount of cash balances he could or would maintain in the lender bank.

¹⁴Ibid., p. 223.

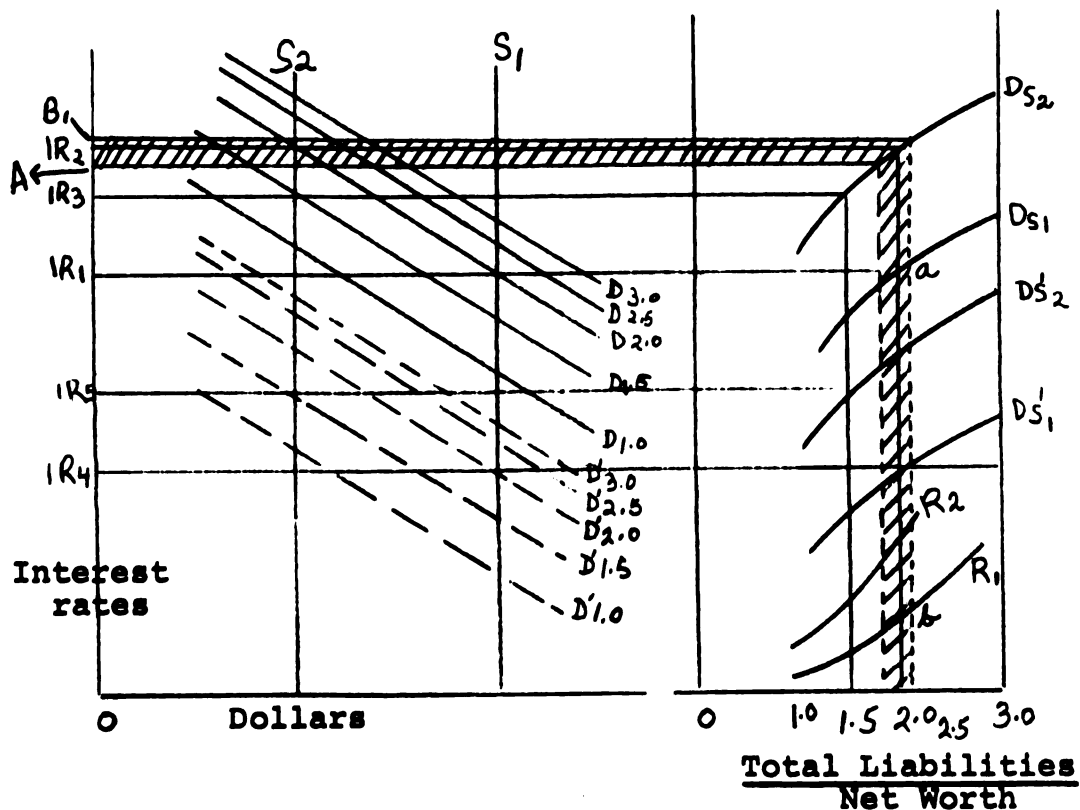
Analysis of Relationship Between Availability and Interest Rates

There are two groups of factors underlying the grant of loans or the supply of credit function. These are (a) objective factors, such as the volume of funds available to lenders, and (b) the subjective factors which have a bearing on the lender's evaluation of the risks involved in the loan in question.

The subjective factors underlying the supply function may be represented by a risk function. This shows the premium required by lenders at every total liabilities to net worth ratio to compensate for the difference in risk between loans and a riskless security. The difference between the interest rate and this premium is the net or riskless yield on loans. A change in expectation and outlook may cause the risk function to shift, for example from R to R' , and the supply function will shift accordingly (see graph on page 121).



An explanation of the graph is in order. In the left panel of the diagram, we assume that S_1 is the sum that the lender has allocated for loans. $D_{1.0}$, $D_{1.5}$, $D_{2.0}$, $D_{2.5}$ and $D_{3.0}$ are the demand schedules at total liabilities to net worth ratios of 1.0, 1.5, 2.0, 2.5 and



3.0, respectively. For convenience of exposition the demand schedules are drawn parallel. The relevant risk function is drawn as R_1 in the right hand panel which also shows the demand-supply-locus curves. Each of these curves indicates all the combinations of rate and total liabilities to net worth ratio for which the demand is some given amount. The curve D_{S_1} , for instance, shows the various combinations of total liabilities to net worth ratio and interest rate when the amount demanded is equal to S_1 . That is, every point on D_{S_1} , represents an intersection of a demand schedule with S_1 . Given S_1 , D_{S_1} and R_1 , lenders will choose the combination of rate and total liabilities

to net worth ratio at which the vertical distance between D_{s_1} and R_1 is a maximum. Here the maximum yield is ab , the equilibrium interest rate IR_1 , and the total liabilities to net worth ratio of 2.0. Now consider the effect of a shift from S_1 to S_2 with the risk function unchange on the equilibrium interest rate and on the equilibrium availability of a change in supply. A new demand-supply locus curve D_{s_2} becomes relevant. When demand curves are parallel, D_{s_2} will be parallel to D_{s_1} , and the new equilibrium interest rate will be IR_2 , but the equilibrium total liabilities to net worth ratio will be unchanged at 2.0.

At higher total liabilities to net worth ratio there will be greater sensitivity to interest rates and a lower sensitivity to the lower total liabilities to net worth ratio. This will result in a converging of the demand curves at the top. Also, a shift in supply will move the credit availability and interest rate in opposite directions. We assume that both supply and demand for credit are functionally related to net worth to total liabilities ratio and the interest rate. Therefore, a decrease in the supply of credit increases the rate of interest and also decreases the availability of credit.

As already discussed there is a range of rates on loans and the rates charged to the individual borrowers vary within this range. In the diagram, for example, it

could be a small range above and below the IR_2 , say between A and B, depending on the total liabilities to net worth ratio. In this diagram, the rate of interest could vary within this range.

Following the same procedure, it could be shown that the debt services to net income ratio can also influence the interest rate bargaining. In actual talks with the loan officers, it was confirmed that there is bargaining with the customer within the range of interest rates. In the case of term loans for five years, it is between the prime rate and 1 1/2 per cent above the prime rate depending on the non-interest terms. The two important terms are total liabilities to net worth, and debt services to net income. The compensatory balances or cash balances maintained with the bank has the greatest emphasis at the present time, because these balances affect the effective interest rate.

Behavioral Analysis

Accountants are showing an increasing interest in understanding the relationship between accounting and decision making. Questions have been raised about the role of accounting in decision making in business. In light of the variations in accounting methods, another question raised is whether or not these alternative methods affect the decision making.

Decision Making

Decision making has developed along two major lines: (1) management-science approaches, and (2) studies of organizational decision making approaches. The management-science approaches give prominence to formal quantitative models, while the organizational decision making approaches are concerned with the decision making processes of individuals, groups, and organizations.¹⁵ While the management science models of decision making are normative, the behavioral research on organizational decision making has been largely descriptive. It has been concerned primarily with how decision makers actually do make decisions. Organizational decision making starts with those aspects of decision making behavior that formal decision models either ignore or minimize. Behavioral research focuses on how decision units make decisions in environments which are grossly complex and in which the complexity tends to be grossly disproportionate to the information processing and computational ability of the decision making unit.¹⁶

¹⁵Marcus Alexis and Charles Z. Wilson, Organizational Decision Making (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), p. 10.

¹⁶Herbert A. Simon, Administrative Behavior (New York: The Macmillan Company, 1966), pp. 14-17.

Perception.--Processes of perception are important in decision making for two reasons: (a) they provide means of gathering information from the environment, and (b) interpersonal flows of information are distorted by the perceivers' biases.

Perception means different things to different psychologists. There is no unanimity as to a method of studying the scientific aspects of perception. Stimulus-response¹⁷ theorists approach perception simply as a mechanism for acquiring or receiving special kinds of stimuli. Gestalt theorists¹⁸ emphasize laws of perception. In their view, the recognition of objects takes place according to organizational laws: laws of similarity, proximity and closure. There are others who have still different views.

The decision maker should be sensitive to the personality and social forces infringing on information gathering and decision making in organizations. What are these personality and social forces? In psychology, it is becoming increasingly clear that believing is different than seeing. People see what they want to see. Perception is guided by inner cognitive sets that reflect past experiences, values, motives--basic personality needs.

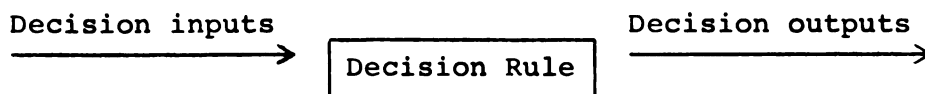
¹⁷Ernest R. Hilgard, Theories of Learning (New York: Appleton-Century Crofts, 1956), pp. 15-184.

¹⁸Ibid., pp. 222-289.

There are three main sets of personality variables that infringe on perception: (1) self confidence--the sense of being able to act effectively in a situation, (2) needs, and (3) values.¹⁹ Confidence in one's ability to overcome obstacles influences the way a decision maker uses input information to confirm initial beliefs about a situation. Needs may be important forces in perception. The judgments of perceivers are often distorted by a strong need attached to an event. People develop certain sensitive values about information inputs. These values influence the perceptual processes of the perceivers.

Social forces affect perception through group identification, social aspirations and expectations of the perceiver.

Decision process.--In general, a decision process is characterized by three variables: (1) decision inputs, (2) a decision rule, and (3) decision outputs.



Decision inputs are the factors which the decision maker considers in making his decision. Decision outputs are decisions made by the decision maker. A decision rule is

¹⁹Alexis and Wilson, op. cit., p. 68.

a rule by which a set of decisions is associated with a set of decision inputs.²⁰

Let us assume that purchases are to be based on the margin between sale price and purchase price. The purchase will be made if the margin is 50 per cent or more of the purchase price. Otherwise, the purchase will not be made. Here the decision input is the margin on the item to be purchased. The decision output is either to buy or not to buy. The decision rule is to associate all margins greater than or equal to 50 per cent with decision output "buy," and all other margins (that is, less than 50 per cent) with the decision output "not to buy."

Of course, an actual purchase decision may not be so simple and may require other decision inputs. For example, the decision maker may want to consider the question of freight. However, if we emphasize only one input (for example, margin) and one output (that is, to buy or not to buy), ceteris paribus, it would be reasonable to assume the existence of a relationship between the value of the input and the value of the output, which may be stable for some time. That is what is meant by a decision rule.

²⁰Yuji Ijiri, Robert K. Jaedicke, and Kenneth E. Knight, "The Effects of Accounting Alternatives on Management Decisions," Research in Accounting Measurement, ed. by Robert K. Jaedicke, Yuji Ijiri and Oswald Nielson (American Accounting Association, 1966), pp. 186-199.

If "a" represents an input variable and "b" an output variable, then the decision rule can be shown as a function as follows:

$$b = f(a)$$

In an actual decision process, function f may have many values, which will result in different values for the decision output with the same input. Similarly, with different values of inputs and applying the different values of f we may have different outputs.

Ijiri,²¹ describing the decision process, goes a step further. He gives these three variables in a decision process: (1) an environmental variable which we can say is the equivalent of the inputs in the decision process, (2) a decision variable which is the decision made, based on the choice of the decision maker, and (3) a pay-off variable, which is the output he wants to have or optimize. He also considers the pay-off of the decision.

Consider the pricing decision of a gasoline station operator. Let "a", the price his competitor charges, be the environmental variable; "b," the price he charges, is his decision variable; and "c," the profit, is his payoff variable. Depending upon his price and his competitor's price, his profit may be determined as follows:

²¹Ijiri, The Foundations of Accounting Measurement, A Mathematical, Economic, and Behavioral Inquiry, op. cit., pp. 151-154.

A Pay-Off Matrix

		His competitor's price (a)	
His Price (b)		30c	35c
30c	\$100	\$200	
35c	\$50	\$300	
		His daily profit (c)	

So, the feasible relations may be any of the following sets of triplets:

$$P = [(30, 30, 100), (35, 30, 200), (30, 35, 50), (35, 35, 300)].$$

This first element represents the competitor's price in cents per gallon; the second element represents his price in cents; and the third element represents his daily profit in dollars.

Role of Accounting Process in a Decision Process

Accounting data, like other types of business information, are surrogates which the decision maker uses to carry out the decision process. Therefore it is necessary to distinguish between the principals and surrogates in order to understand the role of accounting in the decision process.

Principals and surrogates.--The things or phenomena that are used to represent other things or phenomena are

called surrogates and things or phenomena that are represented by surrogates are principals.

For example, train schedules are surrogates of actual arrival and departure of trains. We want to base our decision on train schedules in so far they reflect the actual arrival and departure of trains. Similarly, financial statements of a firm are surrogates of the financial position and the operating results of the firm. We want to base our decisions on the financial statements in so far they reflect the actual financial position and the operating results of the firm.

However, the same phenomenon may be a principal and a surrogate simultaneously. This depends upon whether the focus of interest is the phenomenon per se or the phenomenon represented by the phenomenon in question. The financial statements are surrogates when the analyst studies them for drawing conclusions regarding the financial position and performance of the firm. If the analyst is attracted by the format of the financial statements apart from the contents of the statements, the financial statements are principals.²²

Principals and surrogates in decision making.--In decision making, a principal input or principal means a

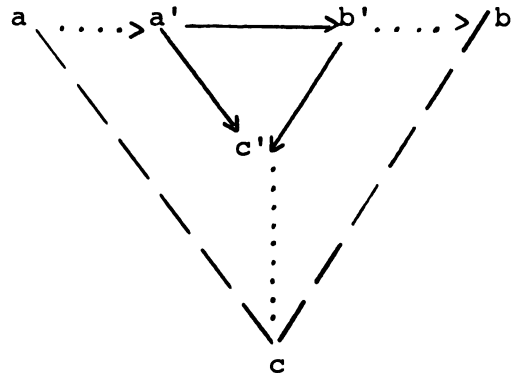
²²For further elaboration please see Ijiri, Jaedicke, and Knight, "The Effects of Accounting Alternatives on Management Decisions," op. cit., pp. 188-192; Ijiri, The Foundations of Accounting Measurement, op. cit., pp. 4-19.

decision input upon which the decision-maker ultimately wants to base his decision. A surrogated input or a surrogate is a decision input upon which the decision-maker bases his decision in so far as the surrogate reflects a principal.

In the case of the gasoline station operator, he may have to choose his price based on information (a surrogate) of his competitor's price rather than on his competitor's price per se (a principal). The operator may be forced to rely on a profit reported by the accounting system rather than through identifying his real profit.

In Figure A, a', b' and c' are surrogates of the principals a, b and c--the environmental, decision and payoff variables. The dashed lines represent the causal links that exist in the environment. In other words, c is produced by the joint efforts of a and b. For the decision maker, the causal links are replaced by the solid

Figure A



— — — — —	Environmental causal link
—————	Decision maker's causal link
.....	Informational causal link

lines since he: (1) receives information on a by way of a', (2) transmits b', a surrogate of b, the decision variable, and (3) receives c', the surrogate of c, the payoff. The dotted lines represent informational links between the principals and surrogates. The decision maker uses surrogates because of the difficulty in obtaining and using principals.

Difficulty in obtaining principals.--In many cases principals are impossible to get or they are too expensive to obtain. For example, a bank loan officer is willing to make his lending decision on the basis of financial statements prepared and certified by a C.P.A., even though he is capable of performing an independent investigation of the financial situation of the borrower.

Difficulty in using principals.--A decision maker may be unable to use principals, because of a lack of technical knowledge or because they may be too numerous to consider. Empirical evidence has shown that human beings can effectively use only a limited amount of information in making decisions.²³ If a decision situation is too complicated, the decision maker tends to consider simpler factors although he realizes that they are only surrogates of what he ultimately wants to consider in his decision process. In addition, even with the availability of

²³Herbert A. Simon, Models of Man (New York: John Wiley and Sons, Inc., 1957), pp. 241-260.

principals, it may be too costly to take into consideration all of them.

To illustrate the interaction between an accounting process and a decision process further, we consider another simple example. Suppose a decision maker wants to quote a price b on each job in order to recover 400 per cent of direct cost for the job a . In the absence of surrogates, his decision process is $b = 4a$. Further, if a firm's accounting process provides the full cost m for each job so that the full cost is twice the direct cost, then this accounting process can be put as $m = 2a$. If the decision maker wants to achieve the same result by basing his decision on surrogate (full cost) instead of principal (direct cost, here), he must make an adjustment and quote $b = 2m$.

Thus the accounting process is included in the decision process, namely $b = 4a$, when the decision maker does not use surrogates. With the use of surrogates the process is split as

$$a \xrightarrow{2a} m \xrightarrow{2m} b$$

If the accounting process is changed and the full cost m is calculated as 150 per cent of the direct cost a instead of 200 per cent, the decision maker must adjust his decision from $b = 2m$ to $b = \frac{8}{3}m$ in order to keep the overall process $b = 4a$ unchanged.

Without going into the question of adjustment by the decision makers we shall see what the effect of an accounting process is upon the behavior of a decision maker who bases his decision on accounting data.

Effect of Accounting on
Behavior of Decision Maker

Psycholinguistical perspective.--In discussing the work of a famous psychologist, Jean Piaget, J. B. Carroll states:

The unifying theme in the work of Piaget is the gradual unfolding of the individual's ability to construct an internal model of the universe around him and to perform manipulations on that model so as to draw conclusions about the probable past history of his environment or the probable results of possible actions that could be taken upon that environment. The ability to do that is the essence of all thinking in the nontrivial meanings of the term.²⁴

A similar view is expressed by Werner and Kaplan, as follows:

Man forms his Umwelt by relating to his environments in a new manner: he is directed toward knowing. The orientation towards, and the capacity for, knowing are essential and irreducible characteristics of man, characteristics that come clearly into relief when one compares the nature of the adaptiveness of animals and men to their respective environments. . . . This human process of becoming familiar with one's milieu is not simply a mirroring of an external, prefabricated "reality," but it involves a formation of the world of objects by the human being in terms of his equipment and biopsychological "goals." The human world, then, cannot claim to reflect an independent "reality per se";

²⁴J. B. Carroll, Language and Thought (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1966), p. 79.

it is rather a coherent, man-specific Umwelt, a representation of "what there is" by means available to human beings.²⁵

In this sense, the causal relationship expressed in terms of the surrogates a', b', c', which represents the inner triangle in Figure A, provides the decision maker with a model of the actual causal relationship among a, b and c in the outer triangle in the same figure.

As discussed earlier, it is only recently that accountants have started investigating the effect of accounting systems on the behavior of decision makers. It is an accepted fact in psychology, linguistics and psycholinguistics, that language has a material effect on man's thinking and even cognition. Benjiman Lee Whorf²⁶ has forcefully expounded the dependence of concepts on language. He maintains that conceptualization, like all higher level processes involved in thought, is entirely dependent on language. The structure of his language determines man's concepts, his thoughts in general, and, indeed his whole view of the universe.

Edward Sapir has been quoted by Whorf as follows:

Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy of the particular language which has become the medium of expression for their society. It is quite an illusion to

²⁵Heinz Werner and Bernard Kaplan, Symbol Foundation (New York: John Wiley & Sons, Inc., 1964), pp. 12-13.

²⁶Benjiman Lee Whorf, Language Thought and Reality, ed. by J. B. Carroll (New York: John Wiley & Sons, Inc., 1956), pp. 246-270.

imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication or reflection. The fact of the matter is that the real world is to a large extent unconsciously built upon the language habits of the group. We see and hear and otherwise experience very largely as we do, because the language habits of our community predispose certain choices of interpretation.²⁷

J. B. Carroll expresses the similar views as follows:

Language symbols--or, rather, the internal processes that underlie given language symbols for the individual--may figure prominently in thinking and often determine its direction. The concepts named by language symbols--that is verbal mediating processes--are tools of thought.²⁸

Writing on the same point Robert F. Terwilliger states, "There are a number of phenomena which suggest an intimate relationship between linguistic behavior and thinking."²⁹

Accounting as a language.--Accounting is the language of business. Accounting and linguistics have a great number of similarities. Accounting practices are the basic objects of study for formulating accounting theories and policies. They are like our daily conversation in linguistics. Based on these similarities, we may draw the conclusion that, like language, accounting affects the cognition and thus behavior of the decision maker. How this influence takes place may be described as follows:

²⁷ Ibid., p. 134.

²⁸ Carroll, Language and Thought, op. cit., p. 111.

²⁹ Robert F. Terwilliger, Meaning and Mind (New York: Oxford University Press, 1968), p. 271.

The relationship expressed by means of the surrogates a', b', and c' provides the decision maker with a model of the actual causal relationship among the principals a, b and c in Figure A. In this sense, an accounting system provides a means by which the decision maker organizes his experience and thoughts. Recorded and reported factors in an accounting system get more attention than unrecorded factors. This influence comes from the fact that environment is complicated and not well structured.³⁰

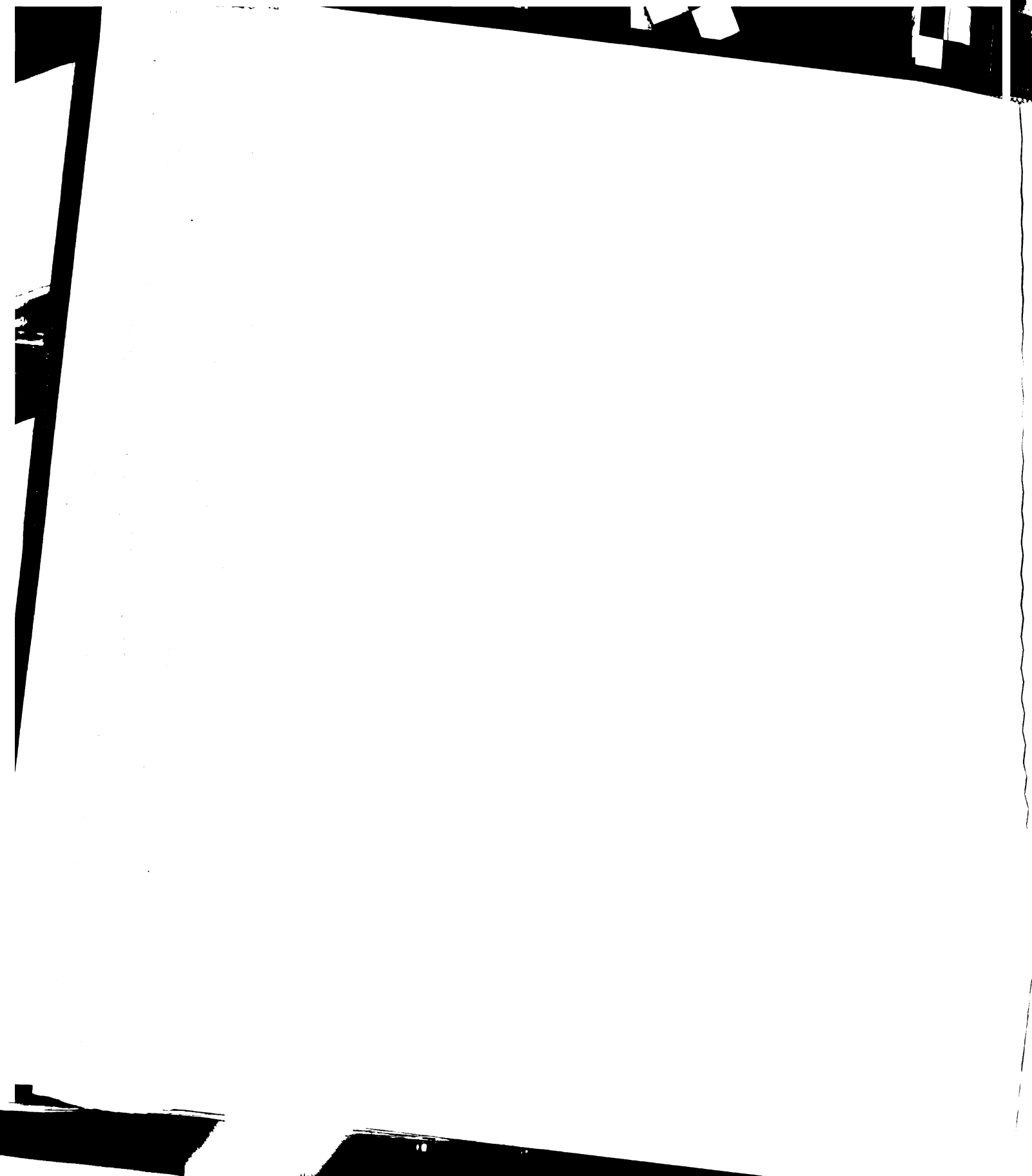
Recently, researchers have emphasized the uncertainties and complexities under which economic decisions tend to be made.³¹ Decision makers often are face to face with gross uncertainties about the alternative courses of action available and their respective outcomes. In many cases, decision objectives are unclear, or even conflicting. Recent researches, describing people's behavior in uncertain situations, throw light on the use of accounting data in such situations. The results show that in such situations, the decision maker would use his experience and available data to define and structure his situation. Organizations overcome such uncertainties differently.

Standard operating procedures.--

Our studies indicate quite a different strategy on the part of organizations. Organizations avoid

³⁰ Ijiri, op. cit., p. 157.

³¹ R. M. Cyert and J. G. March, A Behavioral Theory of the Firm (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1963), pp. 8-21.

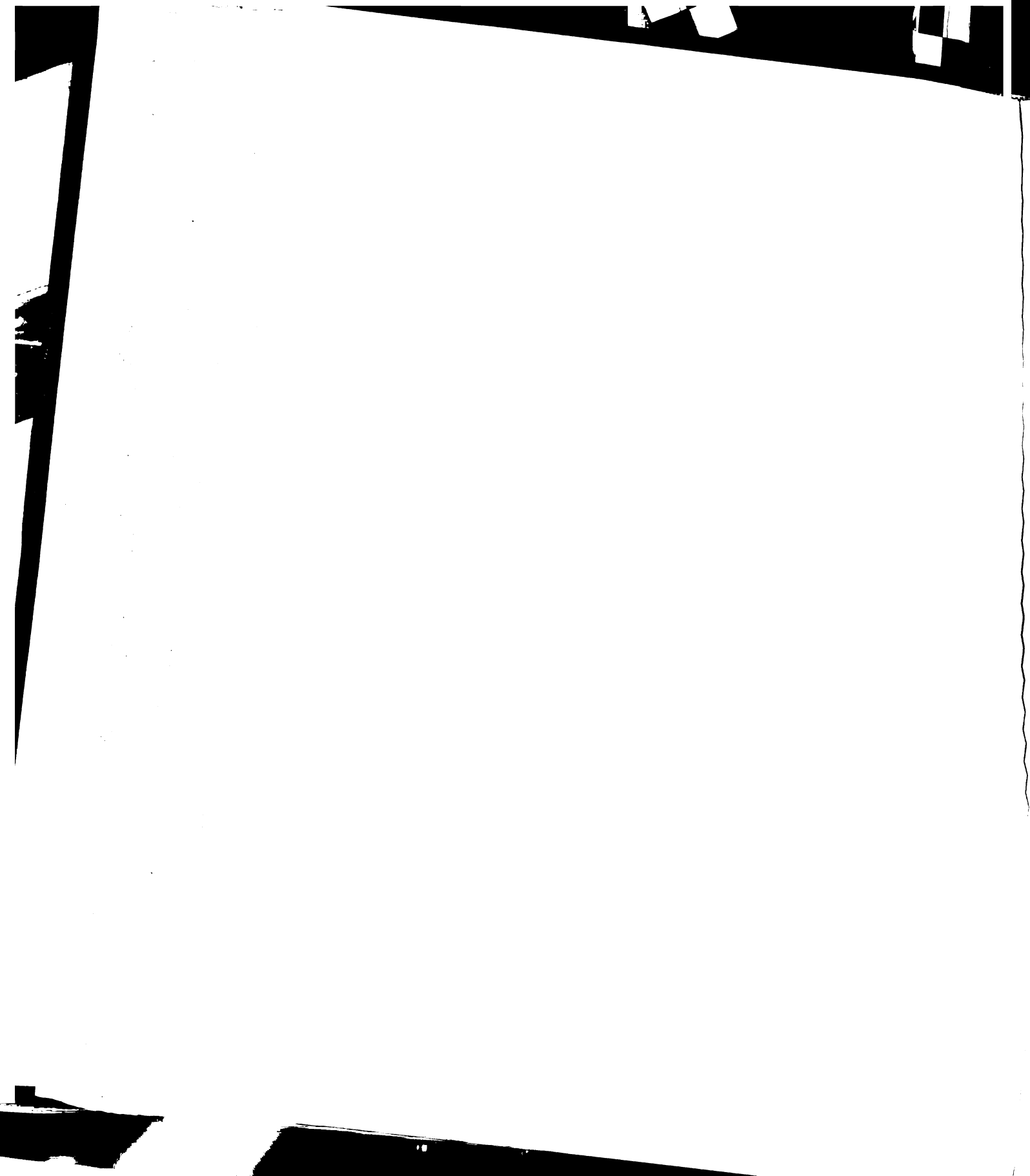


uncertainty. . . . They avoid the requirement that they anticipate future reactions of other parts of their environment by arranging a negotiated environment. They impose plans, standard operating procedures, industry tradition and uncertainty-absorbing contracts on that environment.³²

The standard operating procedures define the environments of the decision maker and remove him from the ill-structured situation. Accounting information is sometimes used to provide standard operating procedures to the decision maker. For example, the accounting profit provides a means to simplify the environment and define the goal for a division manager whose firm's goal of profit maximization is ambiguous and non-operational. Similarly, accounting may define an area of attention for a manager and help define his means.

Functional fixation.--Once standard operating procedures are accepted by a decision maker as a means of organizing his decision process, his behavior can be influenced by a difference in accounting methods. The explanation may be found in psychological concept of functional fixation. This appears in most human behavior in which the person attaches a meaning to a title or object, for example net income or net worth, and is unable to see alternative meaning or use. If outputs from different accounting methods are called by the same name such as net worth or net income, the decision maker may tend to neglect

³²Ibid., p. 119.



the fact that different methods have been used to prepare the outputs.

The Einstellung effect.--A similar concept exists in the linguistics which suggests an intimate relationship between linguistic behavior and thinking.³³ This is called the Einstellung effect which has been studied by Luchins.³⁴ It is postulated that once the subject has arrived at what appears to be a satisfactory verbal label for the situation, he will generalize this label or formula completely. He will, in other words, respond more to the label or the linguistic description of the situation, than he does to the actual situation. It is as if the presence of an apparently viable verbal label actually blinds the subject to the reality. He sees only what the words lead him to expect and does not respond to the objective situation. In banking, too, there exist certain standards. It is possible that the loan officers follow those standards in every situation. For example, a participant states this reason for asking collateral. "A general yardstick has been in existence for sometime in banking that unsecured term requirements should not exceed 50 per cent of working capital or 25 per cent of net worth."

³³Robert F. Terwilliger, op. cit, p. 271.

³⁴A. S. Luchins, Mechanization in Problem Solving: The Effect of Einstellung (Evanston, Ill.: The American Psychological Association, 1942), quoted Ibid.

Influence of accounting information.--Behavioral science literature describes research in which accounting information was found to influence the decision makers' goals and the alternatives to be considered in making decisions. Ridgeway's Study of Accounting Measures and Behavior in American Industry supports the above contention. He observed that:

. . . even where performance measures are instituted purely for purposes of information, they are probably interpreted as definitions of important aspects of that job. . . .³⁵

Studies of behavior in Russian industrial firms provide additional support to the analysis. It has been shown that specific surrogates are used by the decision maker to structure his uncertain world. Smolinski has observed:

The project of Novo Lipetsk steel mill . . . comprises 91 volumes totalling 70,000 pages (one is not surprised to learn that the designers are paid by the sheet . . .). "Literally everything is anticipated in these blueprints, the emplacement of each nail, lamp or washstand. Only one aspect of the project is not considered at all: its economic effectiveness."³⁶

From this observation we can conclude that the measurement and recording of pages, the surrogate in this case, has

³⁵V. F. Ridgeway, "Dysfunctional Consequences of Performance Measurements" in A. H. Rubenstein and C. J. Haberstroh (Editors), Some Theories of Organizations (Homewood, Ill.: Richard D. Irwin, Inc., 1960), p. 377.

³⁶L. Smolinski, "What Next in Soviet Planning?" Foreign Affairs, Vol. XLII, (July 4, 1964), 602-13 quoted in Juji Ijiri, The Foundations of Accounting Measurement, op. cit., pp. 159.

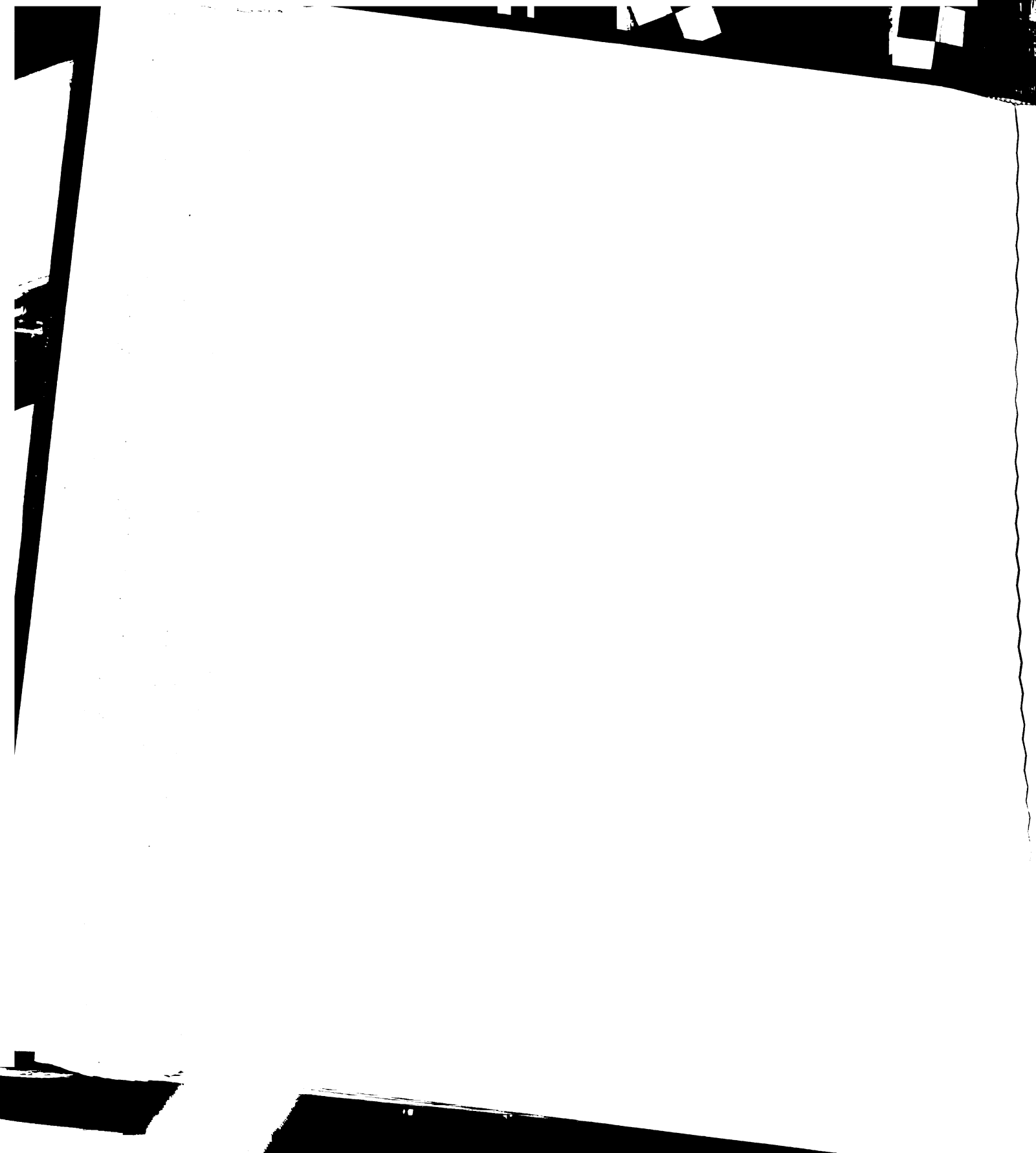
defined the world of the decision maker, and the real goal of the organization, economic effectiveness has been ignored.

In his study of the Russian executives, Garnick³⁷ concluded that the limited accounting data available to the Russian manager resulted in the disproportionate influence of the accounting system on the behavior of the decision maker in all ill-structured situations. Such examples can be multiplied where the surrogates are used to define decision maker's goals and alternatives.

Under these circumstances, when the environment is ill-structured due to uncertainty and complexities, the choice of accounting method is very important because the alternative accounting methods will tend to produce different decisions.

Accounting methods and linguistic rules.--The question whether or not alternative accounting methods do affect behavior can be answered in the affirmative by deductively comparing accounting with linguistics. Accounting rules are a kind of financial grammar which is indispensable in helping to describe transactions in financial terms with reasonable accuracy. Giving conclusions of their experiments regarding perceptive consequences of linguistic rules, Miller and Isard observe:

³⁷Ibid., pp. 159.



Grammatical rules are of two types, phonological and syntactic. In experiments to be discussed here we will ignore phonological rules. . . . The general conclusion that these experiments appear to support is that linguistic rules of a non-phonological sort do indeed have a measurable effect on our ability to hear and repeat sentences. Moreover, both syntactic and semantic rules are effective. . . . A complete psycholinguistic description of speech perception, therefore must take into account the syntactic and semantic rules of the language. . . .³⁸

In another experiment Miller observes:

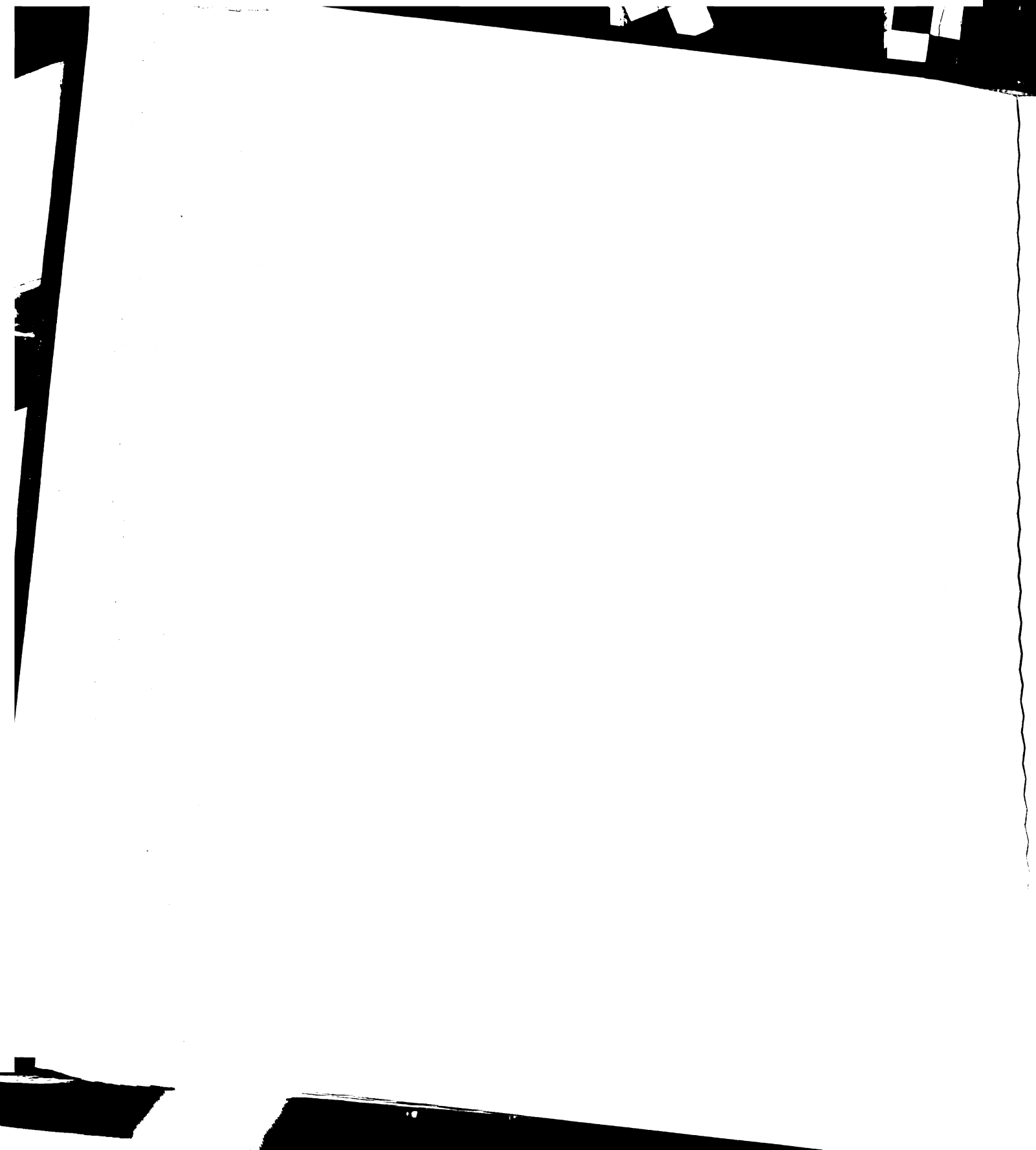
Every time I have tried to explore the psychological reality of syntactic and semantic rules, I have found them to have large and important effect on the behavior of my subject. . . . In an ingenious series of experiments Wason³⁹ was able to show that it takes longer to evaluate negative sentences than positive, and that, under certain conditions, the affirmative-negative difference for that task is more important than the difference between true and false sentence. That is to say, for the evaluation task, syntactic form was more important than semantic content.⁴⁰

We have demonstrated that the alternative methods of accounting affect decision making in general. Now let us see how the decisions made by the loan officers in commercial banks, on the term loan application, will be affected by the alternative methods of accounting. While discussing the processing of a term loan application, it

³⁸George A. Miller and Stephen Isard, "Some Perceptual Consequences of Linguistic Rules," Journal of Verbal Learning and Verbal Behavior, Vol. 2 (1963), pp. 219-227. Reprinted in Leon A. Jakobovits and Murray S. Miron, Readings in Psychology of Language (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1967), pp. 219-231.

³⁹R. C. Wason, "Response to Affirmative and Negative Binary Statements," British Journal of Psychology, Vol. 52 (1961) pp. 133-142.

⁴⁰George A. Miller, "Language and Psychology" in Eric H. Lenneberg (Editor) New Directions in the Study of Language (Cambridge, Miss.: The MIT Press, 1964), pp. 94-103.



was explained that the analysis of credit worthiness involves three broad factors, namely: (a) the financial factor, (b) the personal factor, and (c) the economic factor.

For analysis of the financial factor the bank officer relies on the surrogated data. He is in a position and may be capable of performing an independent audit of the financial accounting of the borrower. But, as observed earlier, he is willing to make his lending decisions on the basis of financial statements certified by a C.P.A. When the alternative methods used come under the umbrella of "generally accepted accounting principles," the auditor ceteris paribus will not be in a position to give different opinions corresponding to the difference in the methods used, even though he may prefer one against the other.

Under the different methods of accounting for taxes, as explained earlier, this surrogated data will be different under different methods. Hence, this may affect the decision of the loan officer. The degree of influence the difference will have, will depend upon the other items considered in the financial analysis and the weight given to each of the items considered. This may differ from officer to officer.

With regards to the personal factor which deals with the management aspects, we may observe:

Making a choice among the alternative methods is the prerogative of the management. The very selection of the alternative gives indications of the behavior of the management. Certain alternatives are more conservative than others. Thus the selection of more conservative methods of accounting gives an indication of the conservatism of the management.

Conservatism is a generic concept that embraces many kinds of behavior including intolerance of ambiguity, solvency position, reluctance to change, minimization of book income, and risk aversion. Each concept implies certain behavior, which can be observed in certain accounting variables.⁴¹

Consideration of all the behavior patterns indicative of conservatism is important in relation to granting of credit because these affect decision making. For example, an indication of greater risk aversion by the management may have a favorable effect on the loan officer, and similarly an indication of intolerance of ambiguity may have the same effect.

Therefore it may be observed that the very fact that one alternative is chosen over the other influences the decision of the bank officer. This observation was confirmed by many officers during discussion with them.

⁴¹George H. Sorter and others, "Accounting and Financial Measures as Indicators of Corporate Personality--Some Empirical Findings" in Robert Jaedicke, Yuji Ijiri and Oswald Nielson, op. cit., p. 200.

Summary and Conclusion

This chapter discusses the theoretical analysis of the effects of alternative methods of accounting under the following three headings: (a) financial analysis, (b) economic analysis, and (c) behavioral analysis.

Financial Analysis

The effect of variations in accounting methods on financial variables is discussed in this section. The effect of using LIFO, FIFO and Average cost methods of inventory on working capital, on earnings and tax implications are discussed. In the area of depreciation, the effect of the use of straight line methods and accelerated depreciation methods on the net income and income tax is discussed.

Allocation of income taxes.--The different financial variables, net income, net worth, and profitability and solvency ratios, affected by difference in methods are discussed.

Economic Analysis

In the economic analysis effects of the various measures of profitability and solvency on the interest rates and other lending terms are discussed. The relationship between availability of credit and interest rates is analyzed. The availability of credit is shown as a function of the measures of profitability and solvency.

Behavioral Analysis

In this section a discussion of the behavioral aspects of accounting and decision making is conducted. The effect of perception on decision making is shown. This is followed by an explanation of the decision process including the relationship between the decision inputs and outputs.

Role of accounting process in decision process.--

This section discusses principals and surrogates, and characterizes accounting data as surrogated data representing the principals that are considered for decision making.

An explanation of the behavioral reasons for using surrogates is derived from the views of psychologists and psycholinguistics. It is shown that the use of surrogates is necessary in decision making when the nature of the environment is ill-structured. Accounting principals are shown to be analogous to the rules of grammar in the study of language. Based on this analogy it is concluded that different accounting principles affect the behavior of the users of accounting information as the rules of grammar in linguistics do.

The theoretical discussion in this chapter leads to the conclusion that the alternative methods of accounting for income taxes influence the decisions of the loan officers. For empirical study of the effects various

approaches were considered and the final decision was in favor of an experimental investigation. The description of the models used in this experimental investigation and the effects of the alternative methods of accounting for income taxes on the financial measures of these models are the subject matter for discussion in the next chapter.

CHAPTER V

DESCRIPTION AND RESULTS OF THE
EXPERIMENTAL MODELS

Introduction

One way to study the effects of different methods of accounting for income taxes on the term lending decisions of large commercial banks, is to use pairs of similar companies. These companies should be similar in all respects except their treatment of income tax allocation. Each member of the pair then applies to the same bank for a term loan of a similar nature. By reviewing the decisions of the bank officers making the loans it will be possible to see how their decisions are affected by the difference in the methods of accounting for income taxes.

Applying this approach to actual companies did not seem feasible for the reasons given below:

1. A number of pairs of companies similar in all respects except for their treatment of tax allocation may not exist.
2. The possibility that such pairs of companies would be asking the same bank for term loans of a similar nature is not only remote but well nigh impossible.

3. Finally the analysis requires that the difference arising from the variations in methods of accounting for income taxes be significant on both the balance sheet and in the income statement over a period of years. These differences arise from the timing differences. One major situation involving timing differences is the use of accelerated depreciation for tax purposes and straight line depreciation for reporting purposes. This necessarily limits the search to the companies which have a high proportion of investment in depreciable assets.

Thus with these restrictions, it is not possible to find pairs of companies by which to study the effect of different accounting methods for income tax allocation. This approach therefore was abandoned.

Another possible approach is to take some companies which had obtained term loans from banks. These data could be simulated for similar companies with the only difference being in the accounting for income taxes. The term loans made to these companies would be studied. Then the lending banks could be asked to give their decisions on the loan requests of the simulated companies. Here bias and change in the environmental conditions are impediments. Hence this approach was abandoned in favor of the experimental investigation which is discussed below.

Description of the Models

The approach is to simulate data for two hypothetical companies. The industry chosen is bread and bakery products. Accounting data for one company is computed for five years based on the average sales figures and other analysis for the firms in the category of assets size \$1 million to \$10 million, as given in the "Annual Statement Studies of Robert Morris Associates." Additional data was made available to the writer through the courtesy of the controller of a large bakery. Accounting data for the other company was computed similarly with minor random variations.

This industry is selected because there is a high proportion of investment in depreciable assets. Also, the detailed data regarding cost and other industry details were available for study.

Accounting data for five years is projected on the basis of a sales forecast with a 3 per cent minimum growth plus a random growth factor ranging between 0.1 per cent and 0.5 per cent. The other data, namely, cost of sales, expenses, and other balance sheet items were computed from the analytical ratios and percentages, calculated on a weighted moving average base of the previous five years. The figures for the most recent year were given a weight of 5, while the year previous to that was accorded a weight of 4, and so on. A random variable

ranging between +5 per cent was added to the figure computed. The two companies are named as Jaytee Bakeries, Inc. and Roysons Bakeries, Inc. Both these companies are similar in type of business and other details, as given in Appendix A.

Roysons Bakeries, Inc. has adopted the comprehensive method of allocation for income taxes, while Jaytee Bakeries, Inc. has adopted the partial allocation method. We are considering only the timing differences which arise from the use of accelerated depreciation for income tax purposes and straight line depreciation for reporting purposes. Following the adoption of comprehensive allocation, the Roysons Bakeries, Inc. computes income tax on accounting income. Jaytee Bakeries, Inc. computes income tax based on taxable income. In other words, the income tax expense for Jaytee Bakeries, Inc. equals the amount determined according to the Internal Revenue Code. Roysons Bakeries, Inc. shows a difference in tax, arising out of the timing difference due to the adoption of accelerated depreciation for income tax purposes and straight line for reporting purposes. This difference appears in the balance sheet under deferred income taxes.

It is assumed that neither company has a declining investment in depreciable assets. In other words neither of them is a declining firm. In the case of declining firms banks will not approve a term loan. This can be

inferred from one definition of a banker "as a person who lends you his umbrella when it is bright and sunny, but wants to have it back as soon as it starts pouring." Exceptions could be cited, but in those cases, the future prospects could be reasonably assured with the help of the banker.

In cases where there is no decline in the net amount of depreciable assets, the question of net reversal of timing differences does not arise. We see that the balance under deferred income taxes will increase. With an increase in price level even for the replacements and fewer increase of fixed assets, an ever increasing balance under deferred income taxes will occur.

Accounting data for both Jaytee Bakeries, Inc. and Roysons Bakeries, Inc. have been computed, both under the comprehensive method of allocation and also under partial allocation. The different methods of accounting for income taxes affect the various variables in the financial statements of the two companies. A discussion of such variations is given in the next section.

Results of the Experimental Models

The basic variables affected are the income tax expense, the net income, and the net worth. The adoption of comprehensive allocation method gives rise to an item appearing on the balance sheet as deferred income taxes.

Before going into further discussion of the variables affected, an explanation of the treatment of the deferred income taxes is in order. This is based on observations from the return questionnaire and from discussions with many loan officers and credit men. There are officers who consider this a liability item and for all analytical purposes will include it in liabilities. There are those who consider this as reserve (these officers use that term to mean a provision against future payments of income taxes). A third category consists of those who consider deferred income taxes to be part of net worth. For all practical purposes, they include it in the net worth. Another opinion is that deferred taxes may be considered both with liabilities and with net worth. There are two opinions regarding this division into two parts. Some say that the income tax deferrals for the previous three years should be taken as liabilities and the balance should be included in the net worth. The second group splits it 50:50, based on a simple case of probability of payment versus no payment as 50 per cent.

Variations in Income Tax Expense,
Net Income and Net Worth

The financial variables and the analytical ratios affected by accounting methods are given in Tables 9 and 10 on pages 154 and 155.

TABLE 9.--Comparative figures for financial measures--Jaytee Bakeries, Inc.

	Actuals					Projections						
	12/31 1965	12/31 1966	12/31 1967	12/31 1968	6/30 1969	12/31 1969	12/31 1970	12/31 1971	12/31 1972	12/31 1973		
Comparative Figures Under Comprehensive Allocation of Income Taxes												
Income Tax (in thousand \$)	144	79	154	131	73	72	182	182	188	211		
Expense { (% of net sale)	1.51	0.95	1.79	1.46	1.59	1.55	1.59	1.54	1.54	1.68		
Net { (in thousand \$)	171	88	180	55	84	86	197	197	203	229		
Income { (% of net sale)	1.79	1.06	2.09	1.73	1.83	1.85	1.72	1.66	1.66	1.82		
Rate of change in net income	96.6	(48.5)	104.5	(13.9)	7.7	10.3	15.9	0	3.0	12.8		
Change in net worth \$M	51	28	30	35	24	26	77	77	53	79		
Rate of change of net worth	3.70	1.96	2.06	2.35	1.57	1.68	4.90	4.67	3.07	4.44		
Total liab/net worth	1.10	0.90	0.84	0.84	0.81	0.78	1.12	1.09	1.03	0.96		
Fixed assets/net worth	1.23	1.11	1.04	1.01	1.07	1.00	1.22	1.19	1.14	1.09		
Net sales/net worth	6.67	5.69	5.78	5.88	5.95	5.92	6.96	6.89	6.87	6.79		
Net income/net worth (%)	11.97	6.04	12.11	10.19	10.87	10.94	11.95	11.42	11.41	12.33		
Comparative Figures Under Partial Allocation of Income Taxes												
Income Tax (in thousand \$)	93	25	118	99	58	58	139	142	161	187		
Expense { (% of net sale)	0.98	0.30	1.37	1.11	1.26	1.25	1.21	1.20	1.32	1.48		
Net { (in thousand \$)	222	132	216	187	98	100	240	237	230	253		
Income { (% of net sale)	2.33	1.60	2.52	2.09	2.13	2.16	2.09	2.00	1.88	2.01		
Rate of change in net income	74.6	(40.5)	63.6	(13.4)	4.25	2.00	21.21	(1.3)	(2.95)	10.0		
Change in net worth \$M	102	72	66	67	38	40	120	117	80	103		
Rate of change of net worth	7.20	4.75	3.98	4.04	2.2	2.27	6.07	6.09	3.92	4.86		
Total liab/net worth	0.97	0.74	0.65	0.62	0.59	0.56	0.82	0.76	0.70	0.64		
Fixed assets/net worth	1.19	1.02	0.93	0.89	0.94	0.87	1.05	1.01	0.96	0.91		
Net sales/net worth	6.28	5.20	5.18	5.19	5.22	5.16	5.97	5.81	5.77	5.67		
Net income/net worth (%)	15.00	8.30	13.04	10.85	11.13	11.10	12.49	11.62	10.85	11.39		

TABLE 10.--Comparative figures for financial measures--Roysons Bakeries, Inc.

	Actuals					Projections						
	12/31 1965	12/31 1966	12/31 1967	12/31 1968	6/30 1969	12/31 1969	12/31 1970	12/31 1971	12/31 1972	12/31 1973		
Comparative Figures Under Comprehensive Allocation of Income Taxes												
Income Tax, (in thousand \$)	15.3	64	153	135	71	72	172	178	178	216		
Expense, (% of net sale)	1.56	0.78	1.75	1.52	1.58	1.56	1.53	1.53	1.47	1.72		
Net Income (in thousand \$)	180	83	180	140	73	75	200	206	208	233		
Rate of change of net income	1.84	1.01	2.06	1.58	1.62	1.62	1.77	1.75	1.72	1.86		
Change in net worth \$M	100	(53.9)	116.9	(22.2)	4.3	5.7	35.1	3.0	1.0	12.1		
Rate of change of net worth	63	25	34	23	15	16	83	89	62	87		
Total liab/net worth	4.68	1.77	3.16	1.56	1.00	2.06	5.45	5.54	3.65	4.95		
Fixed assets/net worth	1.08	0.91	0.87	0.88	0.85	0.82	1.15	1.10	1.04	0.95		
Net sales/net worth	1.30	1.12	1.03	1.03	1.18	1.01	1.23	1.20	1.15	1.09		
Net income/net worth (%)	6.96	5.72	5.97	5.94	5.98	6.07	7.03	6.89	6.88	6.79		
	12.77	5.78	12.26	9.38	9.69	9.85	12.46	12.16	11.84	12.65		
Comparative Figures Under Partial Allocation of Income Taxes												
Income Tax, (in thousand \$)	101	20	118	101	57	57	135	145	154	197		
Expense, (% of net sale)	1.03	0.24	1.35	1.14	1.26	1.26	1.20	1.24	1.27	1.56		
Net Income (in thousand \$)	232	127	215	174	87	90	237	239	232	252		
Rate of change of net income	2.36	1.55	2.45	1.97	1.93	1.94	2.10	2.05	1.92	2.01		
Change in net worth \$M	77.1	(45.3)	69.3	(19.1)	0	3.44	33.9	0.8	(2.9)	(8.6)		
Rate of change of net worth	115	69	69	57	29	31	120	122	86	106		
Total liab/net worth	8.28	4.59	4.39	3.47	1.70	1.79	6.82	6.59	4.30	5.08		
Fixed assets/net worth	1.01	0.74	0.67	0.65	0.61	0.57	0.83	0.78	0.72	0.64		
Net sales/net worth	1.23	1.02	0.92	0.90	0.94	0.88	1.05	1.02	0.97	0.92		
Net income/net worth (%)	6.53	5.22	5.34	5.22	5.21	5.26	6.00	5.84	5.79	5.75		
	15.44	8.08	13.10	10.25	10.08	10.24	12.62	11.95	11.12	11.50		

Income tax expense: Jaytee Bakeries, Inc..--From the comparison, it can be observed that the income tax expense under the comprehensive allocation method ranges from \$79,000 to \$211,000 per year, or from 0.95 to 1.79 per cent of the net sales. Under the partial allocation method the range is from \$25,000 to \$187,000, or from 0.30 to 1.48 per cent (see Fig. 1-a, 1-b on page 157). The difference in the income tax expense due to the difference in method ranges from \$24,000 to \$54,000, or from 0.20 to 0.65 per cent of the net sales. When compared to the income tax expense under partial allocation, the income tax expense under comprehensive allocation method is higher by 12.83 to 216.00 per cent (Fig. 1-c, page 159). Income tax expense is important because of the high rate of taxes.

Income tax expense: Roysons Bakeries, Inc..--Under comprehensive allocation method, the income tax expenses ranges from \$64,000 to \$216,000 or from 0.78 to 1.72 per cent of the net sales. Under partial allocation, the range is from \$20,000 to \$211,000 or from 0.24 to 1.56 per cent of the net sales. The difference in expense due to the difference in methods is from 0.16 per cent to 0.54 per cent of net sales (Fig. 2-a, 2-b, page 158). When compared to the income tax expense under partial allocation, the expense under comprehensive allocation is higher by 9.64 to 220.00 per cent (Fig. 2-c, page 159).

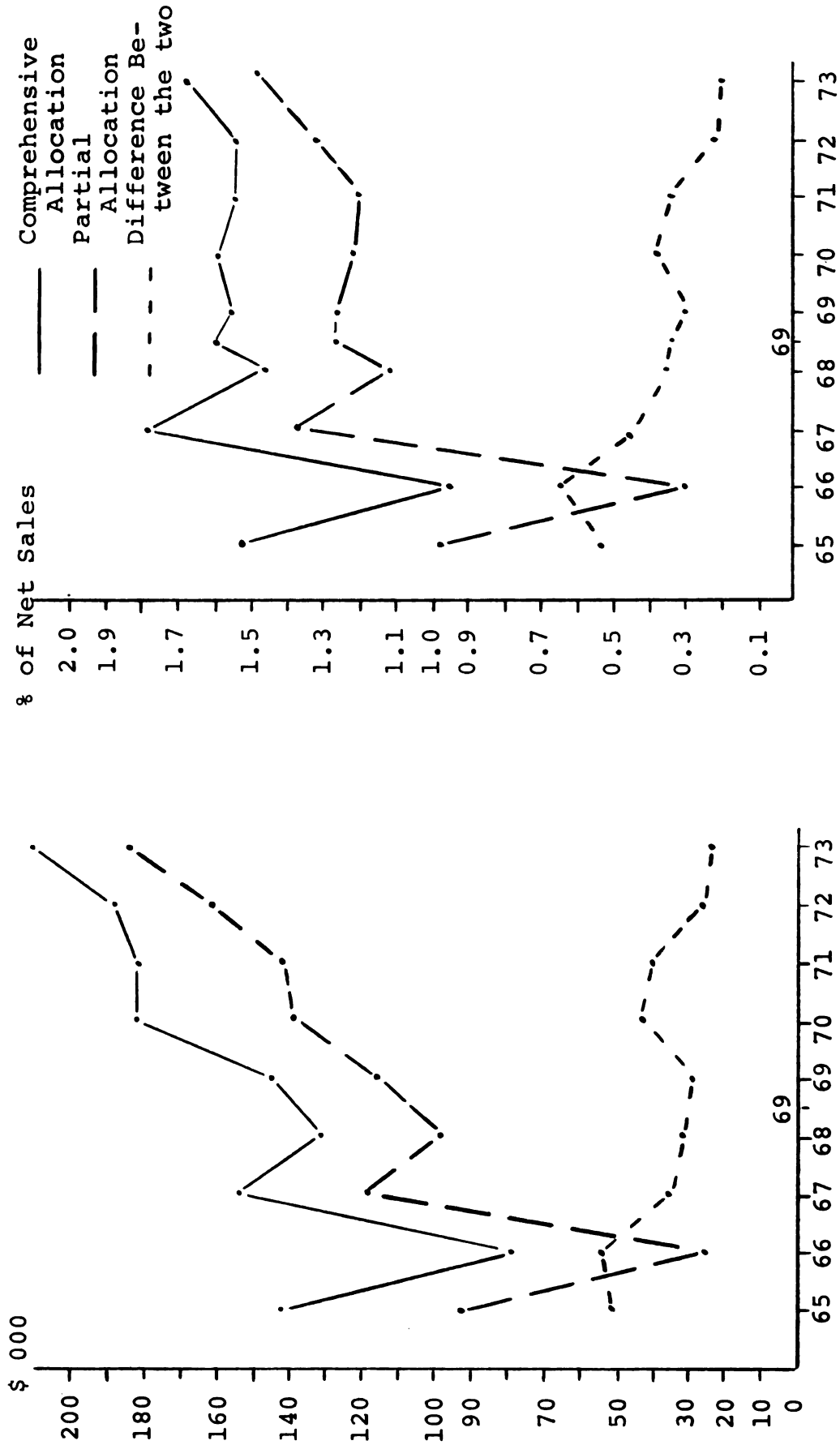


Figure 1-a

Figure 1-b

Fig. 1.--Income Tax Expense--Jaytee Bakeries, Inc.

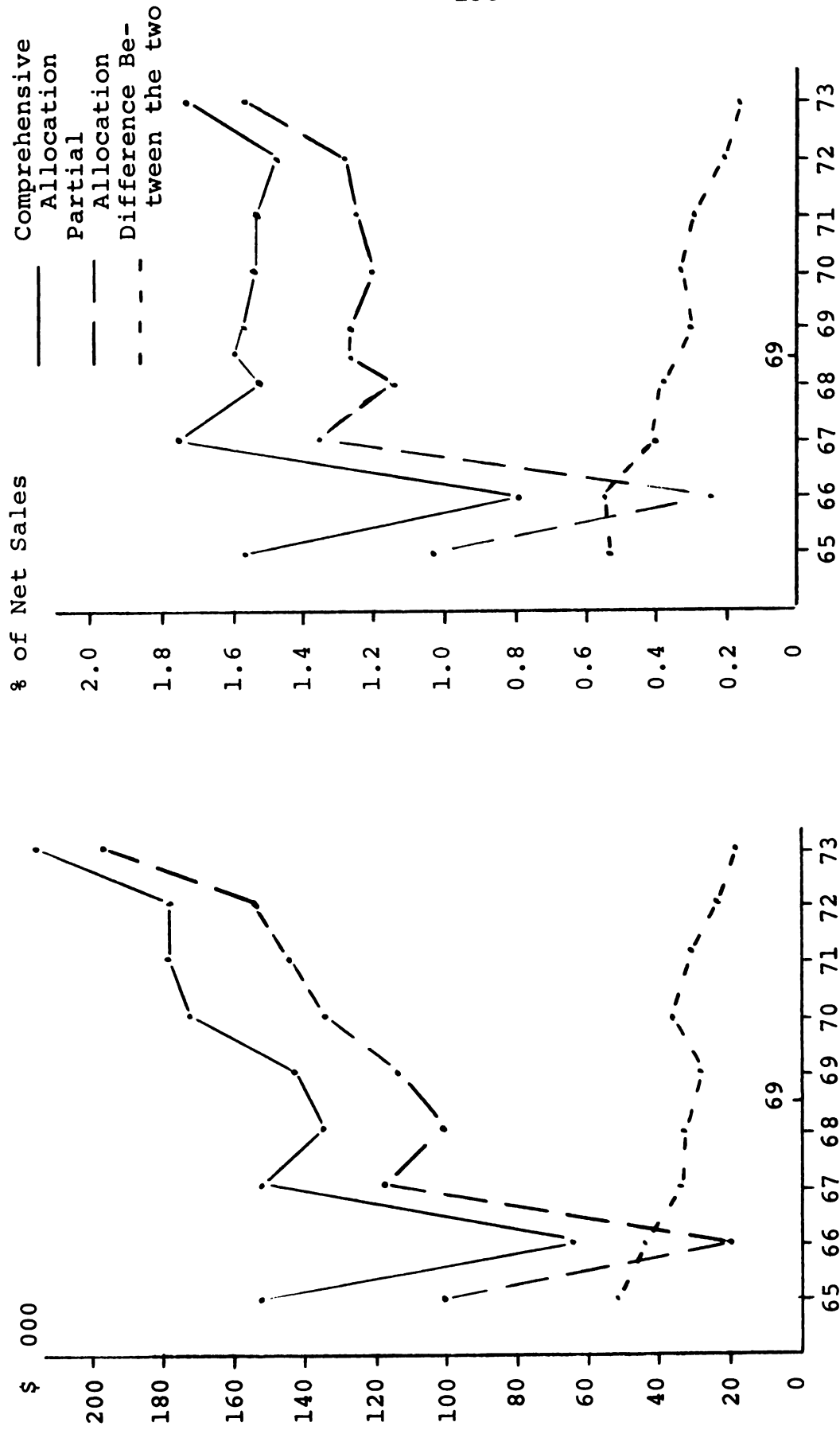


Figure 2-a

Figure 2-b

Fig. 2.--Income Tax Expense--Roysons Bakeries, Inc.

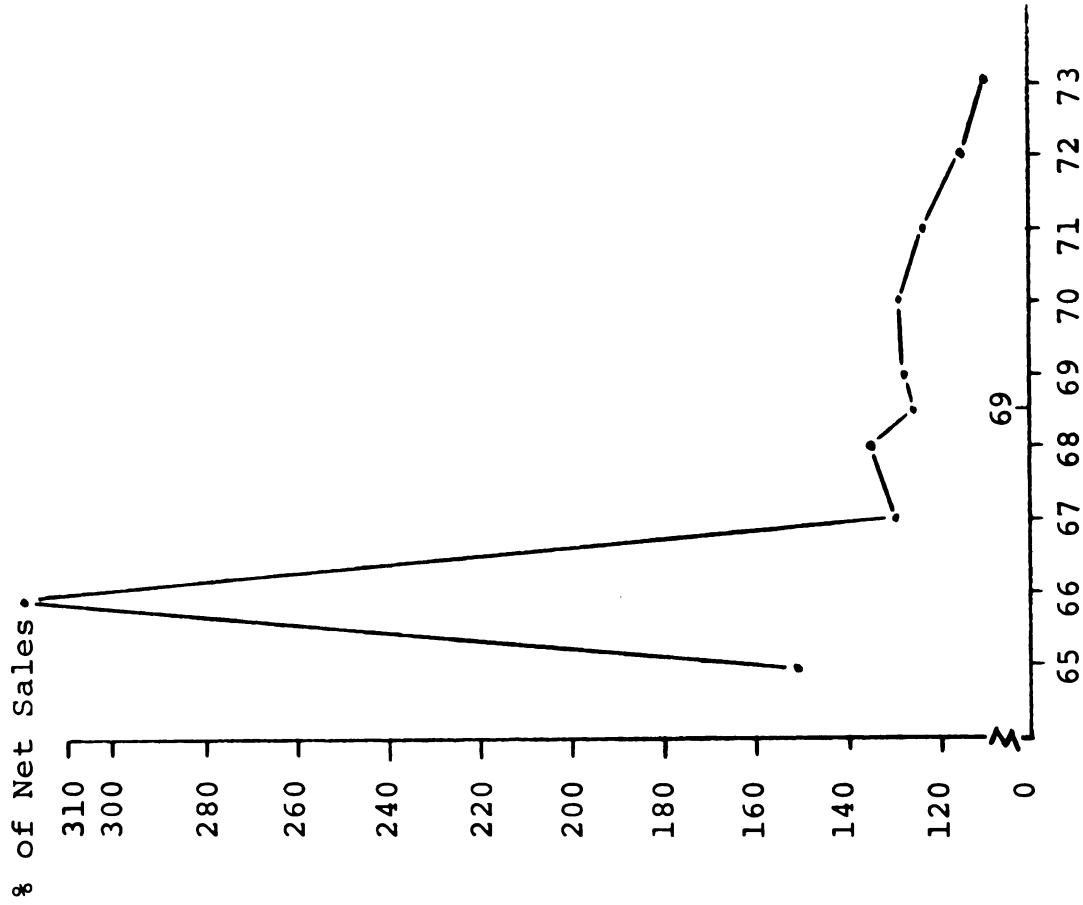


Fig. 2-c.--Income Tax Expense,
Ratio of Comprehensive Allocation Method to
Partial Allocation--Roysons Bakeries, Inc.

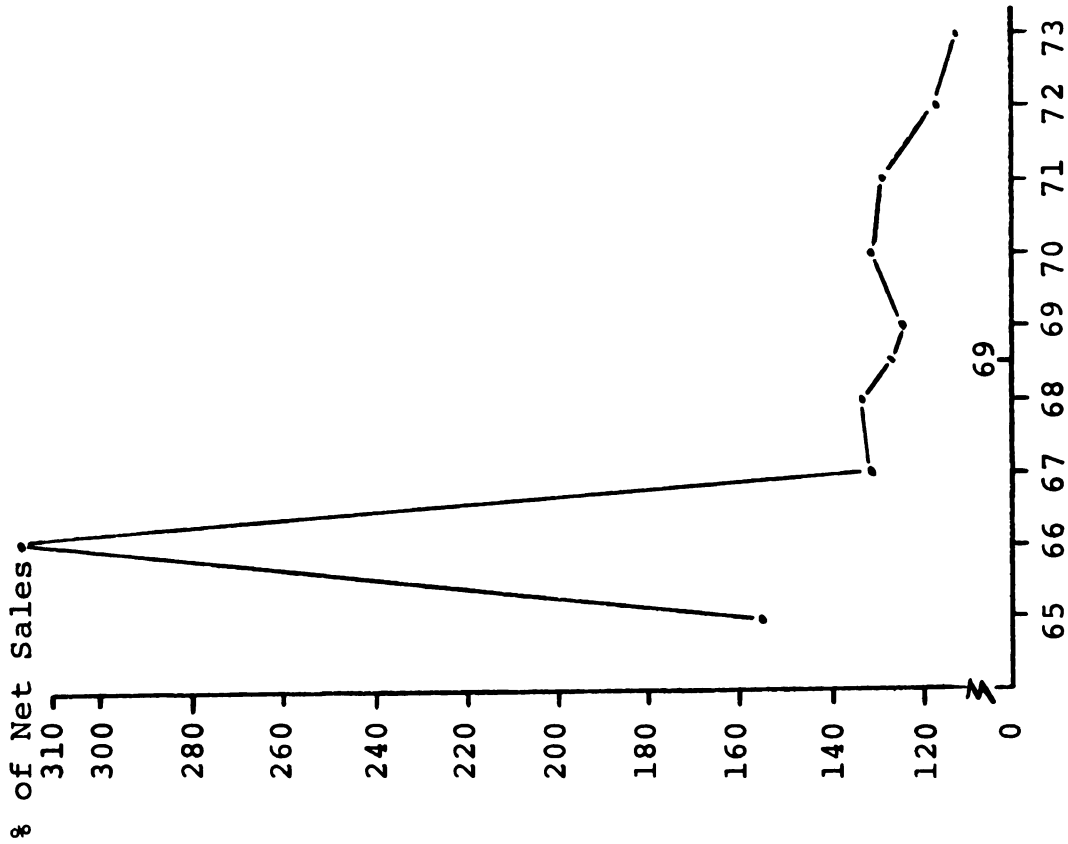


Fig. 1-c.--Income Tax Expense,
Ratio of Comprehensive Allocation Method to
Partial Allocation--Jaytee Bakeries, Inc.

Net income: Jaytee Bakeries, Inc.--These figures are plotted in Figures 3-a and 3-b, page 161. Unlike short-term loans which are paid from the conversion of current assets into cash, the payment of term loans is dependent on the earnings of the borrower. Therefore these figures are very important in the decision on term loans.

Net income under the comprehensive allocation method fluctuates between \$88,000 and \$229,000 per year. In terms of the percentage of net sales, net income ranges from 1.06 per cent to 2.09 per cent. Under the partial allocation method, the fluctuation is between \$133,000 and \$253,000. In terms of percentage of net sales, it ranges from 1.60 to 2.33 per cent. We observe that under comprehensive allocation method the fluctuation in net income is higher than under the partial allocation.

Under the comprehensive allocation method, the rate of change in net income from year to year fluctuates between -48.53 and 104.54 per cent. Under the partial allocation, it is between -40.54 and 74.60 per cent (see Fig. 5, page 163).

Net income: Roysons Bakeries, Inc.--Under comprehensive allocation, the net income per year fluctuates (see Fig. 4-a, 4-b, page 162) between \$83,000 and \$233,000. Expressed as a percentage of net sales, this comes to 1.01 to 2.06 per cent. Under the partial allocation method, the

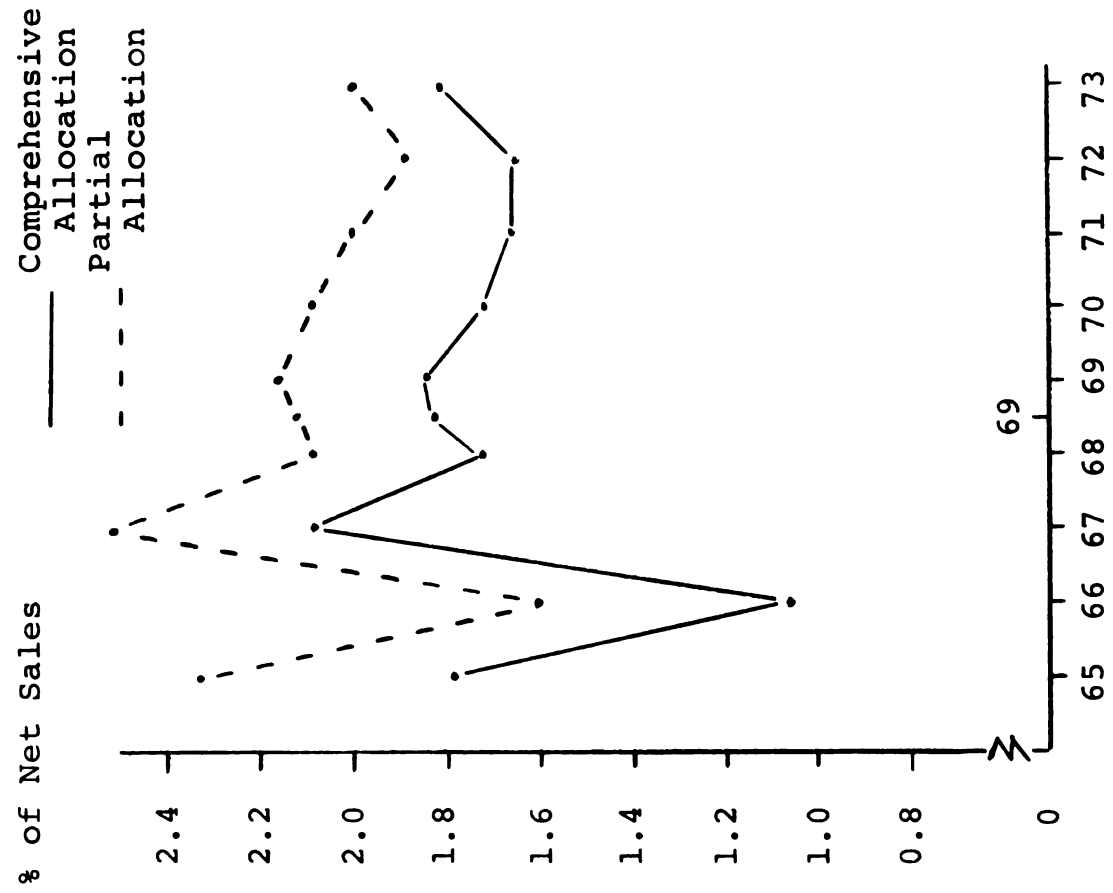


Figure 3-b

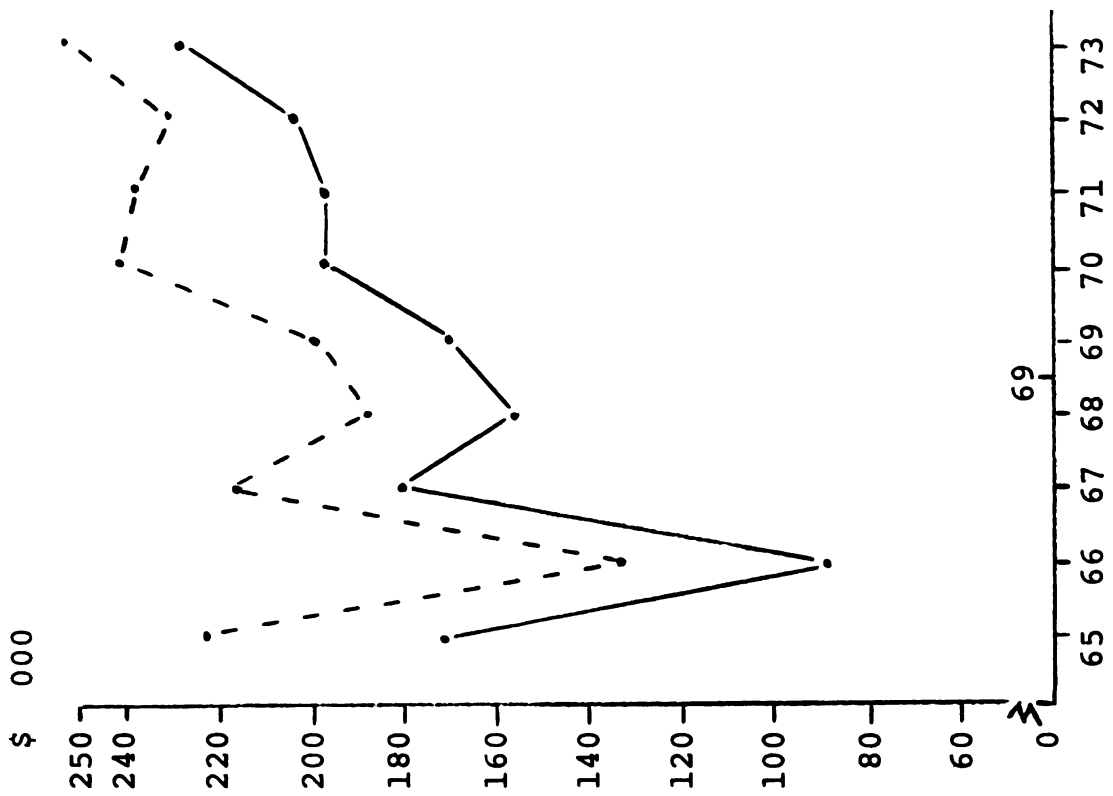


Figure 3-a

Fig. 3.--Net Income--Jaytee Bakeries, Inc.

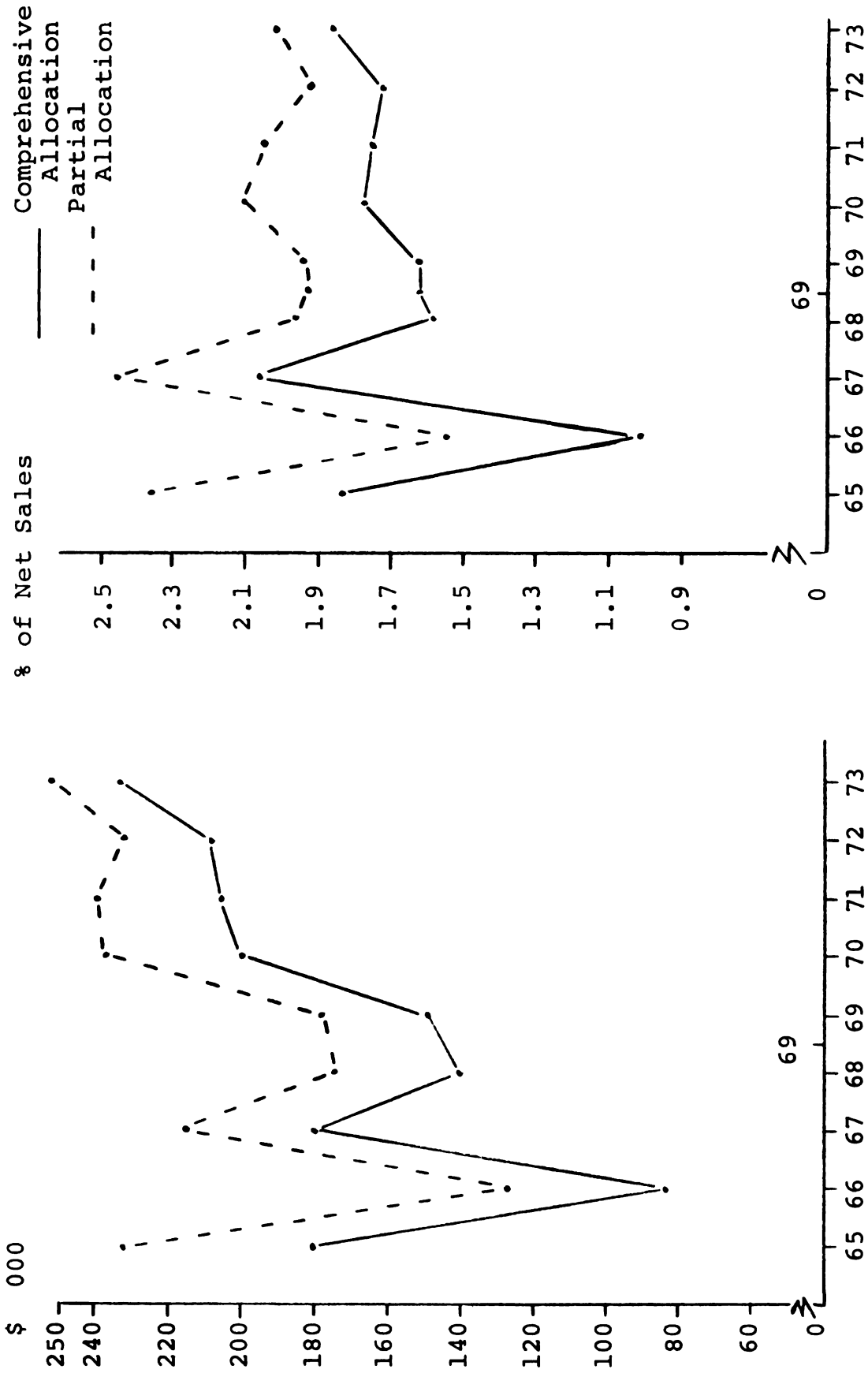


Figure 4-a
Figure 4-b
Fig. 4.--Net Income--Roysons Bakeries, Inc.

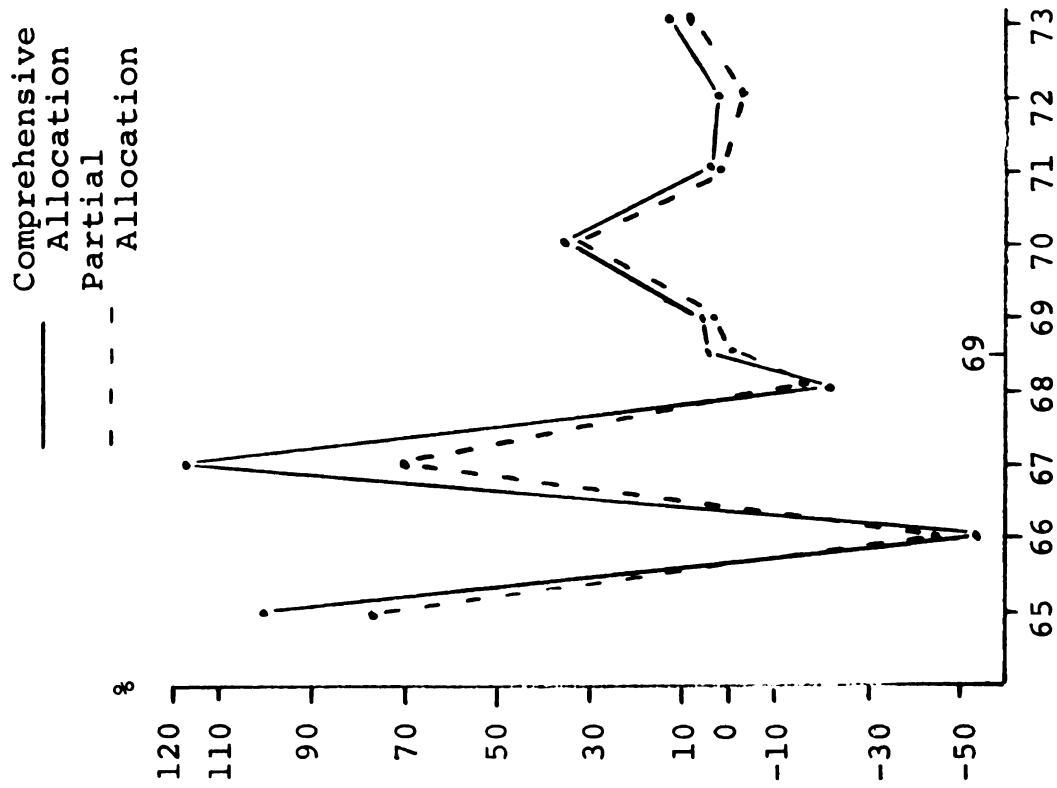


Fig. 6.--Rate of Change in Net Income--Roysons Bakeries, Inc.

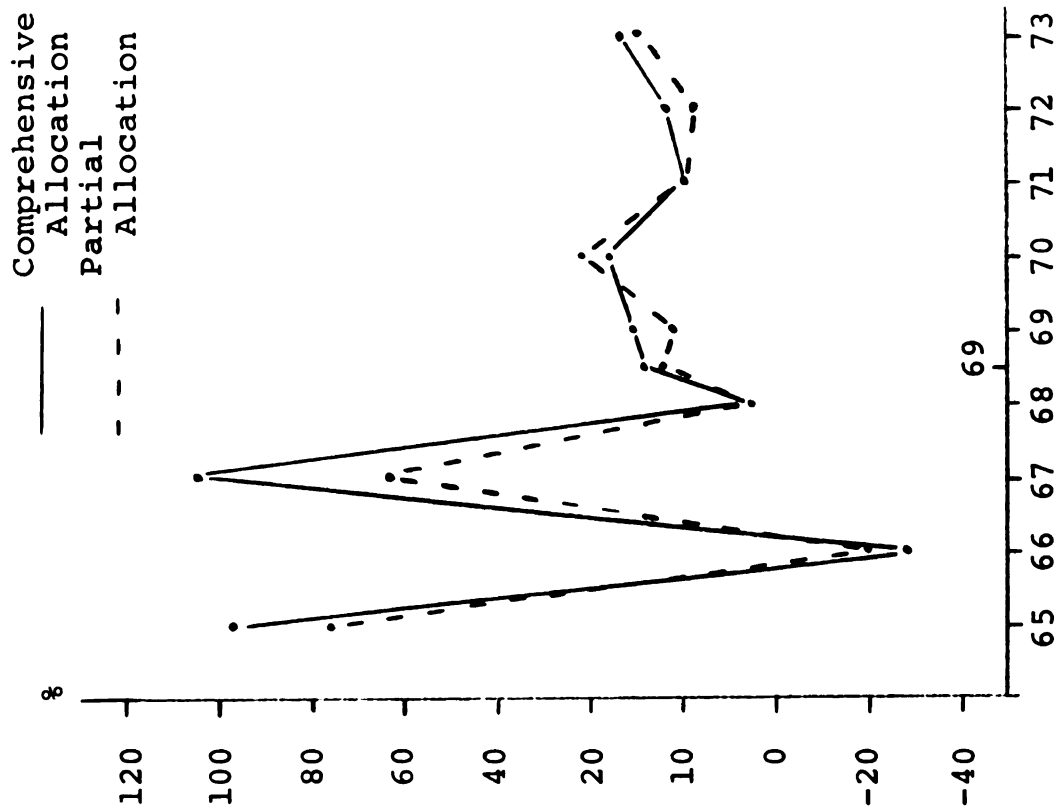


Fig. 5.--Rate of Change in Net Income--Jaytee Bakeries, Inc.

net income fluctuates between \$127,000 and \$252,000. Expressed as a percentage of the net sales, it varies between 1.55 and 2.45 per cent of the net sales. Again we observe, that the fluctuation is higher under the comprehensive allocation method.

The rate of change in net income fluctuates between -53.88 and 116.86 per cent under the comprehensive allocation method. Under the partial allocation method it varies from -29.72 to 65.22 per cent (see Fig. 6, page 163).

Net worth: Jaytee Bakeries, Inc.--Dividend per share is assumed to be the same under both the methods of allocating income taxes. The increase in net worth through retained earnings fluctuates between \$28,000 and \$79,000 under the comprehensive allocation method, and between \$66,000 and \$120,000 under the partial allocation method (see Fig. 7, page 165).

The rate of change for net worth varies between 1.96 per cent and 4.90 per cent under the comprehensive allocation method and between 3.92 and 7.2 per cent under the partial allocation method (see Fig. 8, page 165).

Net worth: Roysons Bakeries, Inc.--The dividend per share is assumed to be the same under both methods of allocation of income taxes. The increase in net worth through retained earnings fluctuates between \$23,000 and \$89,000 under comprehensive allocation method and between \$57,000 and \$122,000 under the partial allocation method (see Fig. 9, page 166).

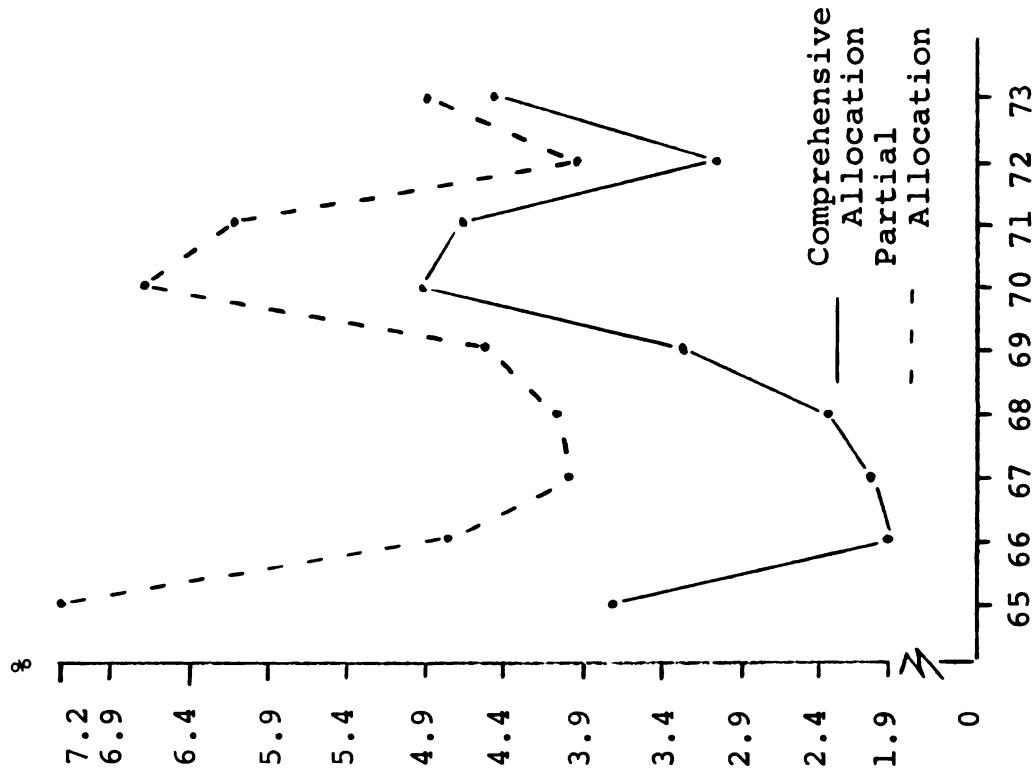


Fig. 8.--Rate of Change of Net Worth--Jaytee Bakeries, Inc.

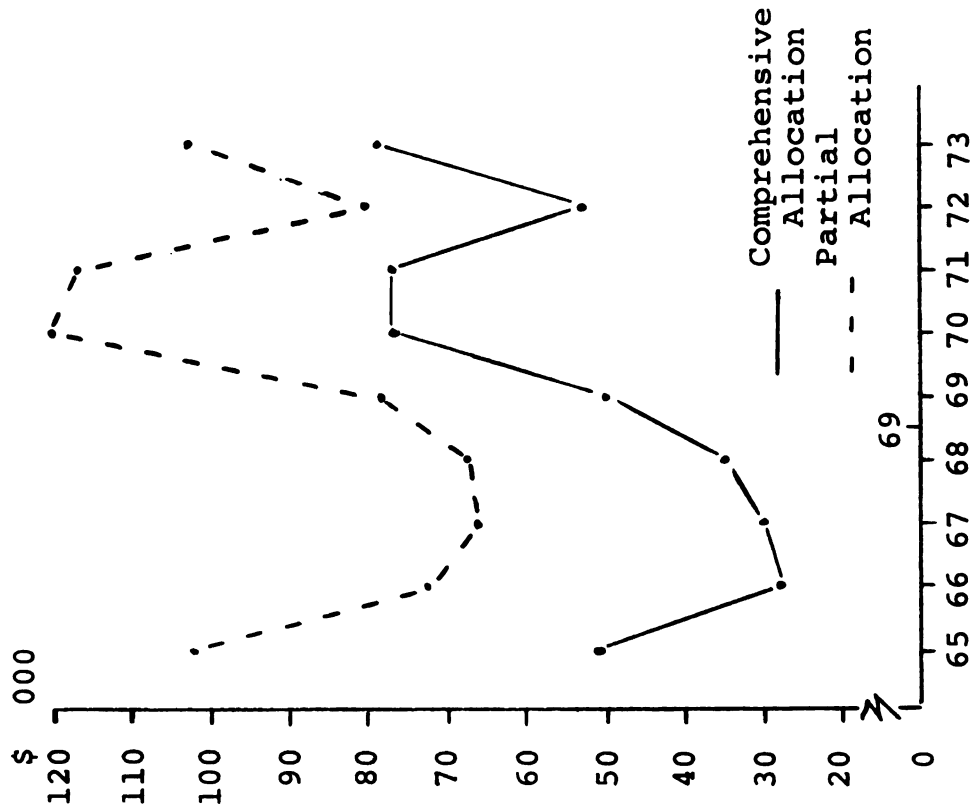


Fig. 7.--Change of Net Worth--Jaytee Bakeries, Inc.

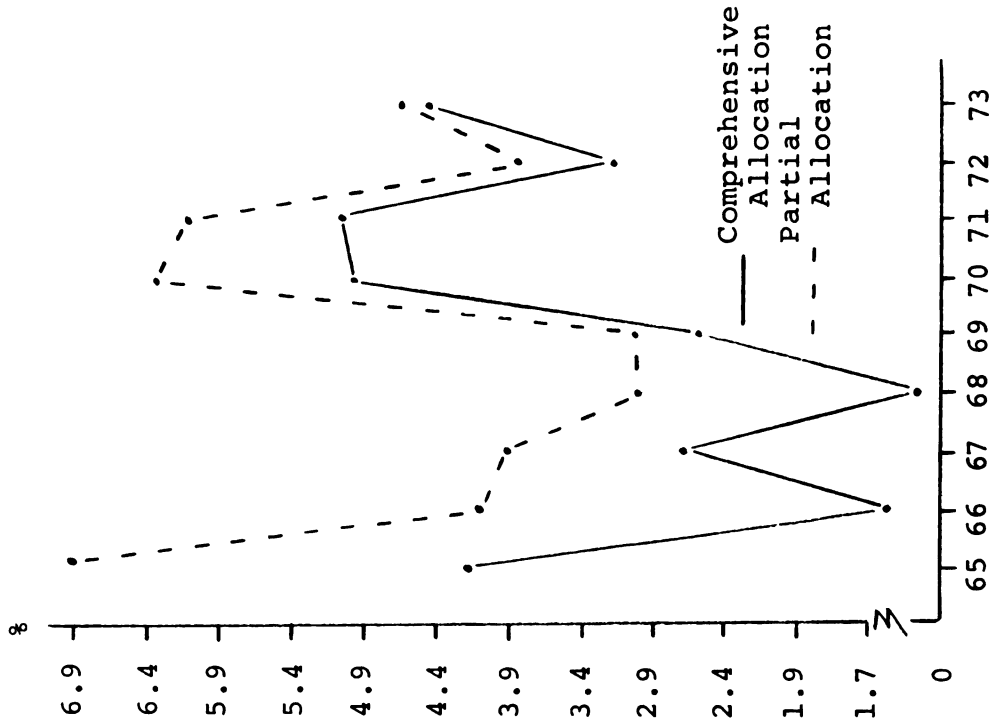


Fig. 10.--Rate of Change of Net Worth--Roysons Bakeries, Inc.

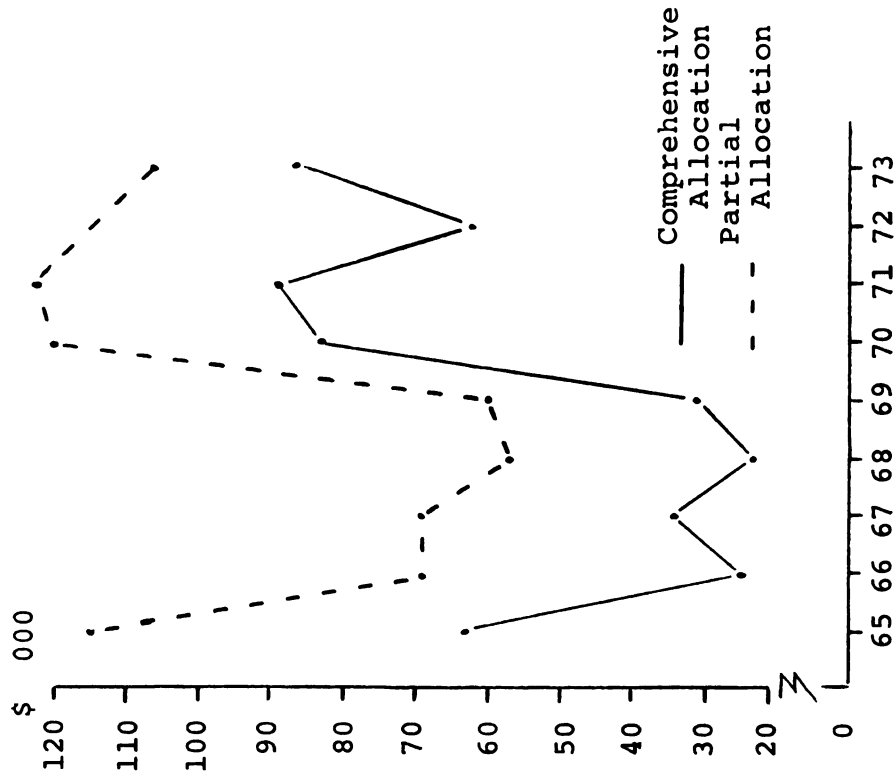


Fig. 9.--Change of Net Worth--Roysons Bakeries, Inc.

The rate of change for net worth varies from 1.56 per cent to 5.54 under the comprehensive allocation method and from 3.47 to 8.28 under the partial allocation method (see Fig. 10, page 166). Net worth is an important factor in loan decisions because it represents the cushion available for the absorption of losses. It is the borrower's equity that protects the lender against loss due to insolvency.

Analytical Ratios

Total liabilities/net worth: Jaytee Bakeries, Inc.--This ratio expresses the relative position of creditors to owners. The ratio is important in measuring the capital structure and long-term solvency of a firm. Under comprehensive allocation, the ratio varies between 0.78 and 1.12, while under partial allocation it varies from 0.56 to 0.97 (Fig. 11, page 168). In computing the ratio under comprehensive allocation, the deferred income taxes have been included in the liabilities. If the deferred income taxes are included in the net worth, then this ratio is the same under both the methods of allocation of income taxes. Taking the other views, as discussed earlier, will change this ratio.

Total liabilities/net worth: Roysons Bakeries, Inc.--Under the comprehensive allocation method, the ratio ranges between 0.82 and 1.15. Under the partial allocation method, it varies between 0.57 and 1.01 (see Fig. 12, page 168).

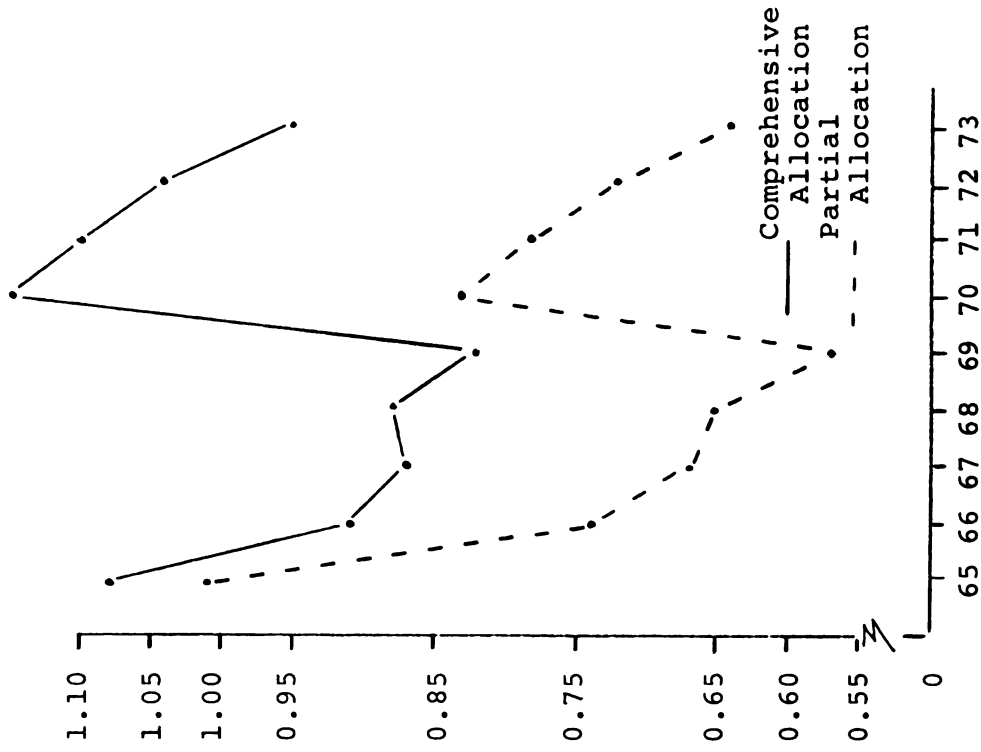


Fig. 12.--Total Liabilities to
Net Worth--Roysons Bakeries, Inc.

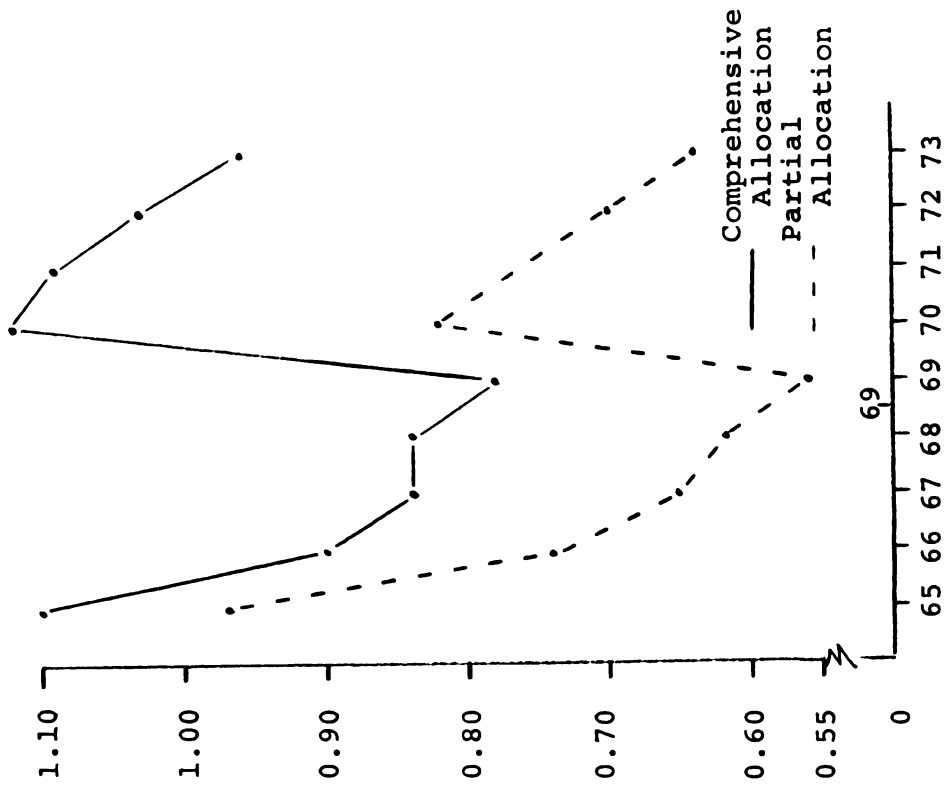


Fig. 11.--Total Liabilities to
Net Worth--Jaytee Bakeries, Inc.

The alternative methods of allocating income taxes affect both the net worth and the liabilities. Hence this ratio will be different under different methods of accounting for income taxes.

In some banks the relative position of the creditor and the owner was indicated by the inverse of this ratio. It was observed that they computed net worth to debts ratio, which is the reciprocal of the ratio under discussion.

Fixed assets/net worth: Jaytee Bakeries, Inc.--

The alternative methods of accounting for income taxes affect this ratio because the amount of net worth is different under the two methods. Hence with a different denominator, the ratios will be different.

Under the comprehensive allocation method, the ratio varies between 1.00 and 1.23. Under partial allocation, the ratio is between 0.87 and 1.19 (see Fig. 13, page 170).

Fixed assets/net worth: Roysons Bakeries, Inc.--

Under the comprehensive allocation method, the ratio lies between 1.01 and 1.30. Under the partial allocation method, this ratio lies between 0.88 and 1.23 (see Fig. 14, page 170).

This ratio shows how much of the fixed assets have been financed by the owner's equity.

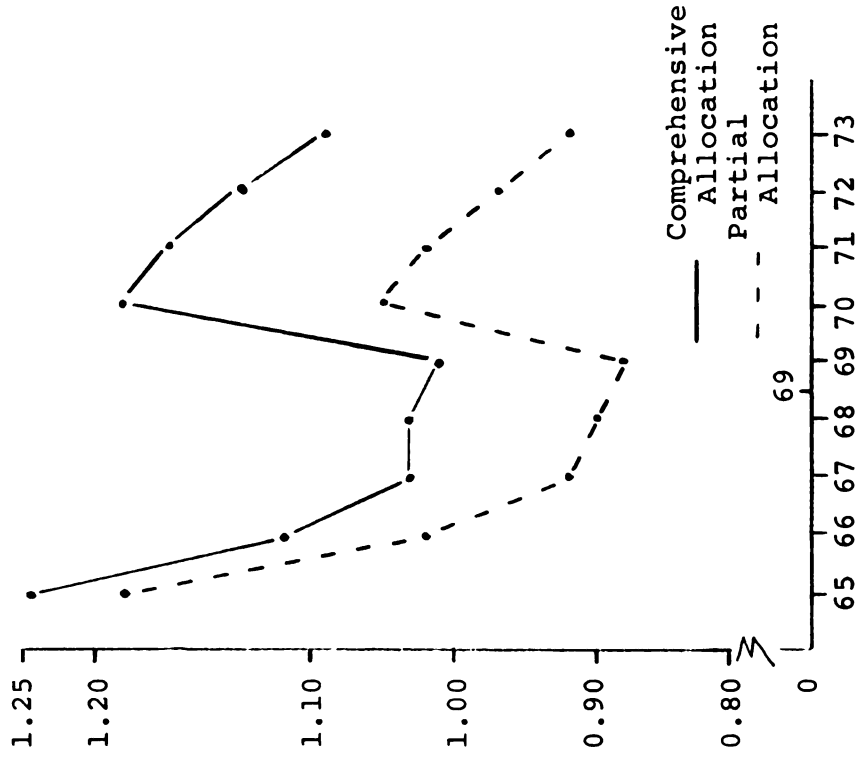


Fig. 14.--Fixed Assets to Net Worth--Roysons Bakeries, Inc.

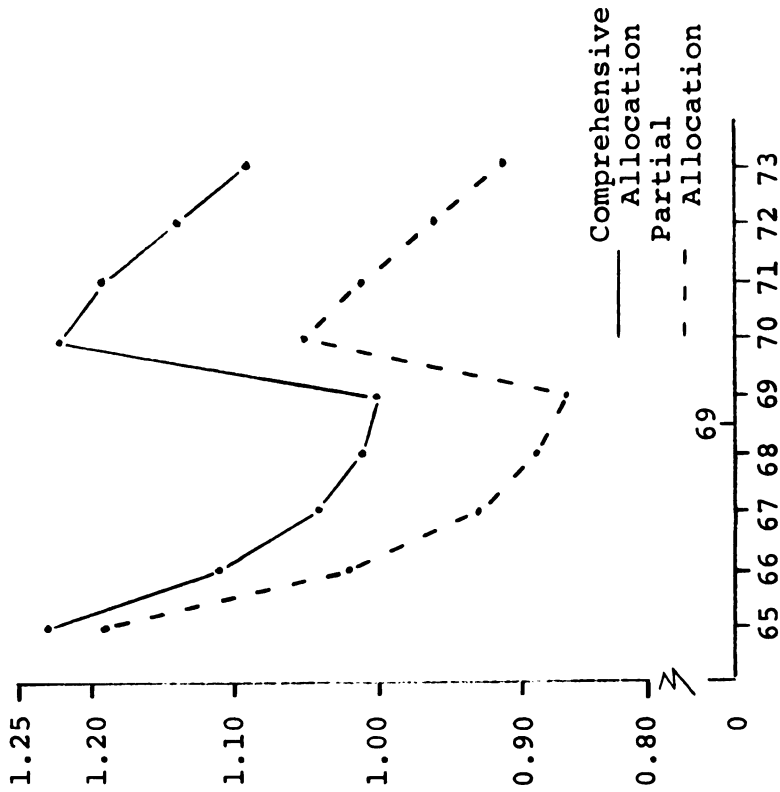


Fig. 13.--Fixed Assets to Net Worth--Jaytee Bakeries, Inc.

Net sales/net worth.--This ratio represents the turnover of the owner's equity. The different methods of accounting for income taxes affect this ratio.

In the Jaytee Bakeries, Inc. case, this turnover ratio varies between 5.69 and 6.89 under comprehensive allocation method. Under the partial allocation method, it lies between 5.16 and 6.28 (Fig. 15, page 172). In the case of Roysons Bakeries, Inc., this ratio lies between 5.72 and 6.96 under the comprehensive allocation method and between 5.21 and 6.53 under the partial allocation method (Fig. 16, page 172).

Net income/net worth.--This ratio is a measure of the earning power of the equity funds. It tells us how efficiently the funds invested by the owners or stockholders are being used.

In the case of Jaytee Bakeries, Inc. this ratio fluctuates between 6.04 and 12.33 per cent under the comprehensive allocation method. Under the partial allocation method, it ranges from 8.30 to 15.00 per cent (Fig. 17, page 173).

The difference in net earning to net worth ratio due to the difference in the methods of accounting for income taxes fluctuates between -1.13 and 3.03 (Fig. 17, page 173).

In the case of Roysons Bakeries, Inc., the ratio net income to net worth fluctuates (see Fig. 18, p. 173)

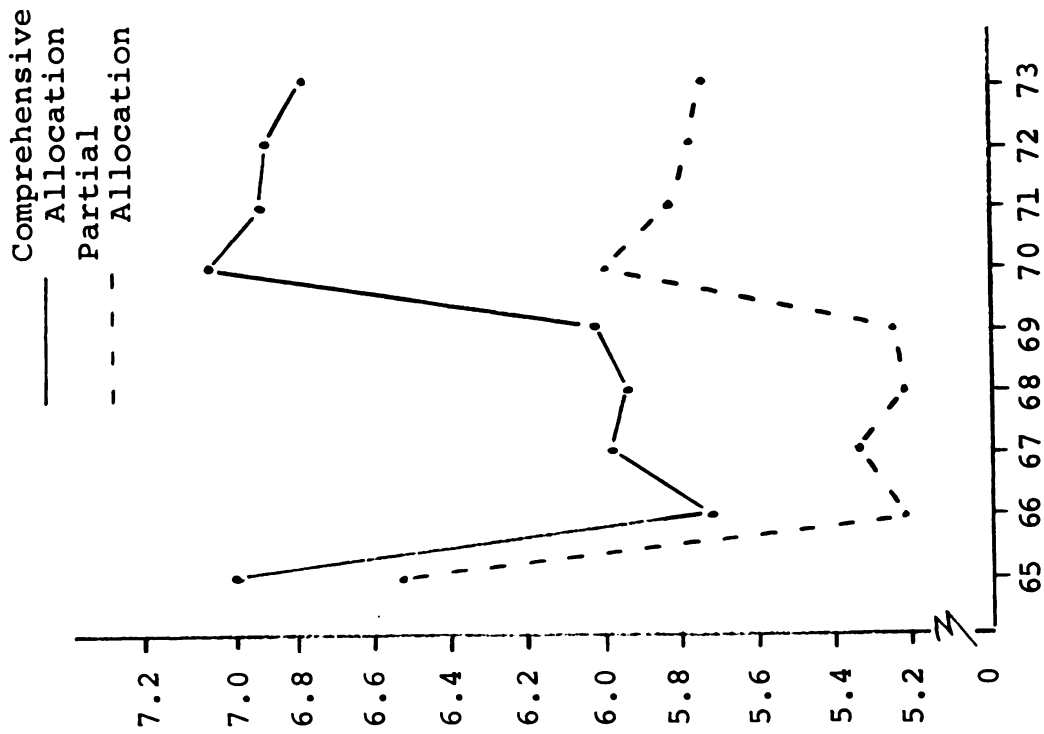


Fig. 16.--Net Sales to Net Worth--Roysons Bakeries, Inc.

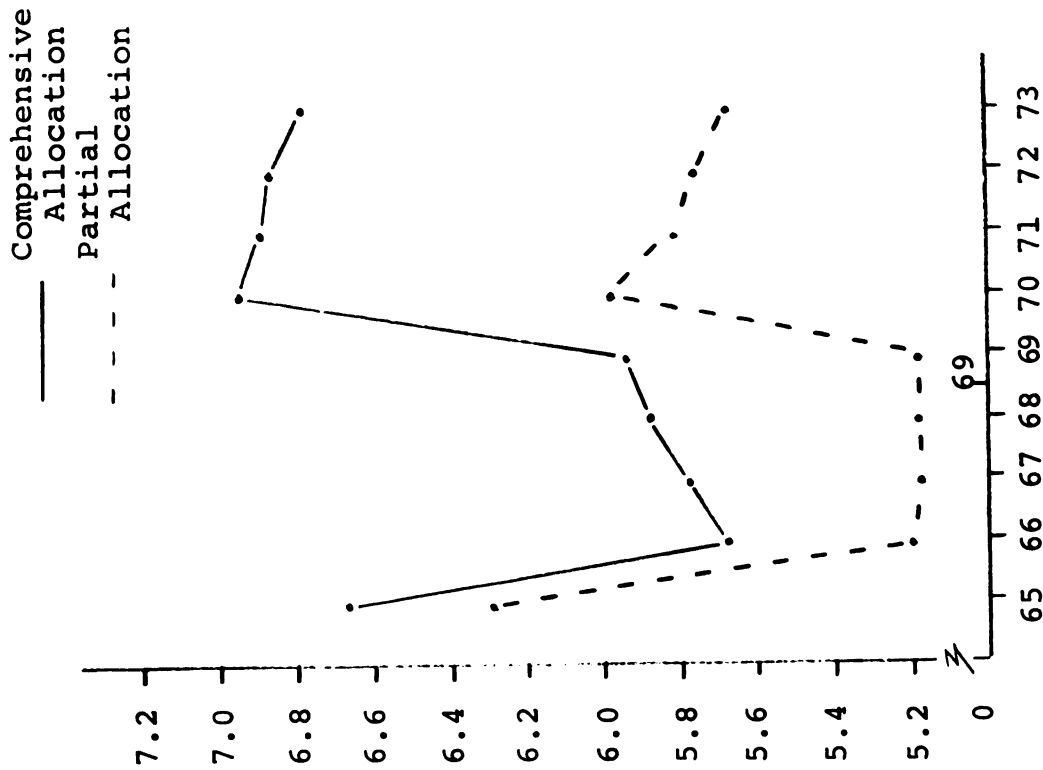


Fig. 15.--Net Sales to Net Worth--Jaytee Bakeries, Inc.

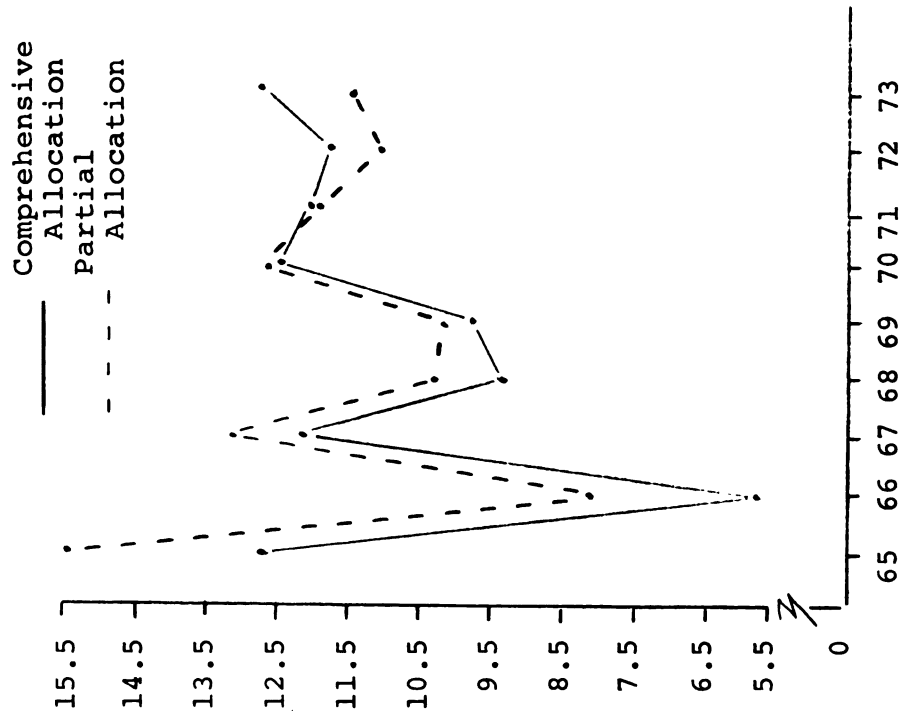


Fig. 18.--Net Income to Net Worth--Roysons Bakeries, Inc.

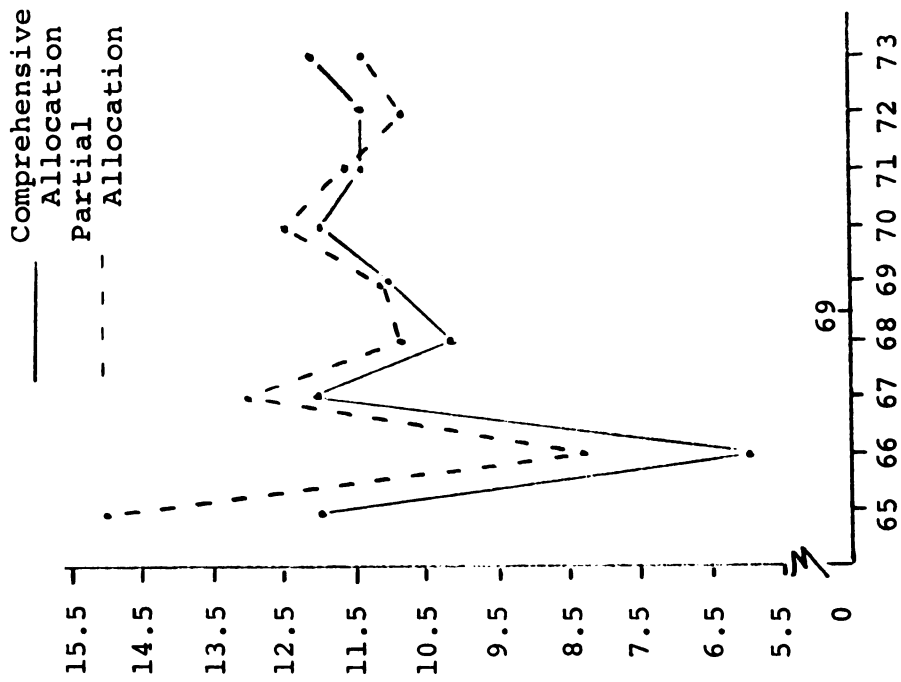


Fig. 17.--Net Income to Net Worth--Jaytee Bakeries, Inc.

between 5.78 and 12.77 per cent under the comprehensive allocation method. Under the partial allocation method, it fluctuates between 8.08 and 15.44 per cent.

The difference in net earning to net worth ratio due to the difference in the methods of accounting for income taxes lies between -1.15 and 2.67.

Summary and Conclusion

In this chapter the structure of the model is described and the effects of the different methods of allocation of income taxes are studied. The chapter starts with the reasons for adopting the experimental method of study. This is followed by a description of the models. The data for the models are generated from information obtained from the Annual Statement Studies of the Robert Morris Associates, Technical Study No. 5 of the National Commission on Food Marketing, and detailed data provided by the controller of a large bakery. Financial statements are prepared for the previous five periods and projections are prepared for the future five periods for two companies. The companies are similar in all respects except for their methods of allocating of income taxes.

The chapter then discusses the results of using two different methods of allocating income taxes on the financial variables of the two companies. These results are tabulated in two tables and the effects are illustrated with the help of figures. Comparative figures for both the

companies are given under comprehensive allocation and under partial allocation. The figures also highlight the difference in the methods of allocation.

It has been shown that accounting variations do result in different measurements. The two alternative methods of accounting for income tax have resulted in different income tax expense and different figures for net income and net worth. The analytical ratios, namely total liabilities to net worth, fixed assets to net worth, net sales to net worth, and net income to net worth, are also different under the two different methods. In the next chapter we shall see whether or not these differences in the attributes and ratios affect the actual lending decision.

CHAPTER VI

ANALYSIS OF THE QUESTIONNAIRE SURVEY RESPONSES AND FIELD STUDIES

Introduction

In the previous chapter, the model used in the investigation is described. The effects of different methods of accounting for income taxes on the financial variables of two model companies are also discussed. The purpose of this chapter is to observe the effects of the difference in accounting methods on the decisions of loan officers. This is accomplished by providing a complete presentation and analysis of the data collected in response to the questionnaire which was sent to the participants and from the four field studies. The complete details of the procedure followed by the writer and the purpose of the questionnaire survey is discussed on pages 21-23 of the first chapter.

Participants

Participants are loan officers or credit men from large banks in Chicago, Cleveland, Detroit, Indianapolis

and Milwaukee. One hundred and ten participants were selected at random from the 285 bank representatives listed in the Member Roster 1968-69 of the Robert Morris Associates. Each participant was sent the financial and other data for the two companies along with a return questionnaire. These are given in Appendix A.

To reduce non-response attempts were made to contact personally all the participants. Of 110, 74 responded. This represented over 67 per cent of the participants. (However, four of the responses were not considered because these were improperly completed.)

Analysis of the Questionnaire

The questionnaire is divided into two parts. This chapter first discusses the results of part one of the questionnaire along with its statistical analysis. This is followed by a discussion of part two of the questionnaire and its statistical analysis.

In part one there are three questions. The participants are asked to give their preferences, the degree of their preferences, and the rationale for their preferences for granting loans to Jaytee and Roysons Bakeries. They are asked to answer these questions under both normal conditions and existing conditions when there is an acute shortage of loanable funds.

The effect of their preferences on lending terms is measured in the second part of the questionnaire. There

are eight questions to be answered in the light of normal conditions. These eight questions deal with the usual terms that are included in a term loan agreement. Two additional questions are answered under the existing conditions when there is an acute shortage of loanable funds. The participants are asked to apportion two different loanable amounts between the two companies.

It may be recalled that these two companies are similar except for their method of accounting for income taxes. Any difference in the answer to any question for the two companies is an indication of perceiving the two companies as dissimilar. This perception of dissimilarity can be attributed to the difference in the method of accounting for income taxes. The following section will provide a presentation and an analysis of the results of the questionnaire.

Analysis of Part I of the Questionnaire

Question 1:

1. Please indicate the company you Jaytee Royson
would prefer:
- (a) in the light of normal
conditions.
 - (b) in the light of existing
conditions when there is
an acute shortage of
loanable funds.

The question aims at studying whether or not the participants are influenced by the difference in the methods

of accounting. The influence is indicated by their preference for one company over the other company. Both the companies are similar, except for their method of accounting for income taxes.

The data collected in response to Questions 1(a) and 1(b) is tabulated as follows:

Preference for	Normal Conditions		Existing Conditions	
	No.	%	No.	%
Jaytee Bakeries, Inc.	60	85.71	48	68.57
Roysons Bakeries, Inc.	5	7.14	8	11.43
Either or No Preference	5	7.14	4	5.71
Neither	0	0	10	14.29
Total	70	100.00	70	100.00

We observe that under normal conditions, sixty out of the seventy respondents prefer Jaytee Bakeries, Inc. Five prefer Roysons Bakeries, Inc. Only five indicate no preference or evaluate both of the companies as equals. In other words, 92.85 per cent of the respondents indicate their preference for one or the other company, and only 7.15 per cent indicate no preference for either.

Under existing conditions, forty-eight (68.57 per cent) of the respondents prefer Jaytee Bakeries, Inc. Eight

(11.43 per cent) respondees show preference for Roysons Bakeries, Inc. Four of the respondees hold equal preference for both of the companies. Ten of the respondees state that they prefer neither of the two companies. They are not willing to consider either for a term loan. According to the policy of their banks, the priority assigned to such loans is very low under the existing tight money market.

Question 2:

2. Indicate the degree of your preference in 1 above, Strong Moderate Weak
- (a) in the light of normal conditions.
- (b) in the light of existing conditions.

The purpose of this question is to study the degree of preference for each of the two companies.

Under normal conditions the responses are as follows:

Preference	Weak		Moderate		Strong		Total	
	No.	%	No.	%	No.	%	No.	%
Jaytee	22	33.85	31	47.69	7	10.77	60	92.31
Roysons			2	3.08	3	4.61	5	7.69
Total	22	33.85	33	50.77	10	15.38	65	100.00

Twenty-two of the respondees indicate weak preference for Jaytee Bakeries, Inc. Thirty-one indicate moderate preference and seven respondees show strong preference for Jaytee Bakeries, Inc. Among those who prefer Roysons Bakeries, Inc., two have moderate preference and three have strong preference.

Under the existing conditions the distribution is given below:

Preference	Weak		Moderate		Strong		Total	
	No.	%	No.	%	No.	%	No.	%
Jaytee	9	16.07	34	60.71	5	8.93	48	85.71
Roysons	5	8.93	1	1.79	2	3.57	8	14.29
Total	14	25.00	35	62.50	7	12.50	56	100.00

Question 3:

- Please briefly give the reasons for your preference stated above, in the space provided on the next page.

This question allowed the participants to make a free response. This elicited the reasons which each officer considered important.

Analysis of Reasons Given for Preference Under Normal Conditions

Data collected in response to this question is given in Table 11.

TABLE 11.--Reasons for and degrees of preference under normal conditions.

Reasons for Preference	Degrees of Preference							
	Weak		Moderate		Strong		Total	
	No.	%	No.	%	No.	%	No.	%
1. Higher net income	6	8.57	19	27.14	5	7.14	30	42.85
2. Better debt to worth ratio	12	17.14	11	15.71	6	8.57	29	41.43
3. Larger net worth	6	8.57	6	8.57	4	5.71	16	22.85
4. Larger cash flow	9	12.86	4	5.71	2	2.86	15	21.43
5. Better return on sales	5	7.14	4	5.71	1	1.43	10	14.28
6. Stronger balance sheet	2	2.86	3	4.28	1	1.43	6	8.57
7. Better fixed assets to worth ratio	3	4.28			2	2.86	5	7.14
8. Deferred income taxes			5	7.14			5	7.14
9. More retained earnings			1	1.43	3	4.28	4	5.71
10. Greater ability to provide compensatory balance	1	1.43			3	4.28	4	5.71
11. Lower taxes			4	5.71			4	5.71
12. Growth through retained earnings	1	1.43	1	1.43			2	2.86
13. Better return on net worth					1	1.43	1	1.43
14. Conservatism					1	1.43	1	1.43
15. Better possibility of faster paydown	1	1.43					1	1.43
16. Better financial conditions			1	1.43			1	1.43
17. Lower liabilities			1	1.43			1	1.43
Total	46		60		29		135	

(1) Higher Net Income: Thirty (42.85 per cent) of the respondees base their preference on higher net income. Different respondees have used different phrases to give this reason. Some of these phrases are: "greater net income," "better performance," "better earning power," "better track record," "stronger in profit," "better operating figures," "profit performance better," "larger profit," and "greater net income after taxes."

Of the thirty respondees, six (8.57 per cent) show weak preference, nineteen (27.14 per cent) hold moderate preference, and five (7.14 per cent) show strong preference for one company or the other.

(2) Better Debt/Worth Ratio: Twenty-nine (41.43 per cent) respondees prefer for this reason. Different phrases used to state this reason are: "lower debt to worth ratio," "debt/worth ratio offers more protection," "stronger debt/worth ratio," "more satisfactory debt to worth proportion," and "more favorable debt ratio."

Twelve (17.14 per cent) of these indicate weak preference, six a strong preference, and eleven (15.71 per cent) state moderate preference for either one or the other.

(3) Larger Net Worth: Sixteen (22.86 per cent) respondees give this reason for their preference. Some of the respondees use the phrase "better net worth" and others use "stronger net worth" to state this reason. Six (8.57 per cent) of the respondees indicate weak preference,

four (5.71 per cent) have strong preference, and the remaining six (8.57 per cent) indicate a moderate degree of preference.

(4) Larger Cash Flow: This is the fourth reason given for preference. Fifteen (21.43 per cent) respondents give this reason. Nine (12.86 per cent) show weak preference, four indicate moderate preference, and two have strong preference. Again the different phrases used are "more favorable cash flow" and "stronger cash flow."

(5) Better Return on Sales: Ten (14.28 per cent) respondents state "better return on sales" as the reason for their preference. Five (7.14 per cent) indicate weak preference, four (5.71 per cent) show moderate preference, and one shows strong preference.

(6) Stronger Balance Sheet: Six (8.57 per cent) of the respondents give stronger balance sheet as the reason for their preference. Two of them indicate weak preference, three indicate moderate preference, and one shows strong preference.

(7) Better Fixed Assets to Worth Ratio: Five of the respondents base their preference on the better fixed assets to worth ratio. Three of these show weak preference and two indicate strong preference.

(8) Deferred Income Taxes: Five respondents have given this reason for their preference. All five indicate their preference as moderate.

(9) More Retained Earnings: Four of the respondents prefer one company to the other because that company shows more retained earnings. One of these four states his degree of preference as moderate and three indicate strong preference.

(10) Greater Ability to Provide Compensatory Balances: Four of the respondents give the greater ability of one company to provide compensatory balances as the reason for their preference. Three of them state their preference as strong while one states it as weak. No basis for judgment as to greater ability is given.

(11) Lower Taxes: This is given as the reason for preference by four of the respondents. Their preference is moderate.

(12) Growth Through Retained Earnings: Two of the respondents give this reason for their preference. One of them states his preference as weak and the other states it as moderate.

(13) Better Return on Net Worth: One of the respondents states better return on net worth as the reason for his strong preference for one company over the other.

(14) Conservatism: Conservatism is given as a strong reason for preference by one of the respondents.

(15) Better Possibility of Faster Paydown,

(16) Better Financial Conditions, and

(17) Lower Liabilities have each been given as reasons for preference by one of the respondents.

It has already been mentioned that different loan officers take different factors into consideration while making the decisions regarding term loans. Further, the weight given to the individual factors considered may be different. While analyzing the reasons given for their preference, it is observed that different respondents have different degrees of preference based on the same reason. For example, thirty officers who give "higher net income" as the reason for their preference show different degrees of preference based on higher income. Further, there is no uniformity as to the number of reasons given to support a strong preference or a weak one. One of the respondents who indicates a strong degree of preference has given only one reason for that strong preference. Some others who hold a weak preference have given more than one reasons for their weak preference. The tabulation on the following page shows the number of reasons given by different numbers of respondents, along with the degrees of preference based on those reasons.

Those who gave no reason for their preference accounted for the remaining four respondents, making a total of sixty-five who showed their preference for one company over the other under normal conditions.

Number of Reasons Given	Degree of Preference							
	Respondees		Weak		Moderate		Strong	
	No.	%	No.	%	No.	%	No.	%
0	4	6.16	1	1.54	1	1.54	2	3.08
1	18	27.69	4	6.15	13	20.00	1	1.54
2	25	38.46	11	16.92	12	18.46	2	3.08
3	11	16.92	5	7.69	6	9.23	0	--
4	1	1.54					1	1.54
5	6	9.23	1	1.54	1	1.54	4	6.15
Total	65	100.00	21	33.84	32	50.37	8	15.39

Analysis of Reasons for Preference Under Exist- ing Conditions

Data collected in response to this part of the question is tabulated in Table 12.

(1) Higher Net Income: Twenty-four (40.00 per cent) of the respondents give this reason for their preference. Of these twenty-four, two show weak preference, seventeen (28.33 per cent) indicate moderate preference, and five show strong preference.

(2) Better Debt to Worth Ratio: Twenty-three (38.33 per cent) respondents base their preference on the debt to worth ratio. Six (10 per cent) of these respondents hold weak preference, fourteen (23.33 per cent) show

TABLE 12.--Reasons for and degrees of preference under existing conditions.

Reasons for Preference	Degrees of Preference							
	Weak		Moderate		Strong		Total	
	No.	%	No.	%	No.	%	No.	%
1. Higher net income	2	3.33	17	28.33	5	8.33	24	40.00
2. Better debt to worth ratio	6	10.00	14	23.33	3	5.00	23	38.33
3. Larger cash flow	1	1.67	5	8.33	5	8.33	11	18.33
4. Larger net worth	1	1.67	8	13.33			9	15.00
5. More retained earnings	1	1.67	4	6.67			5	8.33
6. Better return on sales	3	5.00	2	3.33			5	8.33
7. Strong balance sheet			3	5.00	1	1.66	4	6.66
8. Better fixed assets to worth ratio	3	5.00			1	1.66	4	6.66
9. Greater ability to provide compensatory balance			4	6.66			4	6.66
10. Lower taxes			4	6.66			4	6.66
11. Deferred income taxes			4	6.66			4	6.66
12. Conservatism	1	1.67			1	1.67	2	3.33
13. Better return on net worth					2	3.33	2	3.33
14. Better financial conditions			2	3.33			2	3.33
15. Growth through retained earnings	1	1.67					1	1.67
16. Better possibility of faster paydown			1	1.67			1	1.67
17. Low liabilities			1	1.67			1	1.67
Total	19		69		18		106	

moderate preference, while three indicate strong preference for one company over the other.

(3) Larger Cash Flow: This is the reason given by eleven (18.33 per cent) of the respondents. Of these eleven, one indicates his preference as weak, while five state moderate preference. Another five indicate strong preference for one company over the other.

(4) Larger Net Worth: This accounts for nine (15.00 per cent) of the responses. The distribution into weak and moderate is one and eight. None states larger net worth as the reason for strong preference.

(5) More Retained Earnings: This is given as the reason for preference in five (8.33 per cent) of the responses. The distribution shows one in the weak category and four in the moderate category.

(6) Better Return on Sales: Five of the respondents base their preference on "better return on sales." Three of these indicate weak preference and the remaining two state their preference as moderate.

(7) Strong Balance Sheet: This is the reason stated by four (6.67 per cent) respondents. Preference is moderate in three cases while in the fourth case it is strong.

(8) Better Fixed Assets to Net Worth Ratio: Four of the respondents base their preference on "better fixed assets to net worth ratio." Three of these four respondents

have given their preference as weak, while the fourth states his preference as strong.

(9) Greater Ability to Provide Compensatory Balances:

Four respondents state that their preference was based on the greater ability of one company to provide compensatory balances. They rate their preferences as moderate.

(10) Lower Taxes: Lower taxes is the reason given by four of the respondents. They indicate their preference as moderate.

(11) Deferred Income Taxes: This reason has been stated by another four of the respondents. The degree of the preference they state is moderate.

(12) Conservatism: Conservatism is stated as the reason for strong preference by one of the respondents, while it is stated as a reason for weak preference by another respondent.

(13) Better Return on Net Worth: Two respondents who hold strong preference base it on the better return shown on net worth by one of the companies.

(14) Better Financial Condition: This is given by two respondents as a reason for their moderate preference for one of the companies.

(15) Growth Through Retained Earnings: One respondent gives this reason for his weak preference.

(16) Better Possibility of Faster Paydown: This is given as a basis for a moderate preference by another respondent.

(17) Low Liabilities: One of the respondees states this as the reason for his moderate preference for one company as compared to the other.

It may be stated again that different respondees give a different number of reasons and also have different degrees of preference based on those reasons. The following table gives the number of reasons, indicated by different numbers of respondees, along with the degree of preference based on those reasons.

Number of Reasons Given	Degree of Preference							
	Responses		Weak		Moderate		Strong	
	No.	%	No.	%	No.	%	No.	%
0	7	12.50	5	8.93	2	3.57	0	0
1	17	30.36	3	5.36	13	23.21	1	1.79
2	20	35.70	2	3.57	14	25.00	4	7.13
3	5	8.93	4	7.14	1	1.79		
4	1	1.79					1	1.79
5	6	10.72			5	8.93	1	1.79
Total	56	100.00	14	25.00	35	62.50	7	12.50

Statistical Analysis of Part I

Statistics is a theory of information. Its objective is to make inferences about a population of measurements based on information obtained from a sample.

These inferences may be phrased in one of the following two ways: (1) estimation, and (2) tests of hypotheses.

Estimation.--The objective of this procedure is to estimate or predict the values of one or more parameters of the population.

Tests of hypotheses.--This method of making an inference involves the test of a statistical hypothesis regarding the values of one or more parameters of the population. Some of the ideas in the theory of testing statistical hypotheses are found in the work of R. A. Fisher,¹ but explicit formulation as well as important basic concepts are attributable to J. Neyman and E. S. Pearson,² pioneers in this area of statistical inference. Current references include Cochran and Cox,³ Freeman,⁴ Mendel,⁵ and Mendenhall.⁶

¹R. A. Fisher, Contributions to Mathematical Statistics (New York: John Wiley and Sons, 1950).

²J. Neyman and E. S. Pearson, "On the Use and Interpretation of Certain Best Criteria for Purposes of Statistical Inference," Biometrika, XX-A (1928), 175-240; 263-294.

³W. C. Cochran and G. M. Cox, Experimental Designs (New York: John Wiley and Sons, Inc., 1957).

⁴Harold Freeman, Introduction to Statistical Inferences (Reading, Mass.: Addison-Wesley Publishing Company, Inc., 1963).

⁵John Mandel, The Statistical Analysis of Experimental Data (New York: John Wiley & Sons, 1964).

⁶William Mendenhall, Introduction to Linear Models

The Present Study

The purpose of this investigation was to test the null hypothesis that alternative methods of accounting for income taxes, when timing differences between taxable income and pre-tax accounting income exist, do not affect decisions relating to grant of term loans by large commercial banks. The alternative hypothesis states that alternative methods of accounting for income taxes, when timing differences between taxable income and pre-tax accounting income exist, influence decisions relating to the granting of term loans by large commercial banks.

Consider the total population of $N = 285$ loan officers from which a sample was drawn. We treat the $n = 70$ usable responses as a simple random sample from the population. Actually it represents a sample from the response stratum of the population. Since non-response is minimal and there appears to be no reason to think that the non-response stratum differs from the response stratum in preference pattern, non-response is ignored and the sample is considered as a simple random sample from the whole population.

Let P_N represent the proportion of the population consisting of those loan officers that do differentiate between the two companies under normal conditions and let

and Design and Analysis of Experiments (Belmont, Calif.: Wadsworth Publishing Company, Inc., 1964).

P_E represent the proportion under existing conditions. These two companies are similar except for their method of accounting for income taxes. Any difference perceived by the officers can be attributed to the variations in the methods of accounting. Statistical inferences are to be made about P_N and P_E .

Since the phrasing of questions one and two made it difficult for the respondees to refuse to differentiate, weak preferences are grouped with those responses where no preference is given. The results are tabulated below:

	Normal Condition		Existing Condition	
	No.	%	No.	%
Those who differentiate between the companies (moderate and strong preferences)	43	.61	42	.60
Others	27	.39	28	.40
Total	70	1.00	70	1.00

Figure 19, page 195, illustrates the probability of observing such a large sample proportion as a function of the population proportions. These data⁷ (for Fig. 19)

⁷See Appendix B.

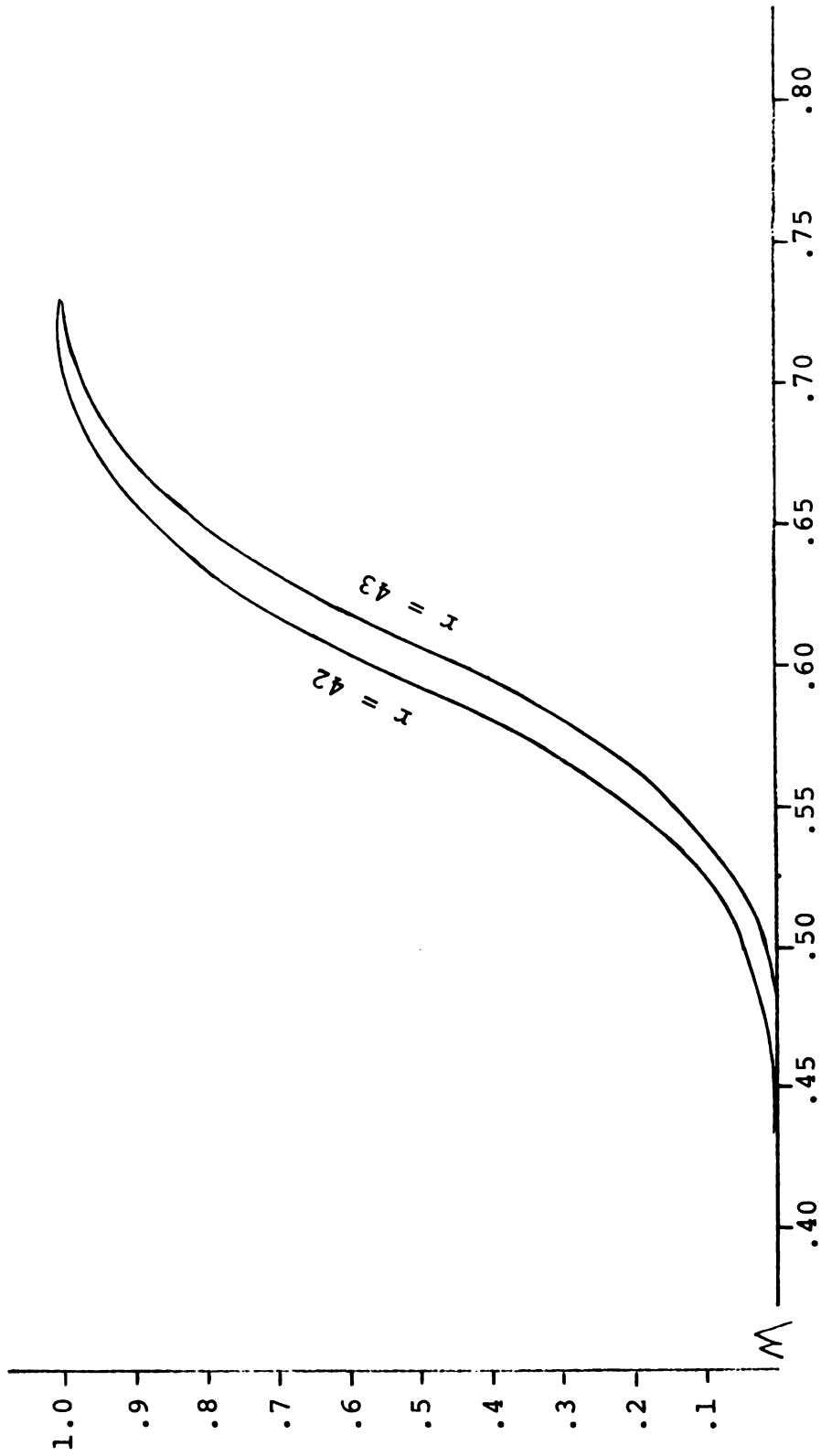


Fig. 19.--Tail probabilities of sample proportion as function of population proportion [$r = 42, 43$].

are computed using the first term of Wise's⁸ approximation to the hypergeometric distribution as follows:

N = total population, that is, number of officers

n = number of officers in the sample

k = number of officers who do differentiate

$P = \frac{k}{N}$ = proportion of officers in population who differentiate

X = number observed in the sample who do differentiate.

Then the probability

P_r [Exactly x officers who differentiate are found in the sample]

$= p(x) = p(N, n, h, x)$

$$= \frac{k!n!(N-k)!(N-n)!}{(k-x)!(n-x)!x!N!(N-k-n+x)!}$$

Where x is an interger such that

$$\max[0, n+k-N] \leq x \leq \min[n, k].$$

Binomial approximation.--When dealing with a large lot and a small sample from the lot, it is common practice to use the binomial distribution to obtain relevant

⁸M. E. Wise, "A Quickly Convergent Expansion for Cumulative Hypergeometric Probabilities, Direct and Inverse," Biometrika, XLI (1954), 317-329, quoted in G. J. Liberman and Donald B. Owen, Tables of Hypergeometric Probability Distribution (Stanford, Calif.: Stanford University Press, 1961), p. 22.

probabilities. As the sample becomes larger and larger part of the lot, the binomial approximation becomes poorer and poorer.

Wise⁹ has refined the usual binomial approximation and gives a series of representations for the hypergeometric distribution. In the present study, the sample size is less than .4 of the population so that the first term of Wise's series is sufficient for computation. The first term gives the approximation

$$\Pr[X \geq r] \approx \Pr[Y \geq r]$$

where $Y \sim \text{Binomial}$ with parameters n and

$$p = \frac{k - \frac{1}{2}(r-1)}{N - \frac{1}{2}(r-1)} \cdot 10$$

The right hand side is tabulated in Tables of the Cumulative Binomial Probability Distribution¹¹ and is graphed as a function of P_N and P_E for results $r = 43$ and $r = 42$, respectively.

The graphs indicate the significance of the results. Figure 19 shows that if $P_N \leq .3$ then the probability of

⁹Ibid., pp. 21-22.

¹⁰The representation is derived in Appendix C.

¹¹The Staff of the Computation Laboratory, Tables of the Cumulative Binomial Probability Distribution (Cambridge, Mass.: Harvard University Press, 1955).

observing such a large proportion $\hat{P}_N \geq \frac{43}{70}$ in the sample is less than .05. That is, the data rejects the null hypothesis $P_N \leq .3$ at level $\alpha = .05$. Similarly, Figure 19 also shows that the data rejects at level $\alpha = .05$ null hypothesis $P_N \leq .3$ (for $r = 42$).

Of course, the data provides unbiased point estimates of P_N and P_E , namely,

$$\hat{P}_N = .61 \qquad \hat{P}_E = .60$$

Variances and standard deviations.--A statistical analysis should take into account the accuracy of estimation. The random variables equal the number of officers in sample who do differentiate between two companies under normal conditions. The random variables follow hypergeometric distribution. The formulas for variances are:

$$\hat{V}(\hat{P}_N) = \frac{P_N(1-P_N)(N-n)}{n(N-1)} \text{ and } \hat{V}(\hat{P}_E) = \frac{P_E(1-P_E)(N-n)}{n(N-1)}$$

with $N = 285$ and $n = 70$. Using the sample estimates for P_N and P_E , the estimates of the variances are

$$\hat{V}(\hat{P}_N) = .002573 \qquad \text{and} \qquad \hat{V}(\hat{P}_E) = .002595$$

and estimates of the standard deviations are

$$\hat{\delta}(\hat{P}_N) = .05 \qquad \text{and} \qquad \hat{\delta}(\hat{P}_E) = .05.$$

Confidence limits.--The above cases lie in the range in which the normal approximation is recommended.¹² Accordingly, the confidence limits for P_N are,

$$p_{N\pm} [t(1-f) \sqrt{p_N(1-p_N)/(n-1)} + \frac{1}{2n}]$$

$f = \frac{n}{N}$ and t is the normal deviate corresponding to the confidence probability and $\frac{1}{2n}$ is a correction for continuity. Confidence limits for

$$\begin{aligned} P_N &= .61 \pm \left[1.96 \sqrt{\frac{(\frac{215}{285}) (.61) (.39)}{(70-1)}} + \frac{1}{2n} \right] \\ &= .61 \pm [1.96 (.051) + .007] \\ &= .61 \pm .11 \end{aligned}$$

$$P_{N_L} = .50$$

and

$$P_{N_U} = .72$$

The confidence limits for

$$\begin{aligned} P_E &= .60 \pm \left[1.96 \sqrt{\frac{(\frac{215}{285}) (.6) (.4)}{69}} + \frac{1}{140} \right] \\ &= .60 \pm .11 \end{aligned}$$

$$P_{E_L} = .49$$

and

$$P_{E_U} = .71$$

¹²See W. G. Cochran, Sampling Techniques (New York: John Wiley and Sons, Inc., 1963), p. 57.

Analysis of Part II of the Questionnaire

In this part there are eight questions to be answered within the context of normal conditions and ten questions are to be answered under existing conditions when there is acute shortage of loanable funds. The first eight questions deal with the usual terms that are included in a term loan agreement. A study of the answers to these eight questions should indicate the preference shown by the lender for either of the companies. The difference in answers to these questions establishes this preference. The two companies are similar except for their methods of accounting for income taxes. If the differences resulting from the use of different methods of accounting for income taxes influence the decision of the participant his answer to the question should be different for the two companies.

Questions nine and ten relate to credit rationing when funds available for loans are less than the demand for the loans. The allocation of the available funds should indicate the preference for one or the other company.

Analysis of Data Collected for Normal Conditions

Question 1:

1. The rate of interest to
charged

Jaytee Roysons

The rate of interest charged is stated in two ways:

(a) floating rate, and (b) fixed or flat rate.

Floating rate.--The rate of interest fluctuates with the prime rate. It is stated as prime rate plus a percentage.

Flat or fixed rate.--In this case the rate is stated in percentage per annum. It does not vary with the change in the prime rate, as does the floating rate.

Fifty-seven (81.43 per cent) respondees state floating rates, while twelve (17.14 per cent) give fixed or flat rates of interest.¹³

The rate of interest stated for Jaytee Bakeries, Inc. ranges from prime rate plus $1/4$ of 1 per cent to prime rate plus $2\ 1/2$ per cent per annum. For Roysons the respective range is from prime rate plus $1/4$ of 1 per cent to prime rate plus $2\ 3/4$ per cent per annum. Thus we see that the range of interest rates to be charged to Roysons Bakeries, Inc. is higher by $1/4$ of 1 per cent. The flat rates of interest range from $5\ 1/2$ of 1 per cent to $9\ 1/2$ for Jaytee, and from $5\ 1/2$ to 10 per cent for Roysons.¹⁴ Thus we see that the range of interest rates to be charged to Roysons Bakeries, Inc. is higher by $1/2$ of 1 per cent.

¹³See Appendix D, Table D-1.

¹⁴See Appendix D, Table D-2.

There are eighteen¹⁵ respondees who give different rates of interest for Jaytee Bakeries, Inc. and for Roysons Bakeries, Inc. Thirteen of these state the rate in terms of percentage plus the prime rate. The rate of interest in these cases ranges from prime rate plus 1/4 per cent to prime rate plus 2 1/2 per cent per annum for Jaytee Bakeries, Inc. and for Roysons the respective range is from prime rate plus 1/2 per cent to 2 3/4 per cent per annum. Five respondees state flat rates. The rate of interest in their cases ranges from 6 3/4 per cent to 9 1/2 per cent per annum for Jaytee and for Roysons it ranges from 7 per cent to 10 per cent per annum.

The average difference in interest rate between the two companies was 1/4 per cent. In two cases Jaytee is charged 1/4 per cent higher than Roysons while in sixteen cases the reverse is true.

It has been mentioned already that banks can vary the rate of interest within a small range.¹⁶ Their discretion in the area of interest rate is very limited. This limitation is greater under normal conditions when the banks are looking for outlets for their loanable funds. Banks can show the difference in ways other than in the direct interest rate charged. However, eighteen (28.57

¹⁵ See Appendix D, Table D-3.

¹⁶ See Chapter IV, pages 115 and 116.

per cent) of the respondees charge different rates to the two bakeries. The difference in the rate of interest averaged to .2 per cent.

Question 2:

2. The compensatory balances to Jaytee Roysons
be maintained.

Compensating balances may be defined as that portion of a bank's customer deposits which affords the bank the opportunity to profit. The term compensating balances, as employed by the bankers, is a phrase which recognizes that deposit balances include potential compensation and possible future profits. However, it is an arbitrary way of increasing the interest rate which requires the customer to maintain account balances in excess of that which they need.

Corporate controllers have become very conscious of the value of investing surplus cash whenever they do not need it in the near future. They have also become aware of the opportunity cost involved in maintaining the compensating balances. In view of the adverse reaction of the corporate controllers, banks do not exercise much discretion in arbitrarily increasing the compensating balance requirements. The usual requirement¹⁷ is between 10 to 20 per cent. There is one respondent who states different compensatory balance requirements for the two

¹⁷See Appendix D, Table D-4.

companies. In this case, Jaytee Bakeries, Inc. is required to maintain 10 per cent, while Roysons Bakeries is required to maintain 15 per cent of the loan outstanding.

Question 3:

- | | |
|--|---------------------|
| 3. Minimum working capital
to be had. | Jaytee Roysons |
|--|---------------------|

There are only two respondees who prescribe different working capital requirements for the two companies.¹⁸

As already discussed, the current ratio, quick ratio, working capital, inventory turnover and receivable turnover are very important in a short-term loan but do not have the same emphasis in decisions about the term loans which have longer maturities.

Question 4:

- | | |
|---|---------------------|
| 4. Maximum amount of further
debt the companies would
be permitted. | Jaytee Roysons |
|---|---------------------|

Different respondees give different amounts of debts that the companies can incur. The answer to this question ranges all the way from the phrase "depends on needs" to specific monetary amounts. There are only four responses where we see different requirements for the two

¹⁸See Appendix D, Table D-5.

companies. In addition to those who give the amount in thousands of dollars,¹⁹ fourteen simply state "none without permission" and one answers "depends on needs."

Three respondees give the answer "negotiated." In one case there is no limit stipulated, but further debt is allowed only for the purchase of additional equipment. The amount of the loan would be limited to 60 per cent of the purchase price of such equipment. One respondee allows loans which would be subordinated to the bank loans. One respondee does not permit any additional loan without further equity. The remaining responses give a ratio which is to be maintained between the debt and net worth. Only four of the respondees state different amounts, and two state different ratios for the two companies.

Question 5:

- | | |
|--|-------------------|
| 5. Maximum amount of annual dividends to be permitted. | Jaytee Roysons |
|--|-------------------|

Some officers state definite figures in response to this question while some others limit the dividends to the amount of excess of a certain minimum of cash flow or net income. Some officers do not permit a dividend if insiders hold all stock. There are some loan officers who allow dividends only if the cash flow or net income exceeds

¹⁹See Appendix D, Table D-6.

certain amounts. In some cases the bank officers demand collateral if the management insists upon the present liberal dividend payout.

There are six respondees who state different amounts of dividend payments²⁰ for the two companies. In these cases, the difference between the maximum amounts permitted for annual dividend for the two companies range between 20 and 30 per cent. Another four differed on the basis adopted for calculations.

Question 6:

6. Maximum amounts of officers' salaries to be permitted. Jaytee Roysons

The data collected shows that there are only two bank officers who state different amounts for the maximum salaries of the officers. In another case one officer does not lend to Roysons. The banks usually do not put any limit on the officers' salaries unless these officers are also the principal stockholders of the company. This explains the reason for the absence of emphasis on this point. This is also the case with the amount of dividends. One of the bank officers states:

With the assumption of common stock entirely owned by management and the cutting back of dividends, there would be a trade off between officers' salaries and

²⁰See Appendix D, Table D-7.

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company."

Question 7:

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dividend income. A compromise would have to be agreed upon between bank and management.

Another officer states: "Usually we do not limit unless officers are also principal stockholders of the company."

Question 7:

7. If you think that the companies Jaytee Roysons should obtain more net worth by selling more stocks, how much stock would you suggest for each company? Please give the minimum figures suggested.

The different methods of accounting for income taxes result in different amounts of net worth of the two companies. The company adopting the comprehensive method of allocation of interperiod income taxes reports a lower figure for the net worth. Therefore this company appears to have a higher debt to worth ratio. If this ratio causes some feeling of greater risk to the officer, he may suggest the issue of more equity to support the loan. However, in discussion with various loan officers, it was observed that they usually do not suggest issuing further equity. The reason for this is that it is costly to sell stock for small amounts. The sale of stock may also cause a dilution of the equity of the previous stockholders. A bank loan officer expresses his view on this point:

It would be necessary for the bank to know management's growth policies. If it plans further expansion, equity financing may be considered, but the cost factor must

be determined in relation to other service costs. If it plans to stay as is with the new bakery, then probably it would prefer to stay closely held corporation and not suffer possible dilution of earnings.

Sixteen respondents suggest the issue of different amounts of stock.²¹ From the data tabulated, it can be observed that the difference in the amount of equity to be issued ranges from \$100,000 to \$300,000. In spite of the bankers' reluctance to ask for the issue of equity, twenty²² recommend the issue of new equity. Sixteen (80.00 per cent) of them suggest different amounts for the two companies.

Question 8:

8. Would you demand collateral? If yes, please state the reasons for this in the space provided on the next page.	Jaytee	Roysons
	<u>Yes</u>	<u>Yes</u>
	<u>No</u>	<u>No</u>

The data collected in response to this question reveals that thirty-two (45.71 per cent) of the respondents do not ask for collateral from either company. Twenty-seven (38.57 per cent) ask for collateral from both the companies. Nine (12.7 per cent) respondents ask for collateral from one company only. Of these nine respondents, eight do not ask for collateral from Jaytee Bakeries, Inc.

²¹See Appendix D, Table D-8.

²²See Appendix D, Table D-9.

but do from Roysons Bakeries, Inc. One asks for collateral from Jaytee Bakeries and not from Roysons Bakeries, Inc.

The reasons given for requiring collateral in these cases are: "more extended condition of Roysons," "less favorable return on sales," and "rather heavy on debt." Some of the officers give long written comments in justification of their demand for collateral. One of these is given below:

Uncertainty with respect to conditions and use of purchased facilities for expansion, as well as, unknowns relative to marketing of additional products and public acceptance, previous operating figures of purchased plant, personnel situation, etc. Projections of future cash flow, too, are at least uncertain, and it is best to take collaterals at the outset and release it later if experience and circumstances are good enough.

A different view is expressed in the following statement:

I would not require a definite pledge of assets but would require a negative clause prohibiting the pledge of any assets to anyone else, and possibly the right to call for a pledge of assets in the events of default or if we deem ourselves insecure.

Another officer has stated:

A general yardstick has been in existence for sometime in banking that unsecured term requirements should not exceed fifty percent of working capital or twenty-five percent of net worth.

One officer gives low balance as the reason for asking for collateral:

Coll. [collateral] because, while the co. [company] may well warrant unsecured cr. [credit], the resulting banking relationships, i.e., balances are low .. [therefore] why make it unsecure?

It can be observed again that there is no uniformity among the officers with regard to the policy on collateral requirements. Different factors may be evaluated differently by different officers.

Analysis of Data Collected for Existing Conditions

Question 1:

1. The rate of interest to be charged. Jaytee Roysons

The rate of interest charged is stated as either floating rate, or fixed rate. Thirty-eight (54.28 per cent)²³ have stated floating rates and nineteen (27.14 per cent) have stated fixed rates.²⁴ Thirteen of the officers recommend no loans at all.

Sixteen of these fifty-seven respondees, or 28.07 per cent of the respondees, state different rates of interest to be charged for these two companies.²⁵

The rate of interest in these cases ranges from prime rate plus 3/4 per cent to prime rate plus 1 per cent per annum for both the companies in the six cases where the respondees state floating rates.

²³See Appendix E, Table E-1.

²⁴See Appendix E, Table E-2.

²⁵See Appendix E, Table E-3.

The rate of interest ranges from 8 3/4 per cent to 10 1/2 per cent for Jaytee and from 9 to 11 per cent per annum for Roysons in the ten cases where the respondees state fixed rate of interest.

The difference in the rate of interest averages to about 1/4 per cent per annum. In one case there is no loan for Roysons while Jaytee is charged 9 1/2 per cent per annum. Charging different rates of interest indicates that these respondees do believe that there is a difference between the two companies.

Question 2:

2. The compensatory balances to be maintained.	Jaytee Roysons
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The usual requirement is between 15 and 20 per cent. During the discussion with different loan officers, the writer observed two different views regarding the balance requirements. There are officers who expressly include this in the loan agreement. Others look at the previous record of the customer. If an adequate balance has been maintained by the customer in the past, they do not include this clause in the agreement.

Difference in the compensatory balance requirement²⁶ appears in two cases only. In one case, the balance requirement is stated as 20 per cent for Jaytee and 30 per

²⁶See Appendix E, Table E-4.

cent for Roysons, while in the other case there is 20 per cent requirement for Jaytee and no loan is made to Roysons.

Question 3:

- | | |
|--|-------------------|
| 3. Minimum working capital
to be had. | Jaytee Roysons |
|--|-------------------|

Two respondees prescribe different working capital requirements for the two companies. The third does not recommend a loan for one company. As already stated, the working capital does not receive the same emphasis in term loan cases as it does in short-term loans.²⁷

Question 4:

- | | |
|---|-------------------|
| 4. Maximum amount of further
debt the companies would
be permitted. | Jaytee Roysons |
|---|-------------------|

One respondee permits only subordinated loans. Another holds the view that no further debt should be incurred without further equity. One officer allows loans up to 60 per cent of the purchase price of equipment. Two tie the amount of debt to the net worth of the company. Six of the respondees²⁸ give different figures for the further amount of debt that each company can incur.

²⁷ See Appendix E, Table E-5.

²⁸ See Appendix E, Table E-6.

There are very few definite answers to this question. During the discussion with the loan officers, it was noted that they keep the purpose of each loan in mind as they consider the request. Accordingly, a precise answer to this question is difficult without the details for the loan requirements.

Question 5:

- | | |
|--|-------------------|
| 5. Maximum amount of annual dividends to be permitted. | Jaytee Roysons |
|--|-------------------|

Different loan officers state different amounts of annual dividends that can be distributed to the stockholders. Some officers give definite figures while some others limit the dividends to the amount in excess of a certain minimum cash flow or net²⁹ income level. Eleven respondees give different figures for the maximum amount of dividends to be permitted by each company. The differences range from 20 per cent to more than 60 per cent.

Question 6:

- | | |
|--|-------------------|
| 6. Maximum amount of officers' salaries to be permitted. | Jaytee Roysons |
|--|-------------------|

The data collected indicates that there are only three officers who indicate different maximum amounts for officers' salaries for each company. As already mentioned,

²⁹See Appendix E, Table E-7.

banks usually do not put any limit on the officers' salaries unless the officers are also the principal stockholders. This explains the reason for limited emphasis on this point.

Question 7:

- | | | |
|---|--------|---------|
| 7. If you think that the companies should obtain more net worth by selling more stocks, how much stock would you suggest for each company? Please give the minimum figures suggested. | Jaytee | Roysons |
|---|--------|---------|

The data³⁰ shows that the difference in the amount of stocks to be sold ranges from \$100,000 to \$300,000. In spite of the banks' reluctance to ask for the sale of more stocks, twenty-two respondees suggest the sale of more stocks. Sixteen of them suggest different amounts for the two different companies.

Question 8:

- | | | |
|--|------------------|------------------|
| 8. Would you demand collateral?
If yes, please state the reasons for this in the space provided on the next page. | Jaytee | Roysons |
| | <u>Yes</u>
No | <u>Yes</u>
No |

The data collected in response to this question indicates that twenty-four respondees do not ask for collateral from either company. Twenty-one ask for similar

³⁰ See Appendix E, Tables E-8 and E-9.

collateral from both companies. Ten of the respondents treat the two companies differently. Nine respondents do not ask collateral from one company but do want collateral from the other company. One respondent lends to one company with collateral but refuses to make the loan to the other company. The reasons given for asking for collateral in these cases are: "more extended condition of Roysons," "less favorable return on sale," and "rather heavy on debt."

It may again be emphasized that there is no uniformity among the officers with regards to the policy on collateral. Different factors may be evaluated differently by different officers.

Question 9:

- | | |
|--|-----------------------|
| <p>9. If, due to acute shortage and previous commitments of loanable funds, the amount available for lending be \$500,000, how would you allocate this amount between the two companies?</p> | <p>Jaytee Roysons</p> |
|--|-----------------------|

The data collected is tabulated on the next page. Thirty-one respondents allocate different amounts to the two companies. From this we may conclude that these thirty-one (44.28 per cent) respondents do perceive the two companies differently. However, ten respondents would not make loans under the existing conditions because of the banks' policies regarding acquisition loans. Therefore only sixty

Allocation of \$500,000

Number	Amount--Jaytee	Amount--Roysons
2	0	500
15	500	0
1	375	125
3	350	150
7	300	200
3	275	225
16	250	250
6	Indifferent	Indifferent
3	No Allocation	No Allocation
14	No Loan	No Loan
70 Total		

respondees make allocations. Accordingly, the percentage of loan officers who treat the two companies differently increases to 51.67 per cent. Since the two companies are similar except for the difference in methods of accounting for income taxes, the difference shown by these loan officers can be attributed to the difference in the method of accounting for income taxes.

Question 10:

10. If the amount available in Jaytee Roysons
 9, above, is \$800,000, how
 would you allocate?

The data collected in response to this question is tabulated on the next page.

Allocation of \$800,000

Number	Amount--Jaytee	Amount--Roysons
2	0	500
2	570	230
1	550	250
9	500	300
5	500	0
4	450	350
2	425	375
23	400	400
5	Indifferent	Indifferent
3	No Allocation	No Allocation
14	No Loan	No Loan
<u>70</u> Total		

The above table shows that twenty-five respondents allocate different amounts to the two companies. The difference ranges from \$35,000 to \$500,000. From this it may be inferred that these twenty-five (35.71 per cent) respondents think that the two companies are dissimilar. When we consider that only sixty of the respondents are in fact answering this question, the proportion of officers who view these two companies as unequal increases to 41.67 per cent. The only significant difference in the two companies is their method of accounting for income taxes. Hence, any difference perceived by the loan officers must be attributed to the difference in the method of accounting for income taxes.

In this section data collected in part two of the questionnaire has been analyzed. Responses to each

question, both in the light of normal conditions and also under existing conditions have been analyzed separately. The number of respondees who give different answers to the same questions relating to the two companies is given in Table 13. These answers are given for normal conditions.

TABLE 13.--Number of respondees giving different answers in response to individual questions in the light of normal conditions.

Question Number	1	2	3	4	5	6	7	8
Number of Respondees	18	1	2	6	10	3	15	9

From the above figures it may be noted that the number of respondees whose answers to the same questions differ for the two companies ranges from one to eighteen for the individual questions. Thus the same question may be given different degrees of emphasis by the different officers.

It may be that interest rate is the most important factor for some officers, and they indicate their preference by giving different rates for the company they preferred. With these officers, an increase in the interest rate for the one company may compensate for the differences perceived between them. Another officer may be satisfied that the sale of more stocks by one company will make up for the difference he perceives between the two companies. Still another officer may show his preference by indicating

differences in answer to more than one question. The number of differences indicated by the various officers is listed in Table 14.

TABLE 14.--Number of questions answered differently by respondees in the light of normal conditions.

Number of Questions	1	2	3	4	Total
Number of Respondees	14	12	6	2	34

Thus, there are thirty-four officers who give different answers for the same questions relating to the two companies under normal conditions. Fourteen respondees indicate a difference in reply to one question only. Twelve respondees give different answers to two questions. Six of the respondees state different responses to three questions, while the remaining two indicate different answers for four of the questions.

There are ten questions answered for existing conditions. There are respondees who give different answers to the same question when it is related to the two companies. The number of respondees who give different answers for each of the questions is given in Table 15.

TABLE 15.--Number of respondees giving different answers to individual questions under existing conditions.

Question Number	1	2	3	4	5	6	7	8	9	10
Number of Respondees	16	2	2	7	11	4	18	10	31	25

The data shows that the number of officers who state different answers to the same question ranges from two for the second question to thirty-one for the ninth question. It may also be noted that the total number of differences in responses numbers 126 for the 70 respondees.

There are respondees who indicate a difference in one question only while others indicate differences in response to more than one question. The number of officers indicating differences in responses are tabulated in Table 16.

TABLE 16.--Number of questions answered differently by number of respondees under existing conditions.

Number of Questions	1	2	3	4	5	6	10	Total
Number of Respondees	9	21	3	3	4	4	1	45

Out of a total of seventy respondees forty-five (64.00 per cent) indicate that they consider the two companies as dissimilar. They indicate this by their difference in answers to the various questions relating to the two companies. Ten of the respondees refuse loans to either of the companies for policy reasons. Thus the number of respondees who answered this part of the questionnaire is reduced to sixty. On this basis, 75 per cent of the officers consider the two companies dissimilar.

Statistical Analysis of
Part II

The effect of the preferences of the loan officers is measured in Part II of the questionnaire. There are eight questions to be answered under both the normal and existing conditions. However, two more questions, that is questions 9 and 10, are answered under existing conditions. The eight questions relate to the usual terms included in a loan agreement. Any difference in answer can be again attributed to the variations in the methods of accounting.

Let P_{N_i} represent the proportion of the population consisting of loan officers who indicate a difference between the two companies by responding with different answers to i th question under normal conditions, where $i = 1, \dots, 8$, and P_{E_i} represents the proportion under existing conditions. Statistical inferences are to be drawn about P_{N_i} and P_{E_i} . There are only two alternatives, that is, either there is difference or there is no difference in the answers. The results are tabulated on page 222.

Tables³¹ are computed showing the probability of observing such a sample proportions as function of the population proportions. These data for tables are computed using Wise's approximation to the hypergeometric

³¹See Appendix F.

Question No.	Normal Conditions				Existing Conditions			
	Difference in Answers		No Differ- ence in Answers		Difference in Answers		No Differ- ence in Answers	
	No.	%	No.	%	No.	%	No.	%
1	18	.26	52	.74	16	.23	54	.77
2	1	.01	69	.99	2	.03	68	.97
3	2	.03	68	.97	2	.03	68	.97
4	6	.09	64	.91	7	.10	63	.90
5	10	.14	60	.86	11	.16	59	.84
6	3	.04	67	.96	4	.06	66	.94
7	16	.23	54	.77	18	.26	52	.74
8	9	.13	61	.87	10	.14	60	.86

distribution as was done for statistical analysis in Part I.

The tables indicate the significance of the results. Tables³² show that if $P_{N_i} \leq .3$, then the probability of observing proportions $\hat{P}_{N_i} \geq \frac{18}{70}, \frac{1}{70}, \frac{2}{70}, \frac{6}{70}, \frac{10}{70}, \frac{3}{70}, \frac{16}{70}$ or $\frac{9}{70}$ in the sample is more than .05, that is the data does not reject the null hypothesis at level $\alpha = .05$. The probability is greater than .10, that is, the data does not reject the null hypothesis even at level $\alpha = .10$.

Tables³³ show that if $P_{E_i} \leq .30$, then the probability of observing proportions $\hat{P}_{E_i} \geq \frac{16}{70}, \frac{2}{70}, \frac{7}{70}, \frac{11}{70}, \frac{4}{70}, \frac{18}{70}$ or $\frac{10}{70}$ in the sample is greater than .05, that is the data does not reject the null hypothesis at level $\alpha = .05$. The probability is greater than .10. That is, the data

³²Ibid.

³³Ibid.

does not reject the null hypothesis even at level $\alpha = .10$. Other data computed for these observations appear on the next page.

The results from questions nine and ten are tabulated as follows:

	Question 9		Question 10	
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>
Difference	31	.44	25	.36
No Difference	39	.56	45	.64

Figure 20, page 225, shows the probability of observing such a large sample proportion as a function of the population proportion. The data for the figure is computed in the same manner as is done for Part I analysis. The figure indicates the significance of the results. Figure 20, page 225, shows that if $P_{E_9} \leq .3$ then the probability of observing such a large proportion $\hat{P}_{E_9} \geq \frac{31}{70}$ in the sample is less than .05. That is, the data rejects the null hypothesis $P_{E_9} \leq .3$ at level $\alpha = .05$. Figure 20 shows that if $P_{E_{10}} \leq .30$ then the probability of observing such a large proportion $\hat{P}_{E_{10}} \geq \frac{25}{70}$ in the sample is more than .10, that is, the data does not reject the null hypothesis even at level $\alpha = .10$.

Variances, standard deviations and confidence limits are as follows:

TABLE 17.--Variances, standard deviation and confidence limits^a for individual observations under normal conditions.

Question Number	Observations	p	$\hat{V}(p)$	$\hat{\sigma}$	\hat{P}_L 95%	\hat{P}_U 95%
1	18	.26	.002078	.046	.160	.376
2	1	.01	.000107	.010	.0004	.076
3	2	.03	.000314	.018	.004	.099
4	6	.09	.000885	.030	.033	.177
5	10	.14	.001300	.036	.071	.245
6	3	.04	.000415	.020	.009	.120
7	16	.23	.001913	.044	.136	.345
8	9	.13	.001221	.035	.061	.230

^aConfidence limits for ten or less observations in the sample were computed from R. A. Fisher and Frank Yates, Statistical Tables for Biological Agricultural and Medical Research (London: Oliver and Boyd, 1963). For observations above ten and below twenty-three confidence limits were found from H. C. Romig, 50-1000 Binomial Tables (New York: John Wiley and Sons, 1952).

TABLE 18.--Variances, standard deviation and confidence limits^a for individual observations under existing conditions.

Question Number	Observations	p	$\hat{V}(p)$	$\hat{\sigma}$	\hat{P}_L 95%	\hat{P}_U 95%
1	16	.23	.001913	.044	.136	.345
2	2	.03	.000314	.018	.004	.09
3	2	.03	.000314	.018	.004	.09
4	7	.10	.000972	.031	.041	.195
5	11	.16	.001452	.038	.081	.241
6	4	.06	.000609	.025	.016	.140
7	18	.26	.002078	.046	.160	.376
8	10	.14	.001300	.036	.071	.245

^aSee Footnote a, above.

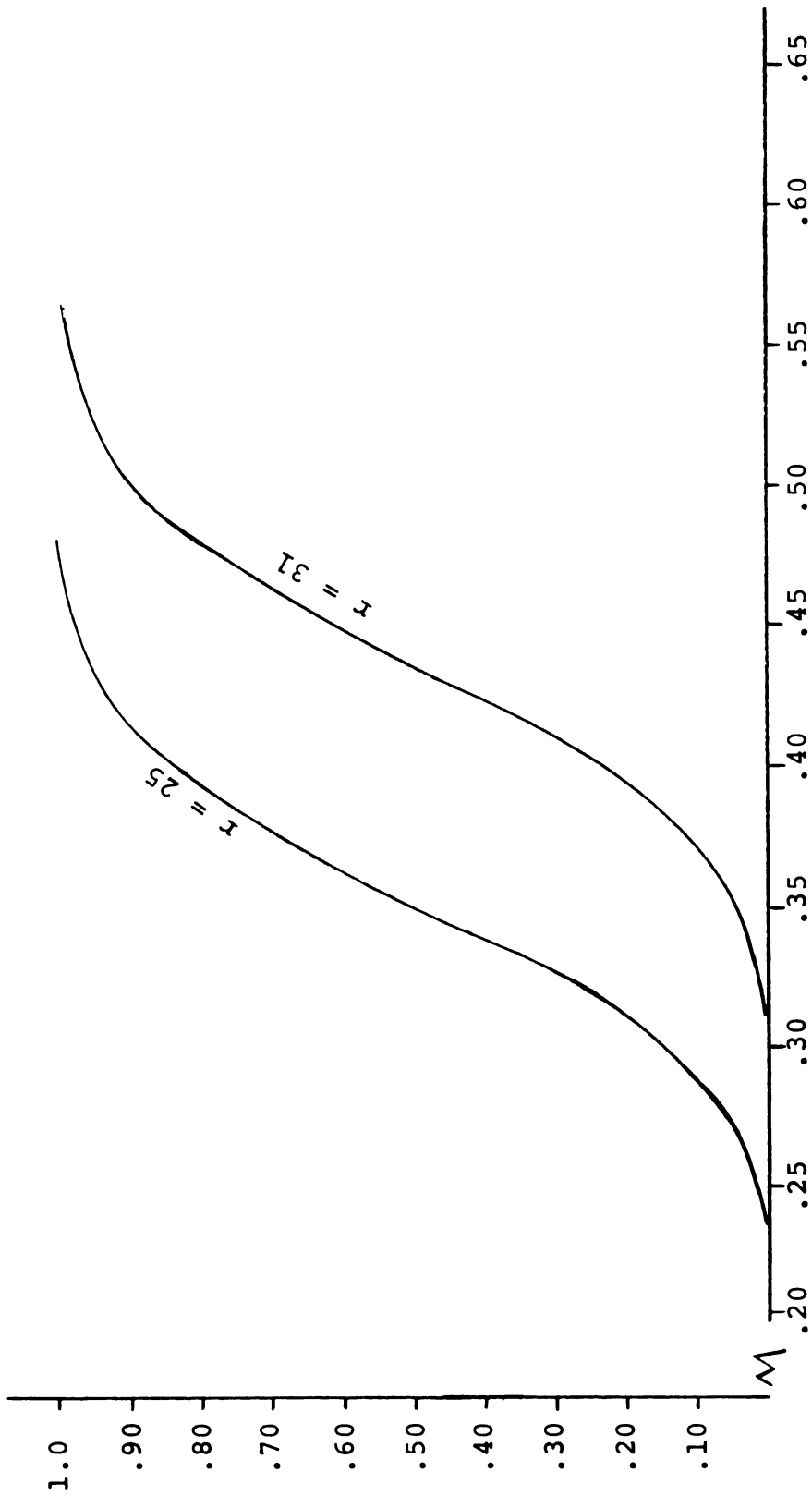


Fig. 20.--Tail probabilities of sample proportion as function of population proportion [$r = 25, 31$].

$$\hat{V}(\hat{P}_{E_9}) = .0027 \quad \hat{\delta}(P_{N_9}) = .052 \quad \hat{P}_{E_U} = .52 \quad \hat{P}_{E_L} = .36$$

$$\hat{V}(\hat{P}_{E_{10}}) = .0025 \quad \hat{\delta}(P_{N_{10}}) = .050 \quad \hat{P}_{E_U} = .44 \quad \hat{P}_{E_L} = .28$$

Different officers place different emphasis on different questions. Some may indicate their differences in one question only, while others may show differences in more than one question. Let \hat{P}_N and \hat{P}_E represent the proportion of the population who indicate differences in answer to one or more questions, under normal and existing conditions respectively. The results are tabulated as follows:

	Normal Conditions		Existing Conditions	
	No.	%	No.	%
Difference	34	.49	45	.64
No Difference	<u>36</u>	<u>.51</u>	<u>25</u>	<u>.36</u>
	70	1.00	70	1.00

Figure 21, page 227, shows the probability of observing such a large sample proportion as a function of the population proportion. The data for the figure is computed in the same manner as done earlier.

The figure indicates the significance of the results. Figure 21 shows that if $P_N \leq .3$ and $P_E \leq .3$, then the probabilities of observing proportions $P_N > \frac{34}{70}$ and $P_E > \frac{45}{70}$ in the sample are less than .05. That is the data reject the null hypothesis at level $\alpha = .05$.

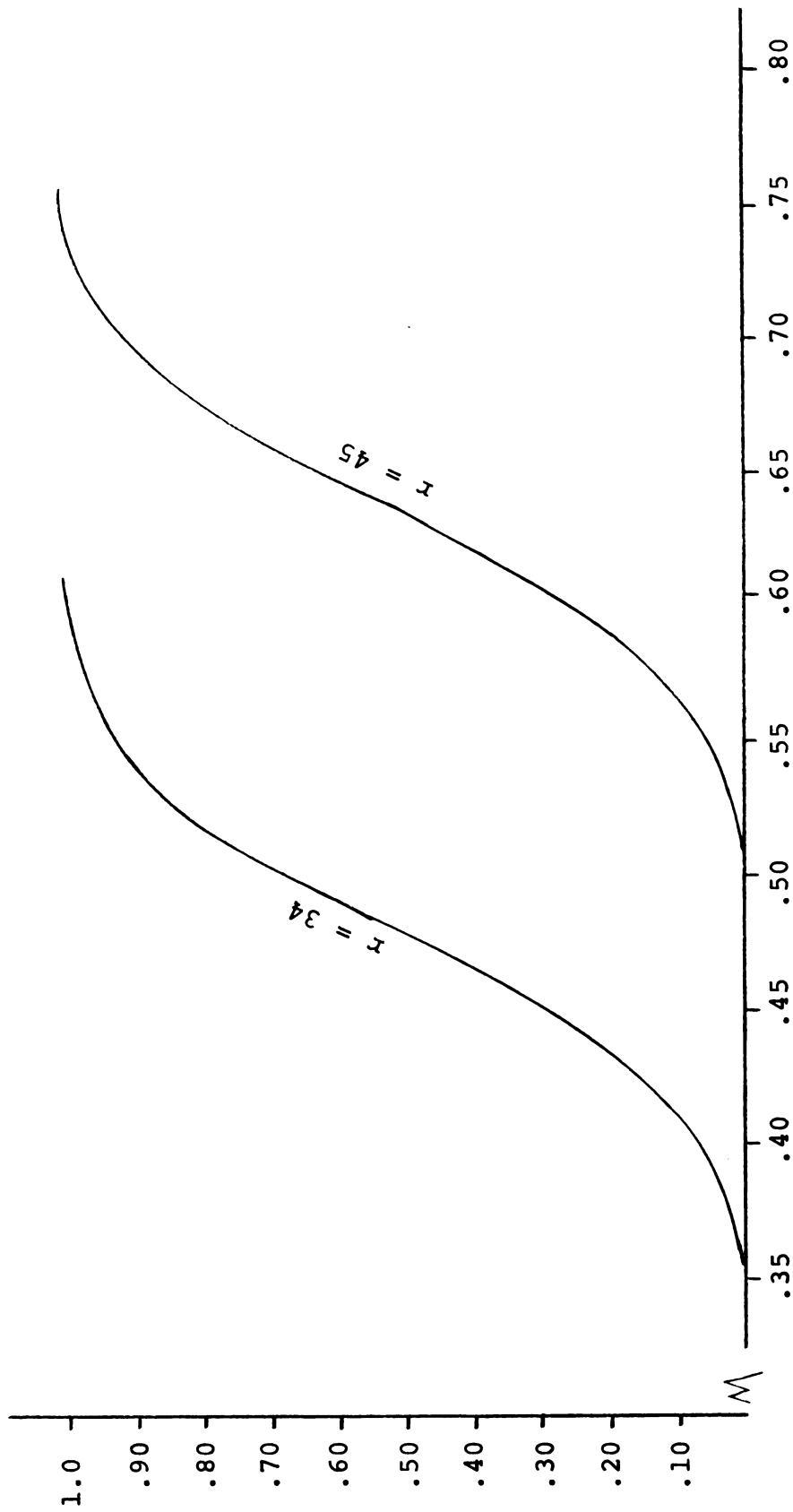


Fig. 21.--Tail probabilities of sample proportion as function of population proportion [$r = 34, 45$].

Variances, standard deviations and confidence limits are:

$$\begin{array}{llll} \hat{V}(\hat{P}_N) = .0027 & \hat{\delta}(P_N) = .052 & \hat{P}_{N_U} = .57 & \hat{P}_{N_L} = .41 \\ \hat{V}(\hat{P}_E) = .0025 & \hat{\delta}(P_E) = .050 & \hat{P}_{E_U} = .72 & \hat{P}_{E_L} = .56 \end{array}$$

The data collected from the questionnaire survey has been presented and analyzed in this section. Another attempt was made to study the effects of alternative methods of accounting for income taxes without requiring the loan officers to make a comparison between the two companies. The loan officers were asked to process the two loan applications separately in their usual routine. The following section discusses these field studies followed by evaluation of both the questionnaire survey and the field studies in the next chapter.

Field Studies

This section provides a description of four field studies conducted and a discussion of the results of the field studies. For these studies, loan officers in various banks were asked to cooperate in the investigation. These officers were not included in the list from which the sample for the questionnaire survey was selected. However, the same cases were used. The loan officers were requested to process the two loan applications separately in the usual routine used for processing such applications.

The loan officers who offered to cooperate were provided with all the data generated for the two companies. The loan officer in each case is a vice-president of the bank. Each was asked if he needed more information or had any other questions. The questions the officers raised were discussed and any further information asked for was given. In most cases, these questions were related to the previous workings of the companies to be acquired, such as the reasons for the acquisition and the life of the equipment to be acquired.

These officers sent the data, along with the other information they sought, to their credit departments for research and analysis. They also arranged for the meetings with the credit department in case the department wanted further information or some explanation. After analyzing the financial data and reviewing the whole case, the credit departments sent the files back to the loan officers with their recommendations. The writer had further discussions with the loan officers in some cases on the points raised. The decisions made by the loan officers along with the reviews and recommendations of the credit departments were received by the writer.

The individual studies are discussed below. The officers contacted will be referred to as Mr. A, Mr. B, and so on in order not to disclose their identity.

Discussion of Study in Bank A

The loan officer, a vice-president in the bank, was approached. The financial and other data was given to him. The procedure regarding term loans was discussed. It was observed that all types of loans to a customer were handled by the same loan officer.

In the bank, the loan officers are divided into different gradations (A, B, C, D, E, and F). The maximum loan an officer can make depends on his grade which is determined on the basis of his experience and service record. If the amount of loan requested exceeds his limit, he takes it to an officer having the necessary authority. The ultimate authority rests with the president, who can make loans up to the legal limit.

The loan officer sent the data, along with his remarks, to the credit department for research and analysis. The writer had two meetings with the credit department head and an analyst. The working of the credit department was explained and the process of evaluating credit worthiness was discussed in detail.

The credit department cast the financial data on its spread sheets for convenient analysis. The analysis includes the computation of the balance sheet percentages, the percentage analysis of the operating statements, and computation of the following ratios: quick ratios, current ratios, fixed to net worth, debt to worth, sales to receivables, cost of sales to inventory, sales to worth and

net income to worth. The following comparative figures are included in the summary part of the spread sheet: net worth, tangible net worth, working capital, current ratio, sales to receivables, ratio of debt to tangible net worth, cost of sales to inventory, sales, net profit, cash dividends or withdrawals, profit carried to surplus or net worth, net adjustment to net worth, and net change in surplus or net worth. Comparative figures from the Robert Morris Associates Annual Statement Studies are entered for comparison.

The credit department gives its review of both cases and makes the proposals to the loan officer.

Jaytee Bakeries, Inc.--Before proposing a loan the credit department brings the following information to the attention of the loan officer.

Short-term loans are unsecured. The loan officer should check the maturity date of the debentures. He should discuss the drop in receivables. The loan department has combined the figures for the two half-years ending on June 30, 1969 and December 31, 1969 for the purpose of analysis.

The credit department proposes that the bank grant the customer a \$360,000 term loan to be written over five years at 1 per cent over the prime rate of the bank from time to time, with the loan being governed by a loan agreement. This loan agreement would include the provision that the loan be paid in equal monthly installments

plus interest. It should include all the usual affirmative covenants, including a profit recapture clause stating that 50 per cent of the net profits, in excess of \$100,000 be made as a principal payment each year after the first full year of the loan. The agreement should also include all of the usual negative covenants, including provisions prohibiting the payment of dividends and limiting compensation to officers.

In addition to the above, the bank would grant an unsecured line of credit in the amount of \$275,000. There would be an agreement with the customer that these be short-term borrowings with interest at 3/4 over prime rate and that all short-term loans be paid out at least thirty days per year.

Roysons Bakeries, Inc.--The credit department points out that the loan officer should have a discussion with the applicant about the effect of a decrease in asset addition on their cash flow, net profit, income tax and deferred taxes. It should be asked why asset acquisition in the 1970's is higher than in the past. It proposes a term loan of \$375,000, written over three years, with payments of \$6,250 per month plus interest, and one payment of \$150,000 at the end of the third year. It also proposes profit recapture starting with the year ending December 31, 1970 and calculated on the basis of 20 per cent of earnings after taxes plus depreciation less principal payments. The

interest rate proposed is 1 per cent over prime rate. An unsecured short-term line of credit, not exceeding \$225,000 at 1/2 of 1 per cent over prime, is also proposed. The negative covenants other than normal should include:

1. The borrower will not declare or pay dividends in any fiscal year except stock dividends.
2. Increase in compensation of officers should be limited to \$40,000.
3. Putting a ceiling on asset additions should be discussed with officers of the company.

The points raised in the credit department's reviews and proposals were discussed with the loan officer. His decisions are:

Jaytee Bakeries, Inc.--A term loan for \$360,000 is to be granted over five years at 3/4 per cent above prime rate. Revolving credit is approved for a maximum of \$300,000, or 70 per cent of the accounts receivable, whichever is less at 3/4 per cent above prime rate. At this point the writer asked the reason for applying the same rate to both the revolving credit and the term loan. The loan officer agreed to reduce the rate by 1/2 per cent if this loan is cleared for at least sixty days in a year. That is, it should be a true short-term loan.

Roysons Bakeries, Inc.--A term loan is granted for \$375,000 with five year maximum maturity at 1 per cent over prime rate of interest. Revolving credit is extended for maximum of \$300,000, or 70 per cent of accounts receivable,

whichever is less at 1 per cent over the prime rate of interest. The interest rate on revolving credit will be reduced by 1/2 per cent if the loan is clear for at least sixty days in a year. The loans in both cases are unsecured.

The loan officer does not necessarily emphasize the compensatory balance. However, he puts restrictions on dividends and salaries paid to officers. In the case of dividends, the agreement does not permit any cash dividend during the term of the term loan. It restricts the increase in salary to 10 per cent each fiscal year with a maximum of \$300,000. The loan officer agreed to the payment of a cash dividend if the public holds stock in the companies.

Regarding the working capital, the officer does not think it necessary to go into a working capital covenant, but wants to put a limit below which the net worth should not go.

Discussion of Study in Bank B

The procedure for making larger loans is different in this bank. Two loan officers together can make one loan up to \$25,000 unsecured, and \$50,000 secured. Over this amount and up to \$100,000, the loan is approved by a loan committee. Two members from the board of directors, officers in the commercial loan division, and senior officers from other divisions are the members of the loan

committee. The loans over \$100,000 are approved by the executive committee. The members of the board of directors are the members of the executive committee.

The bank has two lending officers who are vice-presidents. The other loan officers are assistant vice-presidents. The loan officer contacted for this study is one of the vice-presidents. The data for the two companies were given to him. Various aspects of tax accounting were discussed in addition to other points that he wanted to clarify. The credit investigator, who is the head of the credit department, also joined in the later part of the meeting.

The loan officer gave the financial and other data and his own notes to the credit investigator. At a later date, another meeting was arranged between the writer and the credit investigator by the loan officer. A credit analyst from the credit department also accompanied the credit investigator. At this meeting, other information that had been requested by the credit investigator was given. The loan officer also joined the meeting.

The financial data is spread on the bank's spread sheet which is somewhat different from Bank A. In the previous bank, the credit department put the deferred income taxes after the mortgages payable. In this bank, the deferred income taxes are put along with the taxes due under the heading "Taxes (due and or accrued)." Adjustments for the deferred income taxes are made.

The credit department makes the following recommendations after analysis and review.

Jaytee Bakeries, Inc.--It recommends that the \$500,000, five-year term loan be approved on an unsecured basis, subject to obtaining at least a 15 per cent compensating balance. It further recommends that the loan be subject to a term loan agreement featuring the following major covenants:

1. Working capital of \$300,000 must be maintained at all times.
2. Officers' annual salaries are not to exceed \$225,000 in the aggregate.
3. An annual payment is to be made of 15 per cent of the amount by which the net profit after taxes and before depreciation exceeds the annual loan repayment.
4. Dividends are not to exceed 10 per cent of net profit after taxes plus depreciation.

Roysons Bakeries, Inc.--It recommends a \$500,000 loan for five years, with a mortgage taken on all of the company's real estate, and subject to a term loan agreement with the following major covenants:

1. Working capital of \$70,000 must be maintained at all times.
2. Officers' annual salaries are not to exceed \$200,000 in the aggregate.

3. Annual payment is to be made of 50 per cent of the amount by which net profit after taxes and before depreciation exceeds annual term loan payment.
4. Dividends are not to exceed 50 per cent of net profit after taxes, the profit recapture payments, and depreciation.

The decisions of the loan officer are as follows:

Jaytee Bakeries, Inc.--A loan up to \$500,000 will be made in multiples of \$1,000 within one year of the date of agreement. Interest shall be paid at the rate of 9 1/2 per cent per annum on the unpaid balance and shall be paid quarterly beginning January 19, 1970. The principal shall be payable in equal quarterly installments of \$25,000. Additional repayment on the principal shall be made in an amount equal to 15 per cent of the amount by which net profit, after taxes and before depreciation and dividends, exceeds annual term loan principal repayment.

The borrower shall maintain a tangible net worth of net less than \$1,761,000. Working capital of at least \$300,000 shall be maintained. No dividend shall be paid in excess of 10 per cent of the net profit (net income) after taxes and before depreciation, without the prior consent of the bank.

Roysons Bakeries, Inc.--A loan of \$500,000 shall be made in multiples of \$1,000 within one year of the date of the agreement. The interest rate shall be 9 1/2 per

cent per annum on the unpaid balance and shall be paid quarterly. The principal shall be paid in quarterly installments of \$25,000.

Additional repayment of an amount equal to 25 per cent of the amount by which net profit (income), after taxes and before depreciation and dividends, exceeds annual term loan principal repayment. The borrower shall provide a valid first real estate mortgage on all real estate, and a valid first lien on all machinery and equipment now owned or hereafter acquired.

A tangible net worth of net less than \$1,506,000 shall be maintained. Working capital of at least \$100,000 shall be maintained. Working capital is to be defined as the excess of cash, trade receivables, and inventory, over all debts within a twelve-month period, including deferred income taxes. No dividend will be declared or paid during the calendar years of 1970 and 1971. Thereafter dividends are to be less than 5 per cent of net profit (income) after taxes and before depreciation.

Discussion of Study in Bank C

The process for making a loan whether short-term or term loan is the same. Two or more officers together can make loans of up to \$100,000. Loans for \$100,000 and over are approved by the loan committee. This committee consists of thirteen members including directors, heads of the department, and senior officers. The committee

meets once a week. Loan application of amounts of \$100,000 and above are recommended by the loan officers and the head of the credit department. Then these are approved by the loan committee. Invariably the loan officer and the credit department agree on the recommendations and they determine the usual terms and restrictions.

Both the head of the credit department and the loan officers are responsible to the senior vice-president.

The financial data is put on the bank spread sheets in the credit department for convenient analysis. The recommendations made by the head of the credit department and the loan officer are the same for both the companies:

Loans of \$500,000 are recommended. The interest rate is 9 1/2 per cent per annum. The loans will be secured by real estate mortgages, assignment of accounts receivable, inventories, and all machinery and equipment. Fixed asset expenditure shall be limited to the amounts projected. The following covenants govern the loan:

1. There shall be no other borrowing during the life of the loan, directly or indirectly.
2. Aggregate borrowing shall not exceed accounts receivable which will be aged and submitted monthly.
3. The life insurance policies on the officers of the companies shall be assigned to the bank.

4. The companies shall clean up their short-term borrowing under the line for at least sixty days.
5. Dividends shall be limited to the amounts projected. Bank approval shall be required before each payment.

Discussion of Study in Bank D

In this case also, the loan officer contacted is a vice-president of the bank. He was given the data regarding the two companies and the questions he raised were discussed. At another meeting the credit investigator was also present.

The credit department analyzes the financial data, reviews the two cases and gives its proposals. From the perusal of the spread sheets used in the analysis it is observed that the deferred income taxes are written below the liabilities and above the net worth. It is not included in either. In the review, the credit department makes the following proposals.

Roysons Bakeries, Inc.--A \$500,000, five-year term loan is granted to be governed by a term loan agreement consisting of two notes as follows: a \$250,000 loan to be secured by a real estate mortgage on the Ecko plant, and a \$250,000 working capital loan secured by accounts receivable, inventory, and equipment. A \$150,000 line of credit is reaffirmed secured by accounts receivable, with

advances limited to 70 per cent of current accounts receivable in excess of \$150,000.

Jaytee Bakeries, Inc.--A \$500,000, five-year term loan is granted which will be governed by a term loan agreement: a \$240,000 loan to be secured by a real estate mortgage on the Rushmore Plant, and a \$260,000 working capital loan secured by accounts receivable, inventory, and equipment.

A \$150,000 line of credit is reaffirmed to be secured by accounts receivable, with advances limited to 70 per cent of current accounts receivable in excess of \$150,000.

The decisions by the loan officer can be stated as follows:

Jaytee Bakeries, Inc.--Two loans of \$240,000 and \$260,000 are granted with \$8,333 payable per month plus interest at 1 1/2 per cent over the prime rate. Compensating balances are to be maintained at 15 per cent of outstanding borrowings. A line of credit of \$150,000 with interest rate 3/4 per cent over prime is approved. The loan shall be clear for sixty days in every twelve months.

Mortgage on the Rushmore Plant and security agreements on accounts receivable, inventory and equipment shall be provided. There are the usual affirmative and negative covenants. A working capital of at least \$300,000 is to be maintained. A current ratio of 1.25 is to be

maintained. Net worth of at least \$1,500,000 shall be maintained.

No dividends shall be paid and the officers' salaries shall not be increased more than 5 per cent annually over the year ending December 31, 1968. No bonus shall be paid to any employee or officer who is a stockholder.

Roysons Bakeries, Inc.--Two loans of \$250,000 and \$250,000 are granted with \$8,333 payable per month plus interest at 2 per cent over the prime rate. Compensating balances are to be maintained at 15 per cent of outstanding borrowings. A line of credit of \$150,000, with interest rate at 3/4 per cent over prime is approved. The loan shall be clear for sixty days in every twelve months. A mortgage on the Ecko Plant and security agreements on accounts receivable, inventory, and equipment shall be provided.

There are usual affirmative and negative covenants. A working capital of at least \$300,000 shall be maintained. A current ratio of 1.25 shall be maintained. Net worth shall not drop below \$1,300,000. No dividends shall be paid and the annual increase in the officers' salaries shall not exceed 5 per cent over 1968 amounts. No bonus shall be paid to any employee or officer who is a stockholder.

In the case of Bank A, the credit investigator differentiates on the following grounds: (a) the maturities

of the loans are different; it is five years for Jaytee against three years for Roysons, with the same interest rates for both, (b) the recapture clause states 50 per cent for Jaytee against 20 per cent for Roysons, and (c) another short-term loan is recommended for \$275,000 for Jaytee at $3/4$ per cent above prime rate and for \$225,000 for Roysons at $1/2$ per cent above prime rate. In each case the amount of term loan is limited to the purchase price of the plant to be acquired.

The loan officer differentiates in the interest rates only. It is $3/4$ per cent for Jaytee and 1 per cent above the prime rate for Roysons. The recapture clauses remain as recommended by the credit investigator.

In the case of Bank B the credit investigator and the loan officer differentiate on the following grounds: (a) collateral is required from Roysons but not from Jaytee, (b) dividends are restricted to 10 per cent in the case of Jaytee and 5 per cent in the case of Roysons, and (c) while specifying the amounts of working capital, both take into consideration the deferred income taxes. This is shown in the current liability section, but is accounted in computation of working capital requirements. The working capital is lower in the case of Roysons. It is \$70,000 suggested by the credit investigator and \$100,000 by the loan officer, in contrast to \$300,000 for Jaytee stated by both of them.

In the case of Bank C, both the credit investigator and the loan officer make the same common recommendation for both the companies. They ask for collateral in both cases. Terms of loan are the same for both the companies.

In the case of Bank D, the differences seen by both the credit investigator and the loan officer are indicated in the same manner. The credit investigator does not recommend any rate of interest. This is left to the loan officer to decide in this bank. The only difference made by the loan officer is 1/2 per cent in the interest rate. Collateral is demanded from both the companies.

The results of the analysis of these studies support the results from the questionnaire survey: loan officers do perceive differences between the two companies, but they do not assign significantly different lending terms in spite of these differences.

Summary and Conclusion

This chapter has provided a complete presentation and analysis of the data collected in response to the questionnaire survey and the field studies. The questionnaire was sent to a number of randomly selected loan officers in large commercial banks in Chicago, Cleveland, Detroit, Indianapolis and Milwaukee. The data collected on the two parts of the questionnaire are separately presented and analyzed.

Analysis of Part I

In response to the first question in Part I, sixty-five of the respondees prefer one company or the other. Only five express equal preference for both. In response to the second question, twenty-two indicate weak preferences, thirty-three show moderate preference, and ten state strong preference. Higher net income, better debt to worth ratio and larger net worth are the main reasons given for the preference.

Statistical Analysis Part I.--For statistical analysis, the null hypothesis tested is that P , the proportion of officer influenced by the difference in accounting method, is less than or equals 30 per cent.

Graphs are drawn showing the probability of observing the sample proportion as function of the population proportion. The data for graphs are computed using the first term of Wise's³⁴ approximation to the hypergeometric distribution. Variances and standard deviations are estimated. Confidence limits are computed as recommended by Cochran.³⁵ The data reject the null hypothesis $P < .3$ at level $\alpha = .05$ both under normal conditions and existing conditions when there is an acute shortage of loanable funds.

³⁴Wise, op. cit.

³⁵Cochran, op. cit.

Analysis of Part II

In the Part II analyzed separately, there are eight questions to be answered under both the normal conditions and existing conditions. The eight questions relate to the usual terms appearing in a term loan agreement. However, two more questions are answered under existing conditions. In these questions the participants are asked to apportion two different amounts between the two companies. The two companies are similar except for the difference in accounting for income taxes. Any difference in answers to the questions can be attributed to the difference in the accounting methods. The number of officers who differentiate between the two companies range from one in case of question number two to eighteen for question number one under normal conditions. Under existing conditions they range from two in case of question number two and three to sixteen for question number one in the first eight questions.

Statistical Analysis Part II.--Data showing the probability of observing sample proportions as function of the population proportions are tabulated. Variances and standard deviations are calculated. Confidence limits are computed for observations up to ten by using statistical tables by Fisher and Yates.³⁶ For the number of

³⁶Ronald A. Fisher and Frank Yates, Statistical Tables for Biological, Agricultural and Medical Research (London: Oliver and Boyd, 1963).

observations in the sample exceeding ten but below twenty-three, confidence limits are found in Romig's³⁷ tables. The null hypothesis, $P \leq .3$ could not be rejected at level $\alpha = .05$ and even at level $\alpha = .1$ for any individual question.

The results from question number nine and ten are tabulated and graphs are drawn showing the probability of observing the sample proportion as a function of the population proportion, as is done in Part I. Variances and standard deviations are computed. The data for question nine rejects the null hypothesis at level $\alpha = .05$, while the data for question ten does not reject the null hypothesis even at level $\alpha = .10$.

The individual loan officer places different emphasis on the basic factors for judging credit worthiness and on stipulating the various lending terms. Accordingly, one officer may indicate a difference in one term only. Another officer, who places major emphasis on the financial statements, may differentiate on more than one term.

Results are tabulated for the proportion of officers who differentiate on one or more question. Data are computed as was done for Part I and graphs are drawn showing the probabilities of observing the sample proportions as a function of population proportion. Variances and standard

³⁷H. C. Romig, 50-100 Binomial Tables (New York: John Wiley and Sons, 1952).

deviations are calculated. Confidence limits are computed according to the recommendations of Cochran.³⁸ The data rejects the null hypothesis that $P \leq .3$ at level $\alpha = .05$.

The results of the field studies support the results from the questionnaire survey: loan officers do perceive a difference between the two companies, but they do not assign significantly different lending terms in spite of these differences.

The next chapter presents the evaluation of the results of the questionnaire survey and the field studies followed by implications and suggestions for the accounting profession.

³⁸ Cochran, op. cit.

CHAPTER VII

EVALUATION IMPLICATIONS AND SUGGESTIONS

Introduction

This chapter presents the evaluation of the results of the questionnaire survey and the field studies discussed in the last chapter. It then discusses the implications and suggestions for the accounting profession.

Evaluation of the Results of the Questionnaire Survey and Field Studies

From the analysis and discussion of the data in Chapter VI it may be observed that the accounting methods under investigation influence the decisions of the loan officers.

Effects on Financial Variables

In the section on financial analysis in Chapter IV and V pages 94 and 152 it was observed that the different methods of accounting for income taxes result in different figures for income tax expense, net income, retained earnings and net worth.¹ These affect the measures of long term solvency, and profitability.

¹See Chapter IV, page 94; also Chapter V, page 152.

Effects on Decision Making

It appears that the financial variables affected by difference in the methods of accounting are considered important in decision making by the bank officers. This is evident from the reasons they give for their preferences in part one of the questionnaire. As indicated in Table 11 on page 182, that the three main reasons given are higher net income, better debt to net worth ratio, and larger net worth. The other reasons given are also related to the financial variables affected by the accounting methods under study, directly or indirectly. Further, the accounting methods under study do not affect current assets or current liabilities. It can be observed that there is practically no difference in answers to question number three in part II. This question pertains to working capital requirements.²

Behavioral Explanation

At this point the discussion in the section on behavioral analysis³ may be recalled. Human beings can use only a limited amount of information effectively in making decisions.⁴

Use of Surrogates.--If a decision situation is too complicated, the decision maker tends to consider simpler

²See Chapter VI, pages 204 and 212.

³See Chapter IV, pages 123 to 144.

⁴See Chapter IV, page 132.

factors even though he may realize that they are only surrogates of what he ultimately wants to consider in his decision process. Further, the principals may be too costly to obtain or take into consideration. Therefore the decision maker uses surrogated data instead of the principals.

A credit man is willing to make decisions on the basis of financial statements prepared by a qualified accountant under generally accepted accounting principles, although the credit man may be capable of performing an independent investigation of the financial statements of the borrower. The use of different methods of accounting, all of which are included in generally accepted accounting principles, results in different measurements of the surrogates. This probably explains the results of the investigation.

The officers recognize that they use surrogated data in their decision making. They want these surrogates to be satisfactory representations of principals. To insure this, they prefer an unqualified opinion by a certified public accountant. This provides them with evidence that the financial statements are prepared under generally accepted accounting principles. The discussion with various loan officers revealed that the reliance on financial statements is influenced by the reputation of the accountant certifying the statements.

Functional fixation.--Another explanation may be found in the psychological concept of functional fixation. This appears in most human behavior in which the person attaches a meaning to a title or object, for example net income or net worth, and is unable to see an alternative meaning or use. If outputs from different accounting methods are called by the same name such as net worth, net income, the decision maker may tend to neglect the fact that alternative methods have been used to prepare the outputs.

The Einstellung effect.--Still another explanation may be given by a similar concept in the linguistics called the Einstellung effect.⁵ Under this it is assumed that once the subject has arrived at what appears to be a satisfactory verbal label for the situation, he will generalize this label (or formula) completely. He will, in other words, respond more to the label, to the linguistic description of the situation, than he does to the actual one. It is as if the presence of an apparently viable verbal label actually blinds the subject to the reality. He sees only what the words lead him to expect and does not respond to the objective situation.

Effects on Lending Terms

From the analyses of the data collected on lending terms, it can be observed that the effect of different

⁵See Chapter IV, page 139.

methods of accounting for income taxes is not reflected to a significant extent in all the lending terms.⁶ This may be explained as follows.

Difference in emphasis.--The individual loan officer places different emphasis on the basic factors for judging credit worthiness and on stipulating the various lending terms. Accordingly, preference for one company may be indicated in one term only. The officer may believe that the difference in one lending term⁷ will compensate for the perceived difference in the company due to a variation in the financial variables. Another officer who places major emphasis on the financial statements rather than the personal factor may not be satisfied by indicating difference in one term of lending only. He may therefore indicate his difference in more than one term.

Pressure on banks.--There are lending terms in which the banks do not exercise much discretion. Examples are interest rate and compensatory balances, discussed earlier.⁸ Some officers do not want to limit the salaries of officers unless they are quite disproportionate to the activities of the corporation. This may also be the case with dividends.⁹

⁶See Chapter VI, pages 218 and 219 for tabulated data.

⁷See Chapter VI, pages 219, 220.

⁸See Chapter VI, page 203.

⁹See Chapter VI, page 206.

Interest rates on term loans are higher than on short term loans. Pressure on the banks to maintain earnings under normal conditions enhances their willingness to grant term loans. There is competition in the industry during normal times. The bankers may not have much discretion in differentiating between two similar borrowers in all the lending terms because of differences in the financial variables when these are above their acceptable standards. Even under existing conditions when there is acute shortage of loanable funds, they cannot differentiate much on the lending terms but can resort to credit rationing.

This may explain the reason for similar answers for the lending terms under normal and existing conditions. However, in case of allocation of limited funds under existing conditions significant differences are observed.¹⁰

More information.--The loan officer receives more financial data from the borrower than is given in the usual financial statements. He receives the comparative financial statements for the previous three to five years along with cash flow statements for comparison. He also receives the projected financial statements for three to five years. The projections give the loan officer some knowledge of a firm's future financial position. The information in the financial statements is also more detailed. Besides the information received from the

¹⁰See Chapter VI, pages 215-217.

borrowers, the loan officer also has information collected from other sources. The relative importance of an individual item of information decreases with an increase in the number of items of information.

Standard procedures.--In the behavioral analysis¹¹ it is stated that the decision maker tries to avoid uncertainty by creating and following standard operating procedures. These standards may simply prescribe a maximum or minimum limit that should be observed. In other cases, these standards may not be quite so precise. For example, in one of the responses the participant states as his reason for asking for collateral:¹² "A general yardstick has been in existence for some time in banking that unsecured term requirements should not exceed 50 per cent of working capital or 25 per cent of net worth."

Following this standard the decision maker will ask collateral whether the term loan requirement is 55 per cent or 75 per cent of working capital. Existence of yardsticks like this seem to prevent some from indicating their perceived differences in lending terms.

Adjustments to the data.--Some of the participants make adjustments to the financial data. These may be for the perceived differences in accounting methods but could not convert to a common measurement base due to a lack of

¹¹See Chapter IV, page 137.

¹²See Chapter IV, page 139.

sufficient information for conversion. It is possible that, given sufficient information for conversion to a common base, the decisions might have been different. Some participants exclude the amount of deferred income taxes from total liabilities, but do not add it to the net worth.

Implications and Suggestions

This section contains the implications of the study and suggestions for the accounting profession.

From the perusal of the responses to the questionnaire and from the discussion with the loan officers, it can be observed that accounting data plays an important part in the decision process of the users of the financial information described in this study.

Effects of Different Methods of Accounting

It is the contention of this study that the use of different methods of accounting for income taxes affects the decisions of the loan officers in making term loans. It has been indicated that the diversity in methods of accounting affect the decision maker. The different methods of accounting create apparent differences in financial variables which prevent the decision maker from

seeing the real differences or similarities in the reported activities of the firms.

It was not expected that all the participants would have come to the same conclusion. As already mentioned different officers may give different weights to the various items considered for decision making. The evaluations made by these officers are not comparable. The financial variables are not measured on the same basis. Unless the decision maker is in a position to convert all these variables to a common measurement basis, his comparison will be meaningless.

Uniformity in Accounting

Under these circumstances it may be argued that the ideal situation would be one where there is no basis for differences. That is, there should be no alternative methods of accounting. It is the use of alternative accounting methods that produce different financial measurements. Comparability of financial data within a company at different points of time and between companies is highly desirable and of great importance. Wherever and whenever the user of the financial data has to make a choice, he must make comparisons. Comparisons require comparability of financial statements over time and between companies. To achieve comparability there should be uniformity in the methods of accounting.

This uniformity of accounting methods is opposed by advocates of flexibility in accounting methods. They argue that uniformity limits any immediate development of alternative procedures. This endangers future progress by stifling present initiative and innovation in accounting practices.

They point out that the present progress in accounting practices has occurred through evolution based on many companies adopting and improving the practices first pioneered by an imaginative few. Secondly, uniformity is difficult to implement. Further, they cite the example of regulated industries.¹³ These industries have not fully achieved uniformity. There is some diversity in accounting practices in spite of the uniformity they have in the conditions under which they operate.

This controversy over uniformity is not new. But an over emphasis on this objective over the years has hindered agreements on which methods best serve the proper objectives of accounting. The problem of uniformity is that different things are not in fact comparable, and that any attempt to make them so leads inevitably to a devotion to form rather than substance. It is possible that sometimes the efforts towards uniformity may distort or obliterate some very significant differences. Further

¹³Weldon Powell, "Putting Uniformity in Financial Accounting Into Perspective," Law and Contemporary Problems, XXX (Autumn, 1965), 675.

efforts toward uniformity by creating the illusion of uniformity (and hence of comparability), may encourage the user to base his judgments on those factors alone and to ignore important fundamental distinctions.

Need for flexibility.--From this controversy it can be concluded that some degree of flexibility is necessary in order to provide for the changing conditions and varying circumstances existing in the real business world. This point seems to have been disregarded by the Accounting Principles Board in its quest for narrowing the differences. This is apparent from the pronouncement in its Opinion No. 11. Comprehensive income tax allocation is required regardless of when, if ever, a net reversal is expected to occur. This may suggest that the Board is seeking uniformity. However, the proper objective is the elimination of unjustifiable differences in accounting, while preserving an adequate flexibility to handle real differences in cases. Further, in several cases, there is no published evidence of adequate study or research. In at least the case of Accounting Research Study No. 9¹⁴ the published research appears to have been directed towards implementation rather than towards foundation.

Selection of a uniform method.--Accounting is a service profession. In all its development, the needs and

¹⁴Homer A. Black, "Interperiod Allocation of Corporate Income Taxes," Accounting Research Study No. 9 (New York: AICPA, 1966). Also see page 42 of Chapter II for discussion of this point.

views of the users of financial information should be dominant. The information provided should help users to make decisions. In narrowing down the alternative methods of accounting, the first step should be to study the effects of various alternative methods, and then to select the method which provides the users with the most useful information for his decision making. It is possible that different methods may be useful to different users because of differences in their objectives. In that event the objective which would be in greatest harmony with the overall economy is preferable.

Conversion Statements

Having made a decision about the one uniform method, the next logical step is to accommodate the other users of the accounting information whose objectives require the adoption of a different method. This can be done by providing conversion statements. Some conversion is observed in this study. Intangibles are excluded by loan officers when computing net worth. Prepaid expenses are excluded from current assets by some officers. However, these conversion statements should be included in the financial statements.

Need for conversion statements.--Sometimes uniformity may eliminate useful information. By obscuring the economic facts in particular circumstances, it is possible that more will be concealed than revealed and will be

positively misleading. Sometimes different methods may be preferable in different industries from the point of view of feasibility. To accommodate all these needs and still enable comparability, variance statements or conversion statements could be developed which could then be included in the financial statements.

Development of conversion statements.--One method could be adopted for general use. Which method it should be should be decided by the Accounting Principles Board (the authoritative body in the profession) on the basis discussed above. Deviation from this should be permitted, to allow for the special case of some industries. However, those who deviate should be obliged to provide conversion statements. This statement should convert the financial variables from the method adopted by the industry to the general method. Similarly, within one industry an individual firm may adopt a different method from the others under justifiable circumstances. Again, conversion statements should be provided to enable conversion to the industry standard and also to the general standard. For example, take the case of allocation of income taxes. Comprehensive allocation may be the general standard and also the industry standard. A firm using flow through method for valid reasons may provide conversion statement as follows:

Conversion Statement

	Income Tax	Net Income	Deferred Income Tax		Retained Earnings	
			Current	Cumula- tive	Current	Cumula- tive
Under flow through	\$...	\$...	\$...	\$...	\$...	\$...
Difference*	\$...	(\$...)	\$...	\$...	(\$...)	(\$...)
Under com- prehensive allocation	\$...	\$...	\$...	\$...	\$...	\$...

*Due to difference in methods of accounting for income taxes when timing differences between taxable income and pre-tax accounting income exist.

Cost of Implementation

The old argument about the cost and time-consuming effort required to provide data may be given. But this argument may not be effective in the presence of the computer. Once the task is programmed, the computer can carry it out quickly and usually cheaply. However, the cost question can also have a salutary effect on uniformity. Those who deviate will consider all these factors and this may make a deviation for minor reasons unattractive and thereby increase uniformity. Or it may be considered another imposition, like taxes, made in the public interest for comparability in financial statements.

Budgetary Data

Another suggestion that stems from this study is the inclusion of further data in the financial statements.

The credit grantors require and receive projected financial statements, including future capital investments and cash-flows from the prospective borrower. These help them in their lending decisions. They provide some foreknowledge of a company's future cash-flows and of the elements of both planning and chance which have conditioned their composition. This additional information will be beneficial to the stock-holders for making investment decisions.

Arguments Against Budgetary Data

However arguments can be advanced against providing this additional information: (a) Will it be reliable? (b) Will not this provide competitors and others with information that may harm the interests of the firm? (c) Is there a threat of action under SEC Rule 10b-5?, and (d) Is it costly to implement?

Reliability.--Regarding reliability, it may be suggested that in due course auditing procedures for budgets can be evolved which may be similar to the auditing procedures for financial statements. Until then, the financial statement should include the budgetary data along with the actual data, so that over a period of years the user can have a fair idea of the reliability of the budgetary data. The management should explain the variances from the budgets.

Information to competitors.--Regarding information to competitors it appears that within a given industry standards of disclosure could be agreed upon. This disclosure then will not impair the interest of the firm or stockholders.

SEC Rule 10b-5.--Recent proceedings involving SEC Rule 10b-5 discourage the expansion of the amount of information presently available in financial reports. Legal advisors to management dislike any forecast. But another important question is whether or not the information given to the credit grantor in support of a loan application constitutes as "insiders' information." How can the management be sure that such information is not used by the user for any purpose other than that intended? The only answer that can be suggested is disclosure.

Cost of Implementation.--The additional information to be provided to the other users is already computed for supporting a loan application. Even otherwise the argument may not be effective in the presence of the computer. Once the task is programmed, the computer can carry it out quickly and usually cheaply. Or it may be considered another imposition, like taxes, made in the public interest for better and more useful information in financial statements.

Summary and Conclusion

This chapter has presented an evaluation of the results of the questionnaire survey and the field studies. The difference in methods of accounting affect the financial measures and hence the decision making. This may be due to: (a) the use of surrogates, (b) functional fixation, or (c) the Einstellung effect. However, the effect is not reflected significantly in all the lending terms due to: (a) difference in emphasis, (b) pressure on the banks, (c) more information, (d) standard procedures, or (e) adjustments to financial data.

The contention of this study has been that the diversity in accounting methods affect the decision maker.

It is suggested that: (a) there should be uniformity in accounting methods, (b) conversion statements should be provided in genuine cases of deviation, and (c) pending the attainment of uniformity, budgetary data should also be provided to other users.

The final chapter presents a general summary and conclusions.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

This study investigates the effects of alternative methods of accounting for income taxes used in the preparation of financial statements on the term loan decisions of large commercial banks.

Reporting income taxes in financial statements is one of the significant areas of corporate accounting because of the high rates of income taxes and the impact they have on both the business and national economy. The most important and difficult question in accounting for income taxes today stems from differences in taxable income and accounting income. Permanent differences are not the subject of controversy but the timing differences are because they give rise to the problem of allocation.

The tax allocation issue has generated an unabated controversy. The arguments for and against allocation of income taxes seem logical and rational from different points of views. The Accounting Principles Board supports the comprehensive allocation of income taxes and makes it obligatory for CPA's to disclose and justify any departure from the recommended method. When accountants who adopt

or approve methods differing from the opinion of the APB are obliged to justify their actions, it would seem appropriate to require that such pronouncements should represent not only the controversial preferences of a two-thirds majority of the Board members but also be supported by an adequate research into users' needs.

When the controversy continues and the profession is divided on the question, the matter can be decided best by reference to the users' needs. The first step is to determine whether or not the debated alternative methods affect the decisions of the users. This is the purpose of this study.

The first chapter discusses the need for and purpose of the study and describes the research technique adopted for this study.

Allocation of Income Taxes

In the second chapter, the variations in the methods of accounting in different areas have been described with a detailed discussion of interperiod allocation of income taxes. The chapter begins with a general discussion on the availability of alternative methods of accounting. This is followed by a listing and description of some alternative methods available in the areas of inventories, depreciation, cash flow, leases and income taxes. The allocation of income taxes is discussed in some detail.

The discussion includes the nature, historical background, illustration and arguments for and against the allocation of income taxes.

Nature and Processing of a Term Loan

Credit grantors are important users of financial statements, and term loans represent a significant proportion of commercial loans made by large banks. Chapter III discusses term loans in terms of the nature, development, and reasons for making term loans. It also includes a discussion of the processing of term loans by the banks.

Effects of Alternative Methods of Accounting

After the discussion of allocation of income taxes and of term loans, the stage is set for discussing the effects of the different methods of income tax allocation on the decision to grant a term loan. Accordingly, Chapter IV discusses the effects of alternative methods of accounting. In the financial analysis section, the effects of different methods of accounting in the areas of inventory and depreciation is discussed as an illustration of the general pattern of the effects of the different methods on financial variables. The effects on different financial variables which occur because of the allocation of income taxes, namely income tax expense, net income and net worth, are discussed. The various measures of

profitability and solvency on interest rates and other lending terms are discussed. The relationship between availability of credit and interest rates is analyzed.

A behavioral analysis follows the economic analysis. In this section, discussion focusses on the behavioral aspects of accounting and decision making. It includes a discussion of the decision making process and the relationship between the decision input and the decision output. The latter part of the section discusses the role of accounting in decision making.

A preliminary discussion of principals and surrogates is included because accounting measurements are surrogates. Some reasons for using surrogates are investigated. Accounting principles are compared to the rules of grammar in linguistics and an analogy is drawn. Based on this analogy, it is shown deductively that different accounting principles affect the behavior of the users of accounting information in ways similar to the rules of grammar in linguistics.

The next chapters discuss the questionnaire survey and the field studies. The purpose of the questionnaire survey is to study the relationship between the alternative methods of accounting for the allocation of income taxes and the decisions made by loan officers. For this purpose two models are structured.

Description and Results of the Experimental Models

Chapter V describes the models used in the investigation. These models are developed from the information obtained from the Annual Statement Studies of the Robert Morris Associates, Technical Study No. 5 of the National Commission on Food Marketing, and detailed data provided by the controller of a large bakery. Financial statements for the previous five periods and projections for five years are prepared for two companies which are similar except for their method of allocating income taxes. The results of using two different methods of allocation of income taxes on the financial variables of the two companies are discussed. Comparative figures for both the companies are given under comprehensive allocation and under partial allocation.

Results of the Questionnaire Survey and Field Studies

Chapter VI gives the analysis and discussion of the results of the questionnaire survey and field studies. The two companies are similar except for their method of accounting for income taxes. Any difference shown by the participants in their evaluation of the two companies can be attributed to the difference in the accounting method.

Analysis of Part I of the Questionnaire

In the first part of the questionnaire the participants were asked to give their preference and the rationale for their preference of one or the other company. A significant number showed a preference for one or the other company. The statistical analysis rejects the null hypothesis that the proportion of loan officers who are influenced by the accounting method equals 30 per cent or less at level $\alpha = .05$.

Analysis of Part II of the Questionnaire

Part II discusses the data collected on the various terms of lending. The effect of the different accounting method is not reflected to a significant extent in all of the lending terms. The statistical analysis does not reject the null hypothesis for the eight questions relating to the lending terms, both under normal and existing conditions. However, data from question nine rejects the null hypothesis at level $\alpha = .05$, but the data from question ten does not reject even at level $\alpha = .1$. Taking the over all view of the lending terms the data rejects the null hypothesis at level $\alpha = .05$.

Field Studies

Another attempt was made to study the effects of alternative methods of accounting for income taxes without

requiring the loan officers to make comparisons. This is reported in the latter part of this chapter. Four studies were conducted. The results of these studies support the results of the questionnaire survey.

Evaluation Implications and Suggestions

In Chapter VII an attempt is made to evaluate the results of the study and present implications and suggestions for the accounting profession. The probable explanation for the results is that the loan officers use surrogated data and they usually rely on the auditor's opinion for the applicability of generally accepted accounting principles. There are alternative accounting principles included in the generally accepted accounting principles and the auditor has no reason to qualify his opinion whichever of the accepted alternatives may be used by the corporation.

The loan officer may not ask any question about the financial statements when there is an unqualified opinion because:

The best illustration of how difficult it is for a single individual, and certainly a non-professional like me, to attempt to discuss this subject briefly rests in showing you the book "Inventory of Generally Accepted Accounting Principles for Business Enterprises" which runs to 470 pages.¹⁵

¹⁵A. L. Nash, "Substandard or Inadequate," Journal of Commercial Bank Lending, I (August, 1968), 17.

The alternative methods of accounting for income taxes affect the financial variables considered by the loan officers and hence affect their decisions. However, the influence is not reflected significantly in all the individual lending terms because different loan officers do not place similar emphasis on basic factors. They may indicate the influence in any one or more lending terms. They have more detailed information collected from various sources. The relative importance of the individual items of information decreases with an increase in the number of items of information. Competition in the industry or the standard procedures or adjustment of financial data may be the other reasons for this lack of significant influence on all the individual lending terms.

It is suggested that there should be uniformity in accounting methods to avoid this problem altogether. However, genuine deviations may be allowed but those who deviate should be obliged to provide conversion statements.

Pending the development of uniform accounting methods the other users should also be provided with additional data which at present is given to the lenders. This will reduce the degree of the influence of variations in methods of accounting.

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APPENDICES

APPENDIX A

COVER LETTERS AND DATA SENT TO
PARTICIPANTS



MICHIGAN NATIONAL BANK

BATTLE CREEK CHARLOTTE FLINT GRAND LEDGE GRAND RAPIDS
LANSING MARSHALL PORT HURON SAGINAW

LANSING, MICHIGAN

EDWARD P. MINICH
ASSISTANT VICE PRESIDENT

Dear Mr.

I have worked very closely with Trib Jain on a project which should complete information for a Ph.D. dissertation. When completed his dissertation should yield a better understanding of relationships between accounting and credit granting.

After you have read all the material enclosed, I will appreciate your completing the questionnaire and returning it to Trib in the envelope provided. I am sure the spread sheets will enable you to complete the questionnaire even though you may be a specialist in another line. If he has not received your reply in approximately two weeks, Trib will personally call on you to pick it up.

A summary of the results of the survey will be sent to you when compiled. Thank you again for your cooperation.

Very truly yours

Edward P. Minich
President, Michigan Chapter
Robert Morris Associates

MICHIGAN STATE UNIVERSITY East Lansing • Michigan 48823

**Graduate School of Business Administration
Department of Accounting and Financial Administration • Eppley Center**

Dear Mr.

I am currently working on a research project in the Department of Accounting and Financial Administration for a doctoral dissertation. This research deals with lending decisions by banks on a term loan application.

Your name has been selected as one of the participants from a list of Robert Morris Associates Members. I request your cooperation in this research by responding to the questionnaire enclosed along with other data. The data relates to two companies to be compared and has been generated separately. These companies are hypothetical bank customers and are applying for term loans. You as an officer of the bank dealing with loan applications are requested to give your recommendations and/or decisions on each application.

I assure you that your name or any information provided will not be revealed as such in any case. While drawing inferences, the reference will be by A.B.C. and not by any names, thus the identity of the participants cooperating in this research will not be revealed.

I will very much appreciate your assistance. You are welcome to ask any question and or make any comments. I shall be very happy to provide you with a copy of the conclusions and hope they may be of interest to you as a bank officer.

Yours sincerely,

Tribhawan Jain

[illegible]

1. The first group of people who are interested in the results of the study are the researchers themselves. They want to know if the study was successful in achieving its objectives and if the results are consistent with their expectations. They also want to know if the study has contributed to the field of research and if it has provided any new insights or information.

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4. fourth of these is the fact that the
5. fifth of these is the fact that the
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8. eighth of these is the fact that the
9. ninth of these is the fact that the
10. tenth of these is the fact that the

2017年12月15日，公司召开2017年第四次临时股东大会，审议通过了《关于公司回购注销部分限制性股票的议案》，同意回购注销已离职的原激励对象持有的限制性股票。

11. The following information is available for the year ended 31 December 2014:

RETURN QUESTIONNAIRE

If you make further assumptions and or adjustments to the data provided in order to complete this questionnaire, please state them in the space provided on the next page.

1. Please indicate the company you would prefer. Jaytee Royson
 - (a) in the light of normal conditions.
 - (b) in the light of existing conditions when there is an acute shortage of loanable funds.
2. Indicate the degree of your preference in 1 above, Strong Moderate Weak
 - (a) in the light of normal conditions.
 - (b) in the light of existing conditions.
3. Please briefly give the reasons for your preferences stated above, in the space provided on the next page.

Would you please fill in the following schedule?

CONDITIONS				
	Normal		Existing	
	Jaytee	Royson	Jaytee	Royson
1. The rate of interest to be charged.	%	%	%	%
2. The compensatory balances to be maintained.	%	%	%	%
3. Minimum working capital to be had	\$.....	\$.....	\$.....	\$.....
4. Maximum amount of further debt the companies would be permitted.	\$.....	\$.....	\$.....	\$.....
5. Maximum amount of annual dividends to be permitted.	\$.....	\$.....	\$.....	\$.....
6. Maximum amount of officers' salaries to be permitted.	\$.....	\$.....	\$.....	\$.....
7. If you think that the companies should obtain more net worth by selling more stocks, how much stock would you suggest for each company. Please give the minimum figures suggested.	\$.....	\$.....	\$.....	\$.....
8. Would you demand collateral? If yes please state the reasons for this in the space provided on the next page.	<u>Yes</u> No	<u>Yes</u> No	<u>Yes</u> No	<u>Yes</u> No
9. If, due to acute shortage and previous commitments of loanable funds, the amount available for lending be \$500,000, how would you allocate this amount between the two companies.			\$.....	\$.....
10. If the amount available in 9 above is \$800,000, how would you allocate.			\$.....	\$.....

1. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n f\left(\frac{k}{n}\right) = \int_0^1 f(x) dx$ (Riemann integral) (1)
 2. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n f\left(\frac{k}{n}\right) = \int_0^1 f(x) dx$ (Lebesgue integral) (2)
 3. $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n f\left(\frac{k}{n}\right) = \int_0^1 f(x) dx$ (Stieltjes integral) (3)

30. The following table shows the number of people who were employed in the manufacturing sector in the United Kingdom in 1995 and 2005.

Year	Number of people employed
1995	2,800,000
2005	2,200,000

31. The following table shows the number of people who were employed in the manufacturing sector in the United Kingdom in 1995 and 2005.

Year	Number of people employed
1995	2,800,000
2005	2,200,000

1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

[illegible]

Assumptions:

Adjustments:

Reasons for preference:

Reasons for demanding collateral:

Any comments you would like to make. Please indicate the time spent.

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Additional Comments:

JAYTEE BAKERIES INC.

FINANCIAL STATEMENTS

Spread in Thousands		Actual					Projections				
For the Period Ending		12-31 1965	12-31 1966	12-31 1967	12-31 1968	6-30 1969	12-31 1969	12-31 1970	12-31 1971	12-31 1972	12-31 1973
I N C O M E S T A T E M E N T	NET SALES	9528	8281	8585	8943	4600	4645	11464	11842	12209	12600
	LESS: Materials Used	4403	4131	3981	4075	2112	2145	5315	5475	5551	5684
	Direct Labor	647	612	630	629	336	337	838	874	874	905
	Other Mfg. Expenses	1057	971	1012	1011	524	530	1333	1384	1396	1447
	COST OF GOODS SOLD	6107	5714	5623	5715	2981	3012	7486	7733	7501	8039
	GROSS MARGIN	3421	2567	2962	3228	1619	1636	3978	4109	4708	4561
	LESS: Sales & Delivery Expenses	2239	1640	1854	2164	1076	1088	2545	2648	2905	2999
	Gen'l Admn. Expenses	591	605	575	563	281	284	750	797	819	820
	Officers Salaries	200	124	132	170	78	79	206	214	214	217
	Other Expenses (Net)	76	41	67	45	28	27	68	71	79	85
	Income Tax Provision	93	25	118	99	58	58	139	142	161	187
C A S H F L O W	NET INCOME	222	132	216	187	98	100	240	237	250	253
	Cash Balance (Opening)	33	39	34	42	41	42	43	53	54	54
	PLUS: Receivable Collections	9457	8301	8512	8928	4643	4639	11348	11823	12189	12580
	Others	44	64	75							
	Bank Loan Proceeds	150	150	116	133	122	27	529	91	88	74
	TOTAL	9684	8554	8737	9103	4806	4708	11920	11967	12381	12708
	LESS: Trade Payables	4404	4119	3954	4108	2095	2138	5283	5475	5532	5680
	Direct Labor	652	611	633	632	332	335	842	875	873	911
	Other Mfg. Expenses	990	884	937	929	473	485	1227	1258	1257	1301
	Sales Delivery Gen'l Admn.	2766	2197	2373	2667	1325	1342	3238	3357	3630	3720
B A L A N C E S H E E T	Fixed Asset Addition	367	-	59	156	140	75	653	274	265	236
	Income Tax	34	93	25	118	99	-	116	139	142	161
	Officers Salaries	198	127	132	168	78	80	204	213	214	217
	Dividends	120	60	150	120	60	60	120	120	150	150
	Other Expenses	79	38	69	44	26	28	68	71	80	86
	Others*		241	213	4	1		14	2	3	2
	Bank Loan Repayments	135	150	150	116	133	122	102	129	191	188
	TOTAL	9645	8520	8695	9062	4764	4665	11967	11913	12277	12652
	Cash Balance (Closing)	39	34	42	41	42	43	53	54	54	56
	ASSETS										
	Cash	39	34	42	41	42	43	53	54	54	56
	Marketable Securities	-	38	51	55	56	56	70	72	73	77
	Receivables (Net)	447	427	500	515	472	481	597	616	636	656
	Inventory (Net)	377	348	367	397	373	378	472	487	492	507
	Other (Prepaid)	47	36	41	42	43	45	53	55	59	61
	CURRENT ASSETS	910	883	1001	1050	986	1003	1245	1284	1316	1357
	Fixed Assets (Net)	1813	1617	1541	1529	1650	1572	2011	2058	2034	2022
	Other Non-Current Assets	269	265	190	215	155	230	245	255	253	255
	TOTAL ASSETS	2992	2765	2732	2794	2791	2805	3501	3597	3603	3634
	LIABILITIES										
	Notes Payable Banks	150	150	116	133	122	27	29	91	88	74
	Trade Payable	313	305	340	330	340	350	448	457	461	474
	Income Tax	93	25	118	99	58	116	139	142	161	187
	Current Maturities	203*	200*	-	-	-	-	100	100	100	125
	Accruals	115	95	102	109	110	111	139	144	150	153
	CURRENT LIABILITIES	874	775	676	671	630	604	855	934	960	1013
	Term Loan	200*	-	-	-	-	-	325	225	125	-
	Convertible Debentures	400	400	400	400	400	400	400	400	400	400
	TOTAL LIABILITIES	1474	1175	1076	1071	1030	1004	1500	1559	1485	1413
	Common Stock	1350	1350	1350	1350	1350	1350	1350	1350	1350	1350
	Retained Earning	168	240	306	373	411	451	571	688	768	871
	NET WORTH	1518	1590	1656	1723	1761	1801	1921	2038	2118	2221
	TOTAL LIABILITIES & NET WORTH	2992	2765	2732	2794	2791	2805	3501	3597	3603	3634
	WORKING CAPITAL	36	108	325	379	356	399	390	350	356	344
	DEPRECIATION	135	136	135	143	79	78	199	217	231	246
	CASH FLOW**	357	268	351	330	177	178	439	454	461	499
	DEBT/WORTH	.97	.74	.65	.62	.59	.56	.82	.76	.70	.64

*Equipment Obligations

**Cash flow = Net Income + Depreciation

ROYSON BAKERIES INC.

FINANCIAL STATEMENTS

Spread in Thousands	Actuals					Projections				
For the Period Ending	12-31 1965	12-31 1966	12-31 1967	12-31 1968	6-30 1969	12-31 1969	12-31 1970	12-31 1971	12-31 1972	12-31 1973
NET SALES	9813	8198	8757	8854	4500	4620	11276	11671	12079	12513
LESS: Materials Used	4383	3974	4066	4009	2067	2122	5180	5128	5155	5584
Direct Labor	710	611	630	620	323	331	617	665	669	902
Other Mfg. Expenses	1080	973	1031	1002	517	532	1299	1363	1382	1423
COSTS OF GOODS SOLD	6173	5558	5727	5631	2907	2985	7296	7555	7706	7969
GROSS MARGIN	3640	2640	3030	3223	1593	1635	3980	4052	4373	4544
LESS: Sales & Delivery Expenses	2394	1697	1909	2187	1080	1109	2582	2586	2855	2966
Gen'l Admn. Expenses	628	623	595	549	265	273	744	752	834	876
Officers Salaries	206	131	123	168	77	78	215	223	225	238
Other Expenses (Net)	79	42	70	44	27	28	67	70	73	75
Income Tax Provision	153	64	153	135	71	72	172	175	178	216
NET INCOME	180	83	180	140	73	75	200	206	208	235
Cash Balance (Opening)	34	38	36	42	41	41	41	52	54	54
PLUS: Receivable Collections	9750	8231	8672	8848	4517	4625	11158	11649	12057	12489
Others	47	105	59	3						
Bank Loan Proceeds	150	150	126	150	140	41	538	101	119	75
TOTAL	9981	8524	8863	9043	4698	4707	11757	11802	12250	12619
LESS: Trade Payables	4404	3963	4044	4035	2030	2128	5151	5127	5153	5581
Direct Labor	715	609	633	622	319	330	820	866	869	903
Other Mfg. Expenses	1010	885	958	920	464	485	1194	1238	1245	1289
Sales, Delivery, Gen'l Admn.	2958	2272	2449	2676	1314	1350	3242	3252	3594	3742
Fixed Assets Addition	292	-	46	180	111	65	638	260	220	223
Income Tax	36	101	20	118	101	-	114	135	145	154
Officers Salaries	204	134	123	166	77	79	212	223	225	237
Dividends	117	58	146	117	58	59	117	117	146	148
Other Expenses	82	39	72	42	27	30	67	70	73	76
Other		277*	210*	-	6	-	14	2	4	2
Bank Loan Repayments	125	150	150	126	150	140	116	138	201	219
TOTAL	8943	8488	8851	9002	4657	4666	11685	11748	12176	12563
Cash Balance (Closing)	38	36	42	41	41	41	52	54	54	55
ASSETS										
Cash	38	36	42	41	41	41	52	54	54	55
Marketable Securities	-	42	52	49	55	55	69	71	75	77
Receivables (Net)	464	431	516	522	505	500	618	640	662	686
Inventory (Net)	372	334	374	394	355	355	440	461	464	477
Other (Prepaid)	49	37	42	41	41	43	53	54	58	60
CURRENT ASSETS	923	880	1026	1047	997	994	1232	1280	1313	1355
Fixed Asset (Net)	1841	1603	1516	1533	1617	1539	1971	2093	2018	2006
Other Non-Current Assets	260	255	196	216	166	231	241	238	250	241
TOTAL ASSETS	3024	2738	2738	2796	2780	2764	3444	3557	3581	3602
LIABILITIES										
Notes Payable Banks	150	150	126	150	140	441	38	101	199	75
Trade Payables	315	301	350	339	348	342	431	446	449	450
Income Tax	101	20	118	101	57	114	135	145	154	197
Current Maturities	235*	200*	-	-	-	-	100	100	100	125
Accruals	121	96	104	109	109	110	138	141	149	154
CURRENT LIABILITIES	922	767	698	699	654	607	842	933	971	1011
Term Loan	200*	-	-	-	-	-	325	225	125	-
Convertible Debenture	400	400	400	400	400	400	400	400	400	400
Deferred Income Taxes	93	137	172	206	220	235	272	305	329	348
TOTAL LIABILITIES	1615	1304	1270	1305	1274	1242	1839	1863	1825	1759
Common Stock	1314	1314	1314	1314	1314	1314	1314	1314	1314	1314
Retained Earnings	95	120	154	177	192	208	291	380	442	529
NET WORTH	1409	1434	1468	1491	1506	1522	1605	1694	1756	1843
TOTAL LIABILITIES & NET WORTH	3024	2738	2738	2796	2780	2764	3444	3557	3581	3602
WORKING CAPITAL	1	113	328	348	343	387	390	347	342	344
DEPRECIATION	138	133	133	143	77	78	196	215	229	244
CASH FLOW**	318	216	313	283	150	153	390	421	437	477
DEBT/NET WORTH	1.08	.91	.87	.88	.85	.82	1.15	1.11	1.04	.95

*Equipment Obligations

**Cash Flow = Net Income + Depreciation

JAYTEE BAKERIES INC.

\$500,000 five year term loan to be used for payment of \$360,000 to The Rushmore Bakeries as purchase consideration for the plant, payable in the first week of January, 1970, and \$140,000 for working capital requirements. This loan is in addition to the existing limit of \$150,000.

History.

Business was started in 1958 by Mr. Allen P. Kaul. In December, 1963 the business was purchased by the present management and incorporated under the name and style of Jaytee Bakeries Inc.

Business:

The company manufactures a large variety of bread and bread type rolls, doughnuts and buns. The various products of the company includes white bread, wheat bread, rye bread, diet bread, dinner rolls, sweet rolls, brown and serve buns, cake doughnuts and yeast doughnuts. Bread and bread type rolls account for 85% of net sales while doughnuts and buns make up the remaining 15%.

Selling and Distribution:

The company distributes its products through 105 wholesale driven-salesmen from its 10 sales depots located within a distance of 150 miles from its plant. Sales are made to grocery stores and to two food chains. The latter accounted for about 25% of net sales last year. Terms of sale are 1/10 net 20 to the grocery stores and net 20 days to the food chains.

Competition.

The company has been very successful due to the number of different varieties of bread it manufactures and is ahead of its competitors in introducing new varieties in the market.

Employees.

The company employs 225 persons including the 105 driver-salesmen. Company's relations with the employees are very good and so far there has been no work stoppage due to any grievances by the employees. The present contract with the

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Bakers and Confectioners Union was negotiated in April this year and will run for four years. The contract with the six out of the ten Teamster's locals were negotiated during March and the other four during May this year; all these will be operative for three years.

Management.

J.T. Smith, the president, was born in 1924. Earned his B.B.A. from Wharton School of Business and Finance in 1946 and from 1946 to 1962, has worked with Britannia Bakeries Inc. in various capacities, lately as vice-president before the incorporation of the company late in 1963. He is married and has two sons and a daughter.

Mr. P.T. Smith, the vice president, was born in 1934 and earned his B.B.A. in 1956 from University of Michigan. From 1956 to 1958 he worked in Scott Bakeries Inc. as sales supervisor and then up to 1963 as assistant vice president. Is married and has two daughters.

Mr. G.G. Brown, the secretary and treasurer, was born in 1925 and was a colleague of Mr. J.T. Smith and graduated along him in 1946. He also worked for the Britannia Bakeries Inc. and was Controller when he left it in 1963 to join Jaytee. Is married and has one son.

Mr. K.K. Kamath is another colleague of J.T., is vice president, and is 38 years old. He is a graduate of Northwestern University where he had his degree in 1955. Has served with the Birmingham Bakeries as assistant vice president of production from 1959-63 and before that was with the Britannia Bakeries Inc. in a similar capacity. Is married for the second time after the death of his first wife in 1967. Has no child.

Financial.

Data is given on the spread sheet for the previous five years and also projections for five years from 1969-1973. Accounts receivables were aged as follows on the next page:

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1 -- 30 days old	\$435,000	
31 -- 60 days old	\$ 32,000	
61 --120 days old	5,000	Total \$472,000 as on June 30, 1969.

Any account which goes beyond 120 days is written off as a current charge against other expenses and during the previous five years the amount of write offs has averaged about \$2,000 per year.

Inventories.

Inventories are based on physical count after elimination of obsolete items. These are priced at cost and first in first out costing method.

Fixed assets.

These are carried at cost and depreciation is provided on a straight line basis for financial reports.

Other Non-Current Assets.

Plant and equipment under construction is the major item under this head. All the assets of the company are adequately insured against all risks. All the officers of the company are covered under the life insurance policy taken out by the company for a total amount of \$400,000.

Income Taxes.

Provision for income tax represents the amount determined to be payable for the period under the rules and regulations of the government, and this amount requires no adjustments or allocation.

Capitalization.

The company has outstanding 135,000 shares of common stock for a total paid in capital of \$1,350,000. There are also 7% convertible debentures of \$400,000 which are convertible into common stock at the rate of 50 common stock for every \$1,000 of debentures.

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Bank's relationship with the company:

The account with the bank was opened towards the end of 1963 when the present management took over from the previous owners. The average daily balance for the past five years has been as follows:

<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>
\$34,000	39,000	37,000	38,000	38,000

At present the balance is rather low at \$27,000. The bank has made available a commitment for a loan against notes of up to \$150,000. The company has fully utilized this limit. The present balance is \$130,000 outstanding.

Present Request:

The present request is for a five year term loan of \$500,000 to be used for the payment of \$375,000 to Ecko Bakeries as purchase consideration for the plant and \$125,000 for other working capital requirements. Ecko Bakeries is mainly manufacturer of buns and doughnuts of all varieties. At present Royson does not carry the buns and doughnut line although it is an item the company would like to add to its product line. The plant to be purchased was appraised by Lloyds and Lloyds, industrial appraisers at \$390,000 as on June 25, 1969. The company has given thought to the installation of its facilities as against the present purchase of Ecko's and has decided in favor of the purchase.

Extracts from the Credit Agencies Reports:

International Credit Agency Report already in the file:

Latest report dated May 25, 1969 shows as follows:

Rating AAA1

Payments:

<u>H.C.</u>	<u>Owe</u>	<u>P due</u>	<u>Terms</u>	<u>April 30, 1969</u>	<u>Sold</u>
\$150 M	\$99 M		n/30	ppt	over four years
\$195 M	\$165 M		n/30	ppt	over five years
\$140 M	\$85 M		n/30	ppt	over three years

1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 26

[illegible]

1. *Illegitimate* – the child is born out of wedlock.

* \log_{10} (1 + $\frac{1}{2}$) = 0.1761, \log_{10} (1 + $\frac{1}{3}$) = 0.1258, \log_{10} (1 + $\frac{1}{4}$) = 0.0969, \log_{10} (1 + $\frac{1}{5}$) = 0.0792, \log_{10} (1 + $\frac{1}{6}$) = 0.0646, \log_{10} (1 + $\frac{1}{7}$) = 0.0543, \log_{10} (1 + $\frac{1}{8}$) = 0.0471, \log_{10} (1 + $\frac{1}{9}$) = 0.0414, \log_{10} (1 + $\frac{1}{10}$) = 0.0370.

10

1

$\frac{1}{2} \log \frac{1}{2} \pi$	$\frac{1}{2} \log \frac{1}{2} \pi$	$\frac{1}{2} \log \frac{1}{2} \pi$	$\frac{1}{2} \log \frac{1}{2} \pi$	$\frac{1}{2} \log \frac{1}{2} \pi$
812	813	814	815	816
817	818	819	820	821
822	823	824	825	826
827	828	829	830	831
832	833	834	835	836
837	838	839	840	841
842	843	844	845	846
847	848	849	850	851
852	853	854	855	856
857	858	859	860	861
862	863	864	865	866
867	868	869	870	871
872	873	874	875	876
877	878	879	880	881
882	883	884	885	886
887	888	889	890	891
892	893	894	895	896
897	898	899	900	901
902	903	904	905	906
907	908	909	910	911
912	913	914	915	916
917	918	919	920	921
922	923	924	925	926
927	928	929	930	931
932	933	934	935	936
937	938	939	940	941
942	943	944	945	946
947	948	949	950	951
952	953	954	955	956
957	958	959	960	961
962	963	964	965	966
967	968	969	970	971
972	973	974	975	976
977	978	979	980	981
982	983	984	985	986
987	988	989	990	991
992	993	994	995	996
997	998	999	1000	1001

Number of employees 225
 Record Clear
 Condition Sound
 Trend Up

Sales \$8,943,000 Dec. 31, 1968
 Net worth \$1,723,000

Local Credit Agency Report Extracts.

Credit History

Kind of Business	Date A/C opened	Date of Last Sale	Highest credit	Amount owing	Amount P. due	Term of sale & mode of payment
Z(486)	May, 1964	May 29, 69	\$129M	\$ 65M		0-1
Z(678)	March, 1965	June 3, 69	\$150M	\$ 95M		0-1
Z(897)	Oct, 1966	May 31, 69	\$200M	\$129M		0-1

No record of mortgage or lien of any type. No record of bankruptcy or court
 judgement or collection.

1. The first part of the report is a general introduction to the subject of the study.

2. The second part of the report is a detailed description of the methods used in the study.

3. The third part of the report is a discussion of the results of the study.

4. The fourth part of the report is a conclusion and a list of references.

5. The fifth part of the report is a list of references.

6. The sixth part of the report is a list of references.

7. The seventh part of the report is a list of references.

ROYSONS BAKERIES INC.

\$500,000 five year term loan to be used for payment for \$375,000 to Ecco Bakeries as purchase consideration for the plant, payable in the first week of January, 1970, and \$125,000 for working capital requirements. This loan is in addition to the existing limit of \$150,000.

History:

Business was started in December, 1957 by Mr. B. B. Brown in association with Mr. K. K. Garfield. In November, 1963 the business was purchased by the present management and incorporated under the name and style of Royson Bakeries Inc.

Business:

The company manufactures a large variety of bread and bread type rolls, pies and cakes. The various products of the company include white bread, rye bread, wheat bread, diet bread, dinner rolls, sweet rolls, fruit pies, cream pies, plain cakes, layer cakes and fruit cakes. Bread and bread type rolls account for 88% of net sales while pies and cakes make up the remaining 12%.

Management:

Mr. John K. Brown is the president of the company. He is 46 years old. Earned his B.B.A. from University of Michigan in 1946. He has worked with Brothers Bakeries Inc. from 1946 to 1963 in various capacities, lately as vice-president. He is married and has two daughters and one son.

Mr. Robert K. Brown is the vice president. He is 34 years old and is a graduate of the School of Business, University of California, Berkeley. After graduating in 1957, he joined Escort Bakeries Inc. as a sales supervisor: he was promoted to assistant vice president in 1959. He is married and has one sone and two daughters.

Mr. K.K. Ramon, the secretary and treasurer, is 45 years old and was a colleague of Mr. J.K. Brown and graduated along with him in 1946. He also worked for the Brothers Bakeries Inc. and was assistant vice-president of finance when he left it in 1963 to join Royson. He is married and has a daughter.

The following information was obtained from a review of the files of the Federal Bureau of Investigation, Department of Justice, and the Central Intelligence Agency, and is being furnished to you for your information.

1. Name

2. Date of Birth

3. Place of Birth

4. Education

5. Occupation

6. Residence

7. Travel History

8. Employment History

9. Marital Status

10. Children

11. Other Information

12. Remarks

13. Signature

14. Date

15. Initials

16. Title

17. Agency

18. File Number

19. Classification

20. Distribution

21. Review

22. Approval

23. Disapproval

24. Comments

25. Action

26. Status

27. Remarks

Mr. K. M Briggs is another colleague of J. K, is vice president. He is 39 years of age. He worked for the Brothers Bakeries Inc. from 1955 to 1963, and was assistant vice president of production when he left to join Royson. He is married and has a son.

Selling and Distribution:

The company distributes its products through 110 wholesale driversalesmen from its 10 sales depots located within a distance of 150 miles from its plant. Sales are made to grocery stores and two food chains. Sales to grocery stores account for 75% of the net sales. Terms are 1/10 net 20 to grocery stores and net 20 days to the food chains.

Competition:

The company manufactures a number of different varieties of bread which is the reason for its success. The company leads its competitors in introducing new varieties in the market.

Employees:

The company employs 232 persons including the 110 driversalesmen. Company's relations with its employees have been very good. So far there has been no strike in the company's plant or stoppage of work elsewhere in the organization due to any grievances by the employees. The present contract with the Bakers and Confectioners Union will run for four years. The contract with the ten teamster's locals were negotiated in January 1969 and these will be operative for three years.

Financial:

Data is given on the spread sheet for the previous four years up to 1968, and for the half year ending June 30, 1969, and also projection up to 1973.

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APPENDIX B

TAIL PROBABILITIES OF SAMPLE PROPORTION AS
FUNCTION OF POPULATION PROPORTION

[$r = 25, 31, 34, 42, 43, 45$]

TABLE B-1.--Tail probabilities of sample proportion as function of population proportion [r = 25, 31, 34, 42, 43, 45].

p	Y r=25	Y r=31	Y r=34	p	Y r=42	Y r=43	Y r=45
.20				.44	.002		
.22	.00			.45	.003		
.24	.01			.46	.005		
.25	.02			.47	.01		
.26	.03			.48	.02		
.27	.05			.49	.03	.01	
.28	.07			.50	.04	.02	
.29	.11			.51	.05	.03	
.30	.16			.52	.08	.05	.01
.31	.20			.53	.11	.07	.02
.32	.26	.01		.54	.16	.10	.03
.33	.34	.02		.55	.21	.14	.05
.34	.42	.03		.56	.27	.19	.08
.35	.50	.05		.57	.32	.23	.10
.36	.58	.07	.01	.58	.40	.30	.14
.37	.64	.09	.02	.59	.48	.37	.19
.38	.71	.13	.03	.60	.56	.45	.25
.39	.78	.17	.04	.61	.65	.53	.31
.40	.83	.24	.06	.62	.71	.62	.39
.41	.88	.31	.09	.63	.78	.69	.47
.42	.92	.38	.13	.64	.82	.74	.53
.43	.94	.47	.18	.65	.87	.80	.61
.44	.96	.52	.22	.66	.91	.85	.69
.45	.97	.60	.29	.67	.94	.90	.76
.46	.98	.68	.36	.68	.96	.93	.82
.47	.99	.74	.44	.69	.98	.96	.87
.48		.80	.51	.70	.99	.97	.92
.49		.86	.59	.71		.98	.94
.50		.90	.67	.72		.99	.96
.51		.92	.74	.73			.98
.52		.94	.78	.74			.99
.53		.96	.84	.75			
.54		.98	.88	.76			
.55		.99	.92	.77			
.56			.94				
.57			.96				
.58			.97				
.59			.98				
.60			.99				

APPENDIX C

DERIVATION OF REPRESENTATION

DERIVATION OF REPRESENTATION

Wise¹ refines the usual binomial approximation and gives the following formula for the sum of hypergeometric probabilities. If N , n , k and x are known then

$$1-\gamma = \sum_{r=0}^x \frac{k!n!(N-k)!(N-n)!}{(k-r)!(n-r)!r!N!(N-k-n+r)!}$$

$$\approx I_h(n-x, x+1) + \frac{n(n-1)}{24M^2} I_2$$

where $M = N - \frac{1}{2}n + \frac{1}{2}$, $h = (N - k - \frac{1}{2}n + \frac{1}{2}x + \frac{1}{2})/M$

and $I_2 = (n+1)I_h(n-x, x+1) - (n-x+1)I_h(n-x-2, x+1)$

$$- (x+2)I_h(n-x, x-1) + 2I_h(n-x-1, x)$$

and $I_h(n-x, x+1) = \frac{n! \int_0^h t^{n-x-1} (1-t)^x dt}{(n-x-1)!x!}$ is the incomplete

¹M. E. Wise, "A Quickly Convergent Expansion for Cumulative Hypergeometric Probabilities, Direct and Inverse," Biometrika, XLI (1954), 317-329, quoted in G. J. Lieberman and Donald B. Owen, Tables of Hypergeometric Probability Distribution (Stanford, Calif.: Stanford University Press, 1961).

beta function tabulated by Karl Pearson.² Note that

$$I_h(n-x, x+1) = \sum_{y=n-x}^x \binom{n}{y} h^y (1-h)^{n-y} = E(n, n-x, h)$$

(E notation is used by the Harvard Computation Laboratory³ which tabulates binomial distribution.)

The sums of the first two terms of the expansion seem accurate enough for almost all practical purposes. When the sample size is smaller than .4 of the population or when both the sample and population are very large, one term is usually sufficient. In the present study the sample size is smaller than .4 of the population, the first term is sufficient for computation.

In the first case the number of officers who differentiate between the two companies is stated as 43.

The probability of observing 43 or more is computed as under: $\gamma = \Pr[X \geq 43]$ where X follows hypergeometric distribution, $N = 285$, $n = 70$. The first term of Wise's approximation states that for all x

$$\Pr[X \leq x] \approx I_h(n-x, x+1)$$

²Karl Pearson, Tables of the Incomplete Beta-Function (Cambridge, England: The University Press, 1934).

³Harvard University Computation Laboratory, Tables of Cumulative Binomial Probability Distribution (Cambridge, Mass.: Harvard University Press, 1955).

But $I_h(n-x, x+1) = \Pr[Y \geq n-x]$ where $Y \sim \text{Binomial distribution}$, $n = 70$, $p = h$. Putting these results together

$$\begin{aligned}\gamma &= 1 - \Pr[X \leq 42] \approx 1 - I_h(28, 43) = 1 - \Pr[Y \geq 28] \\ &= \Pr[Y \leq 27]\end{aligned}$$

where $Y \sim B(n=70, p=h)$. But

$$\Pr[Y \leq 27 | n=70, p=h] = \Pr[Y \geq 43 | n=70, p=1-h]$$

So that finally

$$\gamma = \Pr[X \geq 43] \approx \Pr[Y \geq 43 | n=70, p=1-h]$$

Where $1-h = (k - \frac{1}{2}x) / (N - \frac{1}{2}n + \frac{1}{2})$, $x = 42$, $n = 70$, and $N = 285$.

Since the computation is to be done for the tail probabilities for values other than 43, the result is generalized as

$$\Pr[X \geq r] \approx \Pr[Y \geq r]$$

$X \sim \text{Hypergeometric distribution}$
 N, n, k

$Y \sim \text{Binomial } n$

$$p = \frac{k - \frac{1}{2}(r-1)}{N - \frac{1}{2}n + \frac{1}{2}}$$

In every case $N = 285$, $n = 70$ so

$$p = \frac{k - \frac{1}{2}(r-1)}{250.5}$$

$$k - \frac{1}{2}x = k - \frac{1}{2}(r-1)$$

APPENDIX D

TABULATED DATA FROM QUESTIONNAIRE RESPONSES
UNDER NORMAL CONDITIONS

TABLE D-1.--Number of responses and floating interest rates.

Rate of Interest Prime + %	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
1/4%	4	2
1/2	10	12
3/4	8	4
3/4 to 1%	2	5
1	16	17
1-1 1/2	4	4
1 1/2	9	9
2	-	-
2 1/2	4	1
2 3/4	-	3
Total	57	57

Note: One does not mention.

TABLE D-2.--Number of responses and flat interest rates.

Rate of Interest %	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
5 1/2	2	2
6 3/4	1	-
7	2	3
7 1/2	2	-
7 3/4	-	1
8	1	2
8 1/2	1	-
8 3/4	-	1
9	2	2
9 1/2	1	-
10	-	1
Total	12	12

TABLE D-3.--Number of responses and difference in interest rates.

	Floating Rates						Flat Rates					
Number of Respondees	3	1	3	2	1	3	1	1	1	1	1	18*
Rate of Interest: Jaytee	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	$\frac{3}{4}$	1	$2\frac{1}{2}$	$6\frac{3}{4}$	$7\frac{1}{2}$	$7\frac{1}{2}$	$8\frac{1}{2}$	$9\frac{1}{2}$	
Rate of Interest: Roysons	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{3}{4}$ -1	1	$\frac{3}{4}$	$2\frac{3}{4}$	7	$7\frac{3}{4}$	8	$8\frac{3}{4}$	10	
Difference	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{2}$	

*Total

TABLE D-4.--Number of responses and compensating balance requirements.

Rate	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
10%	8	7
10-15	1	1
15%	39	40
15-20	4	4
20%	13	13
30%	1	1
Total	66	66

Note: One respondent gives the requirement as zero; another does not give it at all. One states that the compensating balance is not material, and one writes "working."

TABLE D-5.--Number of responses and working capital requirements.

Working Capital (000)	Number of Respondee	
	Jaytee Bakeries	Roysons Bakeries
\$200 & 250	0	0
250 & 300	3	3
300 & 350	41	43
350 & 400	17	15
400 & 450	1	1
Existing	7	7
Total	69	69

Note: One required a minimum current ratio of 1.5 to be maintained.

TABLE D-6.--Number of responses and amounts of further debt.

Amount \$(000)	Number of Respondee	
	Jaytee Bakeries	Roysons Bakeries
0	32	34
51-100	9	11
101-200	1	1
201-250	4	1
251-300	1	0

TABLE D-7.--Number of responses and permitted amounts of dividend.

Dividends \$ (000)	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0-50	19	20
51-100	10	13
101-150	14	10
As Already	2	2
Negotiated	1	1
Percentage of net income	6	6

TABLE D-8.--Number of responses and further issue of equity.

Equity Issue in dollars \$	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0	50	47
up to 250	14	8
to 500	6	10
over 500	0	5
Total	70	70

TABLE D-9.--Number of responses and differences in issue of equity.

Amount in \$000	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
1	0	100
1	0	200
1	0	300
1	0	400
2	100	275
3	500	700
6	250	400
1	300	600
<u>16</u>		

APPENDIX E

TABULATED DATA FROM QUESTIONNAIRE RESPONSES
UNDER EXISTING CONDITIONS

TABLE E-1.--Number of responses and floating interest rates.

Rate, Per Cent Per Annum	Number of Respondee	
	Jaytee Bakeries	Roysons Bakeries
1/2	7	7
3/4	6	5
3/4 - 1	3	3
1	12	13
1 - 1 1/2	-	-
1 1/2	9	9
2	1	1
Total	38	38

TABLE E-2.--Number of responses and flat interest rates.

Rate, Per Cent Per Annum	Number of Respondee	
	Jaytee Bakeries	Roysons Bakeries
8 3/4	1	-
9	3	3
9 1/4	3	-
9 1/2	6	6
9 3/4	-	2
10	5	6
10 1/2	1	-
11	-	1
Total	19	18

Note: One of the respondees refused to lend to Roysons Bakeries, Inc.

TABLE E-3.--Number of responses and difference in interest rates.

	Floating Rates			Flat Rates							
Number of Respondees	2	1	3	1	1	3	2	1	1	1	16*
Rate of Interest: Jaytee	$\frac{3}{4}$	1	$\frac{3}{4}$	$8\frac{3}{4}$	9	$9\frac{1}{4}$	$9\frac{1}{2}$	$9\frac{1}{2}$	$10\frac{1}{2}$	$9\frac{1}{2}$	
Rate of Interest: Roysons	1	$\frac{3}{4}$	$\frac{3}{4}$ 1	9	$9\frac{1}{2}$	$9\frac{1}{2}$	$9\frac{3}{4}$	10	11	No Loan	
Difference	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$?	

*Total

TABLE E-4.--Number of responses and compensatory balance requirements.

Rate (Per Cent)	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0	1	1
10	2	2
10-15	0	0
15	12	12
15-20	3	3
20	34	32
25	4	4
30	1	2
No Loans	13	14
Total	70	70

TABLE E-5.--Number of responses and working capital requirements.

Working Capital (000)\$	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0-200	0	0
201-250	2	2
251-300	25	22
301-350	18	19
351-400	7	8
Existing	4	4
Current Ratio 1.5	1	1
No Loan	13	14
Total	70	70

TABLE E-6.--Number of responses and amount of further debt.

Debt \$(000)	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0	32	34
1-50	1	2
51-100	1	2
101-150	2	-
151-200	1	-
201-250	3	1
251-300	-	-
No Loan	13	14
Negotiated	12	12

TABLE E-7.--Number of responses and permitted amounts of dividend.

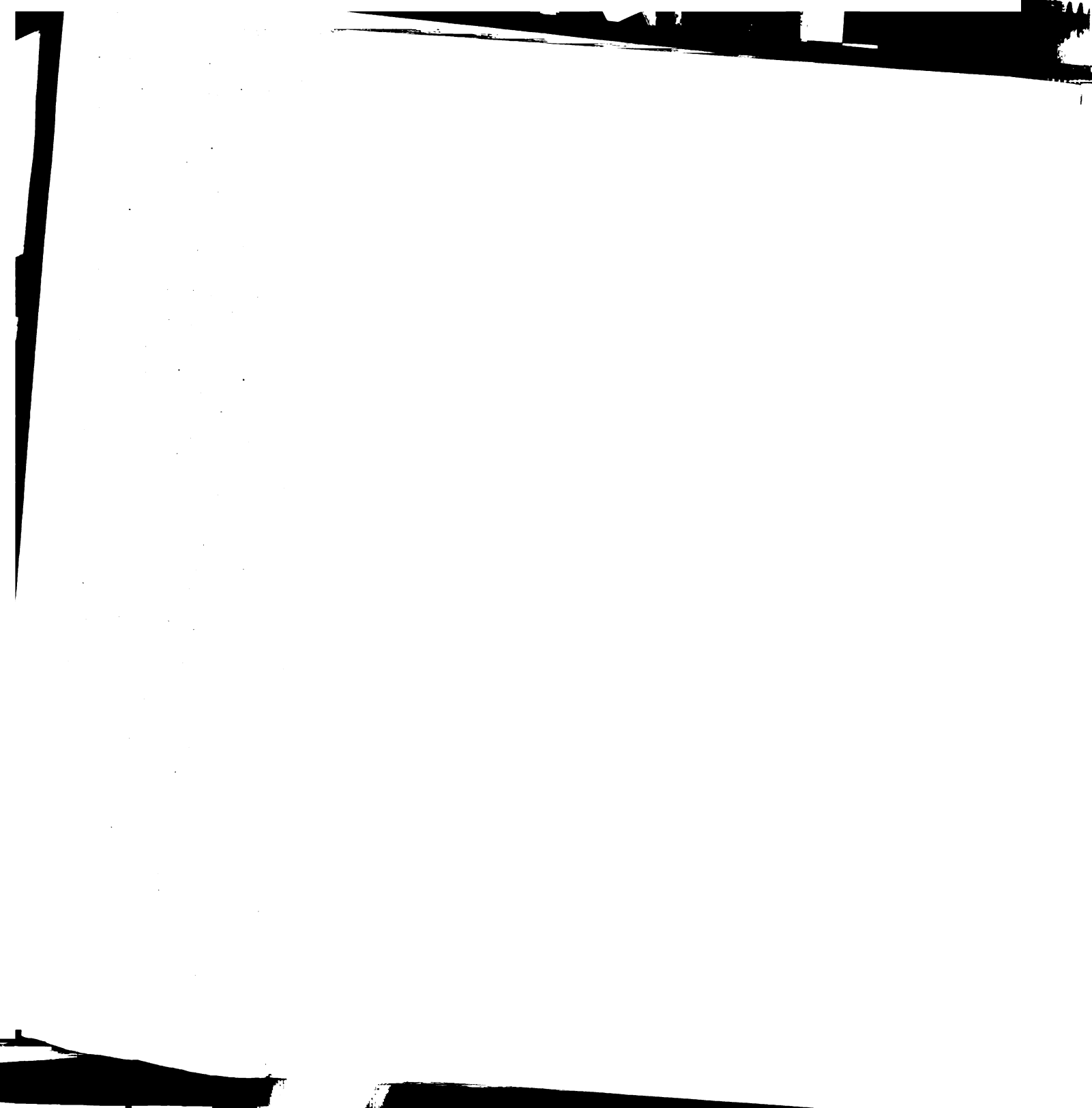
Amount \$(000)	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0-50	19	19
51-100	9	11
101-150	10	6
No Loan	13	14
Existing	1	2
Percentage of net income	8	6
Total	60	58

TABLE E-8.--Number of responses and issue of further equity.

Amount \$(000)	Number of Respondees	
	Jaytee Bakeries	Roysons Bakeries
0	41	34
100	2	2
200	12	7
275	-	2
300	1	2
400	1	8
600	-	1
No Loan	13	14
Total	70	70

TABLE E-9.--Number of responses and differences in the issue of further equity.

Amount \$ (000)	Number of Responses	
	Jaytee Bakeries	Roysons Bakeries
2	0	100
2	0	200
1	0	300
1	0	400
2	100	275
1	200	300
6	200	400
1	300	600



APPENDIX F

TAIL PROBABILITIES OF SAMPLE PROPORTION AS
FUNCTION OF POPULATION PROPORTION

[$r = 1, 2, 3, 4, 6, 7, 9, 10, 11, 16, 18$]

TABLE F-1.--Tail probabilities of sample proportion as function of population proportion [$r = 1, 2, 3, 4, 6, 7, 9, 10, 11, 16, 18$].

p	γ r=1	γ r=2	γ r=3	γ r=4	γ r=6	γ r=7
.10	.9998	.9998	.98788	.95704	.9996	.55960
.15	1.0000	1.0000	.99970	.98842	.9784	.94501
.20						
.25						
.30						
p	γ r=9	γ r=10	γ r=11	γ r=16	γ r=18	
.10	.26374	.14604	.06315	.00035	.00001	
.15	.78158	.65088	.50262	.03500	.00366	
.20				.30402	.1209	
.25				.71094	.4908	
.30						

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