1979

Accounting Ratios as Measures of Benefits to Companies Initiating Pension Plans.

Charles Bruce Swindle

Louisiana State University and Agricultural & Mechanical College

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ACCOUNTING RATIOS AS MEASURES OF BENEFITS TO COMPANIES INITIATING PENSION PLANS

The Louisiana State University and Agricultural and Mechanical Col. PH.D. 1979

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ACCOUNTING RATIOS AS MEASURES OF BENEFITS TO COMPANIES INITIATING PENSION PLANS

A dissertation

Submitted to the Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College in partial fulfillment of the requirements for the degree of Doctor of Philosophy

in

The Department of Accounting

by

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B.S., Northeast Louisiana University, 1971
M.B.A., Northeast Louisiana University, 1973
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ABSTRACT

The purpose of this study is to determine whether the benefits derived from the cost of employee pension plans are observable in financial statement information. Since different financial statement readers use statement data differently, the primary user group assumed is the labor group.

Pension plans require expenditures by firms which may potentially affect labor turnover and productivity, thereby affecting financial statements. Ratio analysis is used in this study to observe the effects of pension plans on granting firms. Fifteen accounting ratios are used, representing three basic categories for ratio analyses. Eight profitability, five labor productivity, and two liquidity ratios were observed in this research. The study's objective is to observe the effects of pension plans on firms' financial statements.

Data were collected from Standard and Poor's COMPSTAT tape. APB Opinion, No. 8 requires that plans be disclosed along with the provision, for the period, of any pension cost. All COMPSTAT manufacturing companies which began reporting pension expense on their financial statements with all other necessary ratio data between 1969 and 1974 were included in this study.

The accounting ratios utilized were standardized by dividing the individual firm's ratios by a computed average of that ratio.
A three-year moving-average was computed for each ratio. The standardized average ratios were plotted for each sampled firm. These plots were traced across the year of plan initiation and grouped into six basic classes—upward trend begun, downward trend begun, a stable (or nondiscernible) trend begun, upward trend continued, downward trend continued, and a stable (or nondiscernible) trend continued.

A one-to-one comparison was made across these same periods with matched-pairs of firms not having pension plans and with matched-pairs of firms which had pension plans throughout the time period of this study. The matched-pairs of the two groups were selected by their industry classification and total asset size.

Sixty-seven manufacturing firms beginning pension plans were included in the test-group. For each of the three ratio classifications, more than 80 percent of the ratios indicated that no negative effect was apparent after the firms' year of pension initiations. The chi-square test for two independent samples was used to examine the similarities between the test-group and each of the control groups. Each control group showed the same percentages of movements (positive, negative, or "neither") as the test-group. No chi-square test was made after the matched pairs were combined with the test-group firms.

The results reported in these observations can only be
considered after the test-group firms have been paired with companies in both of the two control groups. The percentages of actual similarities in ratios' changes between the two control groups and the test-group are small. Therefore, movements in the test-group's ratios appear to be caused by factors other than those present in either of the two control groups.

The major conclusions of this study are listed below:

1. Profitability (measured by profitability ratios) appears not to be affected after the initiation of pension plans.

2. Labor productivity (measured by labor productivity ratios) is not considered to be affected after the initiation of pension plans.

3. As with the other two classifications, most of the liquidity ratios appear not to be affected after pension plan initiations.

4. The benefits to the firm's initiating plans appear either to be at least equal to the cost of their pension benefit plans, or to have no relationship between ratio changes and pension plan initiations.
CHAPTER I

PURPOSE OF THE STUDY

The purpose of this study is to determine whether the benefits derived from the cost of employee pension plans are observable in financial statement information. Since different financial statement users may evaluate possible benefits differently, the primary user group assumed is the labor group.

Employers and businesses have been concerned with providing other-than-wage benefits for their personnel for over 100 years. "The earliest known industrial pension plan in this country was established by the American Express Company in 1875 and the second by the Baltimore and Ohio Railroad five years later."1 During recent years, growth in the area of employee benefits has increased dramatically. "... The greatest expansion of these benefit programs occurred during World War II, largely as a result of wages being frozen."2 "The wartime Stabilization Act was passed in October 1942, and the presidential order to 'hold the line' on prices and wages was issued in April 1943."3 Because of these events, "companies, which were desperate for labor, began to compete for the scarce workers by means of expanded employee benefits."4
Accounting Practices Evolve for Pension Plans

One of the major areas of benefits with which employers have always been concerned is the retirement of their employees. This concern has led to the establishment of private pension plans in most large companies and in many medium-sized and smaller companies as well. In addition to the wage freeze, an Internal Revenue Code clarification relating to pension trusts greatly encouraged the development of pension plans by employers.

The provisions of the Code and subsequent administrative regulations have affected every important aspect of private pension—the tax status of the financial support, of investment income if the plan is funded, of the pension income to beneficiaries, and also of the character of the plans themselves. In arriving at net income for tax purposes, employers are permitted to deduct contributions to support qualified pension plans, subject to the limitations imposed by the Internal Revenue Code and the applicable regulations. Income earned by a trust forming part of a pension plan is not taxable to the trust. In addition, taxation to the employee is deferred until after retirement.

In 1973, about one-half of the work force was covered by some form of retirement plan other than social security while only about 35 years earlier less than 20 percent of that work force was covered. Private pension plan assets increased from less than $3 billion in 1940 to about $150 billion in 1975. Noninsured pension plan assets ($33 billion in 1960) were over $160 billion in 1976. The assets of private pension funds have been growing faster than the assets of their corporations. Two examples are AT&T and
General Motors in 1971. AT&T's pension fund assets were valued at over $9 billion, and its pension cost exceeded $800 million. The pension cost of GM increased by 77 percent over the preceding year. Therefore, private pension plans appear to be far-reaching and important.

A survey by Deaton and Weygandt revealed that pension costs are very large for the majority of the firms they surveyed and appeared to be growing at a more rapid rate than net income. "In 1968, no firms surveyed had pension costs greater than net income, whereas in 1971, seven firms had pension costs exceeding 100 percent of net income. Two firms reported pension costs over four times greater than net income."^10

Combined with this tremendous growth in the size, diversity, and coverage of pension funds, the importance of the pension plan's cost in relationship to the financial position and operations of organizations has greatly increased.

Employee benefit plans without question, have become a very important segment of our economy --

One indication of their importance is the increasing millions or billions of dollars being allocated to them year after year . . .

A second indication is the growing number of employees who are covered by such plans . . .

And a third indication is the variety of plans and the many areas they cover--

and they continue to grow:11
The extremely complex interactions of social, tax, business, and legal environments are at least partly responsible for the accounting profession's problems in dealing with pensions.

Until the mid-1960s, accounting practices for handling pension costs were quite diverse.

The APB's predecessor, the Committee on Accounting Procedure, had previously dealt with accounting for costs of pension plans in Accounting Research Bulletin No. 43, Chapter 13A, "Compensation-Pension-Annuity Costs Based on Past Service," and in Accounting Research Bulletin, No. 47, "Accounting for Costs of Pension Plans." The subject was also reviewed in Accounting Research Study, No. 7, by Paul Grady, "Inventory of Generally Accepted Accounting Principles for Business Enterprises," and was examined in depth in Accounting Research Study, No. 8, published in 1966.12

Since 1965, the various accounting practices considered acceptable have decreased. The events which caused this decrease were the AICPA's publication of Research Study, No. 8 and the APB's issuance of their Opinion No. 8 in 1966, both entitled "Accounting for the Cost of Pension Plans."

In 1974, the Employee Retirement Income Security Act (ERISA) was passed by Congress, requiring the publication of annual reports for employees' benefit plans. This law requires all private retirement programs to meet federally established standards. The FASB began a study of pension plan reporting resulting in an exposure draft for public comment and discussion. The draft was entitled, "Accounting and Reporting by Defined Benefit Pension Plans." If
adopted, generally accepted accounting principles would be established for pension benefit plans.

The FASB concluded that pension plan participants are the main users for whom the financial statements should be directed. The statements should provide participants with information useful in assessing the security of their accumulated benefits. After examining other potential statements users, the Board concluded that plan financial statements should be primarily directed to participants because other interested parties have access to necessary information through other sources.

The Organization Receives Benefits

The future of accountants and managers employed in the personnel area will possibly be based on what Megginson calls the "human resource concept," i.e., "... employees are treated with human dignity and worth, but their output will be judged by the economic criteria of efficiency and effectiveness."¹³ Niels Nielsen, director of compensation for J. C. Penney Company, indicated that, "Instead of dreaming up new programs, employers have looked for ways to make money go further, to preserve the value of pension funds, to run plans better, and to communicate them better. The watchword seems to be how to get more for the money spent instead of how to spend more money."¹⁴

Investors expect significant returns on their investment.
Satisfactory returns to the owners are important and necessary goals
but other goals are also critical for a company. Personal and ethical
satisfaction, social satisfaction, and avoiding unnecessary risks
might be other goals. Ideally, as with any investment, benefits paid
to employees would do more than aid just the firm's employees; they
would also aid in reaching many of the organization's goals.

Since identified goals are a part of every successful organization,
management must identify what it really wants. Goals allow
the firm's administration to make the managerial decisions which would
lead to a primary goal of most business organizations—maximizing
long-run profits. However, the identification of this goal of
maximum profits is not enough to be effective. Maximum profits are
accomplished by continuously reaching many other subordinate corporate
goals.

Attracting and keeping quality personnel is an essential goal
for effective and efficient corporate growth. A fair wage and bene-
fit package is essential to achieve this particular company goal.
William Jaffe states, "Financial remuneration is being increasingly
viewed as an element in the total process of furthering the goals of
the organization and maximizing the potential of the individual. The
goals are achieved through attracting, retaining, motivating, utilizing,
and developing superior talent."15 (Emphasis in the original).

Communication. Another very important element in achieving company
goals through employees is effective communication. Company personnel who believe the organization is actively seeking effective communication are more likely to respond positively toward organization endeavors. "If you want a winning company, be sure your people know the score—or they can not help you win." One company experienced a negative response because of ineffective communication and poor employee attitudes.

A California computer manufacturer grew rapidly during the past decade without unionization of its expanding roster of employees. In recent years, the company considered installing a profit sharing plan for its production workers, but delayed such action in order to plow maximum earnings back into operations. Last fall, despite the last minute implementation of a profit sharing plan and moves to beef up other benefits, the company's production employees accepted a union's initial organizing drive. Benefit improvements were a key selling point for the union, and the workers subsequently handed the company its first strike over the same issue.

As a result of this and similar cases, corporate managers, desiring to receive "their money's worth," are realizing that the job of effective communication is as important as the benefit plan's design and funding. "The trouble is, while many benefit packages are now providing greater value to employee and employer alike, few companies are communicating the understanding of their plans that's vital to the interests of both." Goals of the firm and the employees should be known by both sides. Nielsen states, "... the probability of corporate success is very low if there is an inconsistency between the goals of the company and the value systems of the employees."
Profit sharing is frequently used as a pension supplement or a method of funding pension plans. For many companies, profit sharing and pension plans are synonymous terms. These employee benefits are methods of merging employer and employee goals. "Management must recognize the essential nature of Profit Sharing—that is not merely a flexible way to fund a retirement income program—but a 'people oriented incentive management' program." 20

Proper incentive must be offered by organizations' managements. However, incentives (increased wages and benefits, improved working conditions, and other special services offered for employees) may not be enough since employee motivation is personal to the individual. Return on investment is not only important in business decision-making but return on input is also important in employee decision-making. Employees must feel they are receiving fair benefits for their production. "Employees must see and believe that their present and potential rewards equal their current and future efforts." 21

Communicating the characteristics of the pension benefit and profit sharing plans to employees can provide information as to what actions management desires.

Metzger quoted Richard Fernstrum, a former president of M P Pumps, Inc.

The benefits derived from Profit Sharing cannot be taken away by complex reporting systems, cannot be taken away by adverse tax treatment. None of these things can in any way mitigate the real and
ever present value of Profit Sharing. Why? Because Profit Sharing is not a gimmick, it is not a sum of money, it is not a pot of gold at the end of the rainbow. To us it is a basis of communicating.

When we adopted a Profit Sharing plan at M P Pumps, our primary purpose was to unite every employee in the company in pursuit of a common goal which is profit. The goal was not to avoid taxation, it was not to plunder the worker, it was not to upset work standards, but it was to promote unity of purpose within the enterprise.22

Productivity. William Howell indicates that pension plans are investments in productivity that pay for themselves in the long-run. Behavioral studies indicate employees are motivated from within themselves and that their productivity can be increased by satisfaction with their work. The more invested in pension funds, the more that should be considered invested in business and productivity. "It follows, then, that if qualified pension plans are a form of deferred compensation, their investment constitutes the biggest factor of improved productivity—accelerated capital formation with increased investment in labor-saving and quality-controlling machinery. Accordingly, to the extent that fund managers 'invest in productivity,' pension plans (on a macroeconomic scale) tend in the long run to pay for themselves (SIC)."23 "Productivity will have a greater impact on private pension benefits, of course, if pension plans have a favorable effect on productivity. There's a reciprocating, cause-effect relationship between the two."24 Howell further states, "Two studies of the Profit Sharing Research Founda-
tion actually show that plans for sharing profits with employees tend to increase the profits remaining after sharing." 25 (Emphasis in the original).

Every organization must determine its own goals and the efforts needed to achieve them. Employee benefits are no exception. "What plan sponsors really need to do is to decide where, and in what amounts, to put their money so that it may produce the optimum short-range and maximum long-range return for dollars spent, measured in terms of employee productivity and corporate profitability." 26 Employee benefits are not mere payments for services rendered. Properly utilized, they are important tools for administering companies. "If employers believe that money does talk, they must find out what the words are that employees understand and respond to. They must decide in advance what actions they want the money to produce." 27 Individual employee goals and the employee benefit goals can and must be in line with the organization's major operational goals.

**Analysis.** Lieber and Dragutsky state what they consider the "true pension cost" to be.

Without considering taxes, the true cost of a pension plan to an employer includes the following:

The benefits paid, including all disbursements made on account of retirement, termination of employment, disability or death before retirement
plus

Expenses incurred for all services in connection with the plan operation, including realized losses on investments

less

Earnings on the pension fund, including dividends and interest as well as realized investment gains.\textsuperscript{28}

The statements of these authors are limited in that they consider only the expenditure aspects of pension cost. They ignore the possible benefits the granting firm receives from the pension plan's beneficiaries who are the company's employees. Employee benefits hopefully would be instituted for the benefit of both the firm and the individuals covered. Firms desire to meet their social responsibility to their employees, especially when the organization is also benefited. "In only a relatively few instances have workers through group action (SIC) developed their own old-age income plans. In the majority of cases the initiative was provided by corporate management."\textsuperscript{29} Pension plans may be offered to help increase employee morale and satisfaction, to help reduce labor turnover, to increase productivity and worker loyalty, and to draw quality workers to the organization.

In earlier days, aged employees usually had been kept on the payroll—although often in relatively light work. In the twentieth century, however, management increasingly looked to pensions as a means of improving operating efficiency or of realizing the intangible—goodwill. Railroads, liable to large damage suits resulting from traffic accidents, developed pension plans to remove aged workers in an orderly fashion as
they presumably became careless and less efficient. Some managements hoped a pension plan would contribute to the development of a stable, loyal workforce. Others saw in pensions a means to reduce strikes and possibly to restrain further growth in trade unions. Finally, in some cases management believed pension plans would not only attract superior workers but also improve the morale of employees as well as enhance in the eyes of the public the company's reputation for humaneness.30

Frequently, firms undertake projects which might not add to cash inflows but contribute to returns by reducing future expenditures. Cost/benefit analysis is widely used in analyzing activities of organizations. As mentioned in a previous section, pension costs are quite high and represent a major expenditure of businesses. Corporate administrations frequently use methodical cost/benefit procedures in making capital investment and other investment decisions. Similar analyses of various types of benefit plans and different facets of a particular type of employee benefit plan are also essential. In discussing the evaluation of various employee benefits Nielsen wrote, "If management were faced with a similar choice in terms of investing in new machinery, developing a new product, or conducting a new advertising campaign, it would have specific information about what comparative rates of return to expect from these alternatives."31 Company managements are aware of the obvious positive aspects of fringe benefit plans to their employees while working and in retirement. Employee compensation benefits can offer financial returns to the organization for its dollars.
spent, as well as to the employees. Labor is aware of these potential returns and uses financial data to evaluate the possible effects of benefit plans. Intelligent managers are also aware of this fact. A logical deduction would be that business organizations are expecting some significant, measurable return to the organization. As a result, financial statement users should be able to notice this improvement in the returns of the business. In order to determine whether these benefits are present, this study examines financial statement data of certain companies which started pension plans for their employees.

**Labor Uses Financial Information**

A number of diverse groups exist who are potential users of a firm's financial statements. Among these are the owners and management, creditors and potential creditors, labor and labor organizations, regulatory bodies, and perhaps even certain individuals in the general public. "Various groups such as shareholders, creditors, employees, tax authorities, customers and suppliers have continuing and sometimes conflicting relations with a company and depend upon its reports to disclose matters affecting their respective interests." Accountants and managers are constantly striving to fulfill their responsibility to these groups through reporting in the organization's financial reports. "Corporate officials and spokesmen have repeatedly asserted that the corporation in our society is socially responsible, and that this responsibility is manifested by the satisfaction of the
needs of the community, stockholders, creditors, government, employees, and others. This study focuses on the labor group, i.e., employees.

Labor has used the financial statements of its employers since the time of the Civil War. Recently, "corporate financial information has been seriously sought and used" by labor. "Labor . . . has organized research and education departments which gather and analyze corporation financial statements. Most labor . . . has the facilities and interests to study the operations of the companies with which they have contracts." "Wages, ability to pay, productivity, the economy, budgets, and cost of living are factors labor as well as management incorporates into its decisions."

"All too often . . . (labor) and management view each other as the 'opposition' or as necessary evils, when the actual fact is that each is dependent on the other." Labor and management use the information in a similar manner. Both examine past results as a basis for future decisions. "Profit-sharing agreements, pension plans, welfare funds, and possibly the annual wage, all present accounting problems for the company and labor . . ., and for the auditors."

Tomczyk has written that labor examines financial information of firms to determine if the firm is able to pay increased benefits. "Because each demand made by unions during the collective bargaining process has a cost attached to it, labor union leaders also feel that they have a social responsibility to intelligently justify
their contract proposals." Labor forces are powerful in certain industries and firms. The employees may be in need but "the economic health of the firm and/or industry sets the ultimate limit on union demands." Statements of various writers seem to imply that even labor examines the economic as well as the social impact of their requests. "The feeling of responsibility to intelligently justify contract proposals probably bears more heavily on the union conscience than on management's." "Corporate financial data have been included among the various data sought by unions to measure and justify the cost of their contract proposals." (Emphasis added). Labor conducts research to determine if its company is earning a fair rate of return on capital invested and if increases in benefits can be afforded or "whether a decrease may be necessary, or whether the company can absorb a(n) . . . increase through increased productivity or by raising prices."

The financial statements are unlikely to provide all of the necessary data for either decision; however, they will provide much of the basic information needed for proper analysis. "They (financial reports) are likely to focus on comparative levels of sales, costs of manufacture, products, management policies, investment practices, merchandising programs, advertising policies, designing problems, management overhead, expenditures, competence, and the host of other aspects of an individual business." Nader and Blackwell recently encouraged workers to request even more information and to become
more active in discussions with employers and unions concerning their pension plans' modifications or possible improvements. "It should be noted . . . that the inevitability of 'vast increases in costs' uniformly predicted by employers and unions that oppose better vesting and funding has never been proved. There is reason to believe that cost is not the overriding problem in improving pension plans that it is often purported to be." "In all events, you should be wary when your employer or union talks to you about the 'vast increases' in cost of improved plans and threatens you with reduced benefits. Ask for facts and figures and don't be satisfied with sweeping statements such as frequently meet employees' arguments for better pension plans." With these ideas in mind, the following recommendation has been made to accountants and managers in providing data to employees. "Meaningful ratios, cost relationships, industry comparisons, and index-type data can all be employed in report or newsletter form."

Summary

Business organizations are spending a large sum of dollars annually on pension benefit plans for their employees. Efficiency and effectiveness in managing today's firms require utilization of predetermined company goals. Many sub-goals must be constantly achieved before the corporate goal of profit maximization is realized. Fair wage and benefit packages are essential in maintaining quality
personnel. Attracting and keeping quality personnel is an essential goal for corporate progress.

Jaffe stated, "... benefits are playing an increasingly more important role in the ability of companies to attract, retain, and motivate key employees." Corporate managers desiring to receive "their money's worth" are realizing that the job of effective communication may be as important as the benefit plan's design and funding. Most likely, company personnel who believe the organization is actively seeking effective communication will respond positively toward organization endeavors. Pension and profit sharing plans have increased the profits remaining after the plans' funding. Properly utilized, benefit plans are important tools for managing companies.

Managers of companies are very aware of costs to their firms and cost/benefit analysis is a widely accepted practice. The obvious benefit is to the employees and their security at retirement age. Employee compensation benefits can also offer financial returns to the organization.

Labor, as well as management, uses financial statement data for evaluations. Company employees are increasingly seeking data for making analyses. Statements of various writers imply that even labor considers the economic, as well as the social, impact of their requests. Much of the economic data needed by management and employees for assessing the impact of corporate decisions are contained in the
organization's financial statements.

The purpose of this study is to determine whether the benefits derived from the cost of employee pension plans are observable in financial statement information. Since different financial statement users may evaluate possible benefits differently, the primary user group assumed is the labor group.
FOOTNOTES

Chapter I


10. Ibid.


18. Ibid., p. 27


24. Ibid., p. 20.

25. Ibid., p. 23.


27. Ibid., p. 29.


30. Ibid., p. 38.


35. Ibid.

36. Ibid.


48. Ibid., pp. 130-131.


CHAPTER II

SCOPE OF THE STUDY

Since cost and benefit relationships are utilized in evaluating both existing projects and potential projects, managers should similarly analyze the cost of pension plans. Management should expect benefits to accrue to the organization. These benefits may be significant and should be measurable.

Pension plans might provide the granting firm with such benefits as increased employee morale and satisfaction, reduced labor turnover, and increased labor productivity. Therefore, improvements in employee morale and satisfaction, labor turnover, and productivity resulting from a pension plan should be reflected in the operations of the firm. Since these effects should be captured in accounting statement information, this study observes companies financial statements to determine if they reflect the benefits of a pension plan.

Ratios

Labor organizations use accounting data, in the form of financial ratios, to assess the firm's ability to pay. "Financial ratios derived from the financial statements of an employing firm were frequently mentioned in the literature as the type of accounting data which is
most useful in measuring ability to pay.

Ratio analysis is a major tool for the interpretation and evaluation of financial statements. "Generally, such analysis involves the breakdown of the examined financial reports into component parts which are evaluated in relation to each other and exogeneous standards." The evaluation of financial statements in the analysis and decision-making processes can be expedited by reducing the large number of items found on financial statements to key ratios. Examining a time-series of financial ratios is one way of analyzing the data. "Ratios, rates, and percentages expedite the analysis by reducing the large number of items involved to a relatively small set of readily comprehended and economically meaningful indicators." No ratio, taken alone, is a meaningful number—comparisons must be made. "Ratio analysis, which relates balance sheet and income statement items to one another, permits the charting of a firm's history and the evaluation of its present position."

Finance literature indicates that financial ratios are classified into four basic types.

1. **Liquidity ratios**, which measure the firm's ability to meet its maturing short-term obligations.

2. **Leverage ratios**, which measure the extent to which the firm has been financed by debt.

3. **Activity ratios**, which measure how effectively the firm is using its resources.

4. **Profitability ratios**, which measure management's overall effectiveness as shown by the returns
The analysis of a total business would certainly utilize ratios from each of the fundamental classes. However, in this analysis of the effect of pension plan adoption, leverage ratios are not relevant. The size of a firm's overall debt and the cost of a pension plan are not necessarily related. Company debt would be directly affected, when pension granting firms finance their past service cost with long-term obligations. However, these obligations would most likely be long-term in nature. Since this study examines the short-term effects of pensions, leverage ratios are not considered in this research.

Tomczyk has listed 14 ratios which are used by labor in assessing an organization's ability to pay labor benefits, specifically wage increases. The ratios listed cover three of the basic financial areas: (1) profitability, (2) labor productivity, and (3) liquidity. Tomczyk ratios, modified for this study, are presented in Table I. If pension benefits are captured in financial statements, the benefits should be revealed by these three ratio groups. Even though this list of ratios was compiled with the intent of predicting ability to pay wage increases, the ratios can be modified for this study to attempt to observe the effect of pension plans on firm.

Liquidity. An extensive liquidity analysis would require more than the examination of financial ratios. However, "ratio analysis, by relating the amount of cash and other current assets to the current
TABLE I
THE RATIOS USED TO OBSERVE THE EFFECTS OF PENSION PLAN ADOPTION

<table>
<thead>
<tr>
<th>Profitability</th>
<th></th>
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<tbody>
<tr>
<td>Operating profit to stockholders' equity*1</td>
<td></td>
</tr>
<tr>
<td>Operating profit to total assets*1</td>
<td></td>
</tr>
<tr>
<td>Operating profit to net sales*1</td>
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<tr>
<td>Net sales to total assets</td>
<td></td>
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<tr>
<td>Cash flow to stockholders' equity</td>
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<td>Cash flow to total assets</td>
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<tr>
<td>Cash flow to net sales</td>
<td></td>
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<tr>
<td>Earnings per share*2</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Labor Productivity</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating expenses (including pension cost) to cost of goods sold*3</td>
<td></td>
</tr>
<tr>
<td>Operating expenses (excluding pension cost) to cost of goods sold*3</td>
<td></td>
</tr>
<tr>
<td>Operating expenses (including pension cost) to net sales*3</td>
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<tr>
<td>Operating expenses (excluding pension cost) to net sales*3</td>
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<tr>
<td>Net sales to stockholders' equity</td>
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<table>
<thead>
<tr>
<th>Liquidity</th>
<th></th>
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<tbody>
<tr>
<td>Current ratio</td>
<td></td>
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<tr>
<td>Dividends per share*6</td>
<td></td>
</tr>
</tbody>
</table>

*1 Tomczyk's study utilized net earnings. This study will use operating profit in order to reduce the individual firm effect of extraordinary events. This process reduced Tomczyk's list by one ratio, due to his inclusion of "operating profit to net sales" in the original list.

*2 For purposes of this study, earnings per share will be primary and before extraordinary items.

*3 Tomczyk's study made no differentiation between labor cost including or excluding pension cost. This adjustment increases Tomczyk's list by two ratios. "Operating expenses" was substituted for labor cost due to the limited availability of labor cost data.
obligations, provides some quick and easy-to-use measures of liquidity." The current ratio is used for this purpose. "Accordingly, attention is focused on the size of the firm's reservoir of liquid assets relative to its maturing liabilities." Cash paid to company owners as dividends also affects, and is affected by, the firm's liquidity position. Dividend payments may be altered or interrupted by other large cash expenditures. Therefore, liquidity ratios certainly may be affected by a pension plan because of the cash payments made by the company into its pension fund. Both of these liquidity measures will increase in size if the initiation of pension plans improve the liquidity position of the firm.

Labor Productivity. Activity ratios, sometimes denoted "efficiency ratios," examine various aspects of operational efficiency. These ratios focus on specifics rather than the overall efficiency indicated by profitability ratios. Relationships of pension and other labor costs to other financial data are indicated by certain activity ratios. These relationships are a measure of labor productivity. Pension plans are frequently established as a result of employee demands. Pension plans may affect employee morale and job satisfaction in addition to labor turnover and productivity. These factors are not measured directly by financial data. "The most widely used index of productivity is the one which computes the output per man-hour as an aggregate indicator of productivity for the private
sector of the economy."10 The intention of this study is to measure pension plan effects on firms' financial statements. Therefore, certain productivity ratios will be included even though the ratios may not be the best measure of labor productivity.

In his attempt to measure labor productivity, Tomczyk used labor cost as the numerator in two of his ratios. Because of the very limited availability of labor cost data from Tomczyk's information source, his ratio analysis carries little reliability. This study will substitute operating expenses for labor cost in Tomczyk's ratios. "A part of any increase in productivity, in the short-run, may be reflected in a price decline, an increase in operating profit, and improvement in the quality of products, or all of them."11 "It is not easy to find a measure of product improvement, but for pricing decisions . . ., operating profit, and the rate of capital investment, financial reports are good sources."12

Even though many extraneous factors and influences are present in "operating expenses," the availability of operating expense data was considered preferable to the limitedly available labor cost data. Fewer extraneous factors are present in operating expenses than in the operating profit data recommended by Horwitz and Shabahang. Both the Tomczyk study and the Horwitz and Shabahang study were concerned with wages and ability to pay. The adjustments made here to their recommended ratios are considered necessary to capture the effects of pension plans on financial statements.
Four ratios used in measuring labor productivity incorporate operating expenses in the numerator. Two of these ratios will include pension cost and two will exclude pension cost. Two denominators will be used; each will have one numerator of operating expenses and one of operating expenses less pension cost. The ratios using cost of goods sold as denominator provide a measure of the relative importance of expenses to the total costs of the products sold. Similar ratios have been viewed as indicators of labor productivity. The ratios with net sales as the denominator are also a measure of a firm's productivity. The Horwitz and Shabahang study used their operating profit in the numerator of a ratio with net sales as the denominator as a measure of productivity. Because the numerators of each of these ratios is an expense value, the smaller the productivity ratio, the greater the positive impact of the pension plan.

Net sales divided by stockholders' equity is seen as a reflection of the firm's revenue decisions and activities. This ratio will grow larger if it is positively affected by pension plan beginnings.

Profitability. Net income, or profit, is a goal of most business organizations. "Profitability ratios are designed for the evaluation of the firm's operational performance. The numerator of the ratios consist of periodic profits according to a specific definition, while the denominator represents the relevant investment base. The ratios thus yield an indicator of the firm's efficiency in using the capital
committed by stockholders and lenders."\textsuperscript{15}

Three ratios in this study use "operating profit" as a definition of periodic profits as the numerator. David Brown wrote, "Since profits are the rate of return to the investor, the most meaningful denominator for most purposes is net worth. Assets are probably second best and sales third."\textsuperscript{16} While net earnings, utilized by Tomczyk, may be a good indicator of ability to pay, the effect of extraordinary items would distort any financial statement effects by pension plan initiation.

Operating profit divided by stockholders' equity indicates the efficiency of the firm's use of the owners' investment. Brown wrote that the most meaningful indicator of profitability is the ratio of net earnings to stockholders' equity,\textsuperscript{17} based on the premise that the duty of businesses is to return profits on their investors' capital.

The profitability measure of operating profit to total assets is an indicator of efficiency in the use of company assets. This ratio is important because "... it is presumed to be built on ... both operating and financial data (primarily flows) as well as financial position (stocks)."\textsuperscript{18}

The ratio, operating profit to net sales, can be described as "margin." It is, of course, a measure of profitability. "... margin raises queries as to the possibilities of changing the relationship between revenues and expenses by changing prices and/or operating costs per sales dollar."\textsuperscript{19} Zulauf warns that using the margin alone as a profitability measure may be dangerous. Zulauf
examined *Fortune* 500 corporations and states that more than 90 percent of these companies had a higher return on investments than margin indicated.  

... margin, as a substitute for rate of return, is subject to significant error at the industry level, some error in comparing companies within an industry, and possible error in the firm both as to magnitude and direction. Therefore, in rate of return and ability to pay determinations margin should be used only as a supplementary tool of analysis.

He also wrote, "Labor union literature warns readers of financial statements that management often stresses margin because it is lower than rate of return on investment."  

The ratio of net sales to total assets can be denoted as asset turnover. This profitability ratio is used frequently to measure how hard the assets are worked to generate the revenue for the organization. Both Zualuf and Tomczyk recommend this turnover ratio to be used in conjunction with margin while evaluating the company's profitability.

Cash flow is considered by many to be a form of liquidity analysis. Lev wrote,

... the sufficiency of the liquid assets reservoir at a point in time reflects only one aspect of the solvency situation; another, potentially more important, solvency aspect is the extent of matching between periodic cash inflows and outflows. The maintenance of adequate liquidity ... obviously requires a close matching or synchronization of cash flows. A general approach to solvency evaluation should therefore consider the relationship between cash inflows and outflows throughout the period, as well as the size of the existing liquid asset reservoir."
Because cash flow generally is net earnings adjusted for non-cash flows (most frequently depreciation, depletion, and amortization), "The cash flow figure reveals the amount of operating cash available for dividend payments, internal financing of plant expansion, and increases in working capital." Zulauf stated, "The success the firm is having in meeting these needs are (SIC) of direct importance in estimating the rate of return for the future, . . ." Therefore, based on these thoughts, cash flow is used as the numerator for three ratios with the same denominators (stockholders' equity, total assets, and net sales) discussed above utilizing operating profit as numerator. These cash flow ratios are classified as profitability measures.

Earnings per share is widely used in evaluating corporate activities. "Straightforwardly interpreted, it represents the amount of earnings allocated to one share of common stock. However, more importance is often imputed to this measure . . ." Profitability of past decisions can be evaluated with earnings per share figures. Some analysts may use EPS data as a base for estimating dividends or other future events of a firm. For purposes of this study, earnings per share will be computed on primary earnings and before extraordinary items.

"Profitability is the net result of a large number of policies and decisions." The decision being studied in this observation of profitability ratios is the initiation of a pension benefit plan. Profitability ratios should include the effects of both the pension
expense and labor's productivity. Each of these eight profitability ratios is structured to increase in value if it is positively affected by firms' instituting pension plans for their employees.

Methodology. Since the purpose of this study is to determine whether the benefits from employee pension plans are observable in financial statement information, each of the three major classifications of financial ratios used in this study (profitability, labor productivity and liquidity) are expected to improve after the firms initiate pension plans. Therefore, the null hypothesis for this study is:

\[ H_0: \text{There is no negative effect on financial ratios after firms initiate pension benefit plans for their employees.} \]

The alternative hypothesis is:

\[ H_A: \text{Financial ratios indicate negative effects after firms initiate pension benefit plans for their employees.} \]

The specific methodology to be used for examining these hypotheses is discussed thoroughly in Chapter III.

Summary

Pension plans require expenditures by firms which may potentially affect labor turnover and productivity; therefore, company financial statements should be affected. Ratio analysis is used in this study to observe the effects of pension plan initiation on granting firms. Because ratio analysis relates balance sheet and income statement data over a time series, effects of actions taken within the time period considered can be charted.

The ratios used in this study represent three of the basic
categories for ratio analysis—profitability, productivity (activity), and liquidity. Liquidity ratios measure the organization's ability to meet its current obligations. The current ratio and dividends per share are used as liquidity measures. Liquidity is affected by a pension plan because of the cash payments made by the company into its pension fund.

Relationships of pension costs to other financial data are indicated by certain activity ratios. These relationships are a measure of labor productivity. Five ratios are included as labor productivity measures; they are: operating expenses, including and excluding pension cost, divided by cost of goods sold; operating expenses, both including and excluding pension cost, divided by net sales; and net sales divided by stockholders' equity. This study assumes pension plans affect employee morale and job satisfaction, as well as labor turnover and productivity. However, these productivity ratios will be included even though the ratios may not be the best measure of labor productivity.

Operating profit to stockholders' equity, total assets, and net sales; net sales to total assets; cash flow to stockholders' equity, total assets, and net sales; and earnings per share are the eight profitability measures utilized to observe the effects of pension plans. These ratios are measures of the overall efficiency of the firms. Thus, profitability ratios should include the effects of both the pension expense and labor's productivity.

Cost/benefit analysis is widely used in analyzing activities of
organizations. Pension costs are high and becoming increasingly a major expenditure of businesses. Management would expect benefits to accrue to the organization, as a result of the costs of funding pension benefit plans. The objective of this study is, with the use of accounting ratios, to observe the effects of pension plans on firms' financial statements. Firms initiating pension benefit plans for their employees are the basis for this analysis.
FOOTNOTES

Chapter II


3. Ibid.


5. Ibid., p. 18.


9. Ibid., p. 27.


12. Ibid.


17. Ibid.


19. Ibid., p. 204.

20. Ibid.

21. Ibid., p. 205.

22. Ibid., p. 205.


CHAPTER III

METHODOLOGY OF THE STUDY

Managers, and employees, are aware of the high cost of pension plans and cost/benefit analysis is a widely accepted practice. The most obvious benefit is to the employees and their retirement security. Also, because firms incur the costs of granting pension benefit plans, managements should expect benefits to accrue to their firms. Using financial ratios, this study observes the effects of pension plan initiations on organizations' financial statements.

Data Collection

Much of the economic data needed by company management and employees to assess the impact of corporate decisions are contained in their firm's financial statements. Accounting Principles Board Opinion, No. 8, which became effective in November 1966, governs the reporting of pension cost information in financial statements. Certain disclosure requirements for private plans are listed in the Opinion. The following disclosures should be made according to Opinion No. 8:

1. A statement that such a plan exists, identifying or describing the employee groups covered.
2. A statement of the company's accounting and funding policies.
3. The provision for pension cost for the period.
4. The excess, if any, of the actuarially computed value of vested benefits over the total of the pension fund and any balance sheet pension accruals, less any pension repayments or deferred charges.
5. Nature and effect of significant matters affecting comparability for all periods presented, such as changes in accounting methods (actuarial cost method, amortization of past and prior service cost, treatment of actuarial gains and losses, etc.), changes in circumstances (actuarial assumptions, etc.), or adoption or amendment of a plan.

Relying on the third disclosure requirement from Opinion, No. 8, the sample selection for this study was based on pension cost disclosed in firms' reported income statements. All data were taken from Standard & Poor's Annual Industrial File COMPSTAT tape. The sample was determined by examining time series of pension cost data for manufacturing firms and selecting those firms which began incurring pension cost after not indicating this expense previously. The year of plan initiation was defined as the first year pension cost data appeared on the firms' income statements. Included in the sample are all firms that have pension information in the pattern described above, as well as all other necessary data to be tested. The data and dates used in this study were verified by comparisons with the following two sources: Wall Street Journal Index/Wall Street Journal and Moody's Industrial Manual.

Ratio Computations

In order to observe the effects of pension plan initiations on organizations and any benefits of these adoptions to the sampled firms, fifteen accounting ratios were computed. These ratios cover three basic financial areas: profitability, labor productivity, and liquidity. The financial ratios used are presented in Table I. Ratio analysis has been shown to be useful in the evaluation of firms by labor. Chapter I discusses statements of various writers which imply that labor considers the
economic, as well as the social, impact of their requests. Much of the economic data needed by managements and employees for assessing the impact of corporate decisions are contained in the organizations' financial statements. This study uses financial statement ratios to determine the effects of pensions on companies beginning these plans.

Industry average ratios were also computed for each of the individual industries represented in the sample of manufacturing firms. Industries were determined by the Standard Industrial Code "two-digit" classification. Every firm on the COMPUSTAT tape with all the data necessary for the ratio computations, whether included in the sample group or not, was included in its industry average determination. Each ratio's industry average was computed as the arithmetic mean of the ratios for the COMPUSTAT firms in their industry. The inclusion of non-sample-group firms in the industry average computations gives a broad-based and realistic presentation of the individual industries' ratio averages. Industry average ratios were computed for each year examined by this study.

Every sample-group firm's accounting ratio utilized in this study was standardized by dividing the firms' ratios by the industry average of that ratio. With this standardization, any effect on the ratio due to the sampled firm being a member of a particular industry is reduced—allowing observations to be made regardless of the firms' industry classification.

Company ratios are affected by financial events specific to the firm, as well as to its industry. Even the year and economy-wide
activities will cause variations in company financial ratios. These effects must be recognized and considered in ratio analysis methodology. This study considers and adjusts for the possibility of these effects in two ways.

First, the study examines the ratios over a period of time. When observing any ratio's changes, the entire sample of manufacturing firms was examined. The sampling procedure allowed companies to be included if their pension costs were initiated in any year from 1967 (the first year after the requirements of Opinion, No. 8) through 1974 (the year of the Pension Reform Act). Since the year of pension plan initiation is the focal-point year for all sampled firms (not any individual, specific year) and since the firms were always examined as a group, the non-pension related effects were somewhat cancelled, i.e., "good" and "bad" effects on individual firms in the sample reduce each other.

The use of smoothing techniques is a very effective method of reducing individual-firm and economy-wide effects. This study is primarily concerned with detecting any significant ratio variation due to pension plan implementation while ignoring other variations. Smoothing techniques, of time series data, can accomplish this goal. Springer, Herlihy, and Beggs state that this goal can be obtained by implementing "... the most common smoothing method in popular use, the moving average."² In computing moving averages, the more values used to compute the average, the more smoothing exists. The fewer values used, the more fluctuations and variations are observable. Springer, Herlihy, and Beggs further state:
... when the process is subject to change, it is desirable to use a scheme that is more responsive, more sensitive to the detection of significant shifts. In such cases small values of \( n \) are called for. In any particular situation the appropriate value is always a compromise between more smoothing to reduce meaningless variation and less smoothing to reduce the time delay in responding to meaningful information.  

A three-year moving-average was computed for every ratio utilized in this study. Each ratio's moving average was determined by computing the arithmetic mean of the industry-standardized ratio for one year plus the two immediately preceding years. These industry-standardized, moving-average, ratios were calculated for each sampled firm for the years 1967 through 1977. This process required data collection of ratios for the years 1965 through 1977. These activities resulted in fifteen time-series (three-year moving-average) industry-standardized accounting ratios.  

The resulting adjusted average ratios were plotted. Each ratio, for each sampled company, was plotted with the years 1967 through 1977 on the X-axis points and moving-average values on the Y-axis. This plotting process eased the observation of ratio movements across the time period considered. The year of pension plan initiation was indicated on each plot, permitting an examination of ratio variations possibly caused by the pension plan's initiation. (See Appendix for examples of the plots.)  

**Ratio Movements**

Edward Deakin recently studied the distribution of accounting
ratios for the purpose of examining the movements of financial ratios and the use of financial ratio data in statistical tests. (Two of Deakin's ratios are included in this study and elements used in his ratio comparisons are also used in computing the ratios in this study.) Deakin concluded that financial ratios are not normally distributed. He states, "As a result of this analysis, it would appear that assumptions of normality for financial accounting ratios would not be tenable..." Therefore, this study does not use parametric statistical procedures in observing the effects of pension plan implementation on firms' accounting ratios.

To determine the benefits of initiated pension plans for the offering companies' financial statements, fifteen accounting ratios were plotted and observed across time. The fifteen ratios were grouped into the three basic categories of profitability, labor productivity, and liquidity. The graphs of each company's ratios were grouped into six possible trend categories. In order to observe the effect of pension plan initiation on the moving-average of the ratios, these six categories are:

1. Upward trend begun or increased
2. Downward trend begun or increased
3. Stable trend begun
   (or ratio began to move with no discernible trend)
4. Upward trend continued at the same rate
5. Downward trend continued at the same rate
6. Stable trend, or no discernible trend, continued

Figure 1 (page 43) illustrates the possible movements of financial ratios. Movements which are considered positive and negative are indicated for each of the three possible directions.
Figure 1
POSSIBLE RATIO MOVEMENTS
AFTER PENSION PLAN INITIATIONS

PREVIOUS UPWARD TREND

PREVIOUS STABLE TREND

PREVIOUS NEGATIVE TREND

--- INDICATES IMPROVEMENT OR BENEFITS EQUAL TO COST

……… INDICATES BENEFITS LESS THAN COSTS

X YEAR OF PENSION PLAN INITIATION
The profitability and liquidity ratios' effects can be interpreted similarly. A direct benefit to the organization is recognized with the beginning of an upward trend in the ratios' values, or the beginning of a stable (or nondiscernible) trend after a downward trend in the values. An indirect benefit exists, or at least support exists for the concept that benefits equal the cost to the organization, when no negative, or decreasing, trends begin after initiating a pension plan. On an overall basis, the cost-equals-benefits effect is observed by the continuation of a trend in any direction. The negative effect of pension plans is observed in the ratios by a downward trend beginning or the leveling off of an upward trend.

In evaluating the labor productivity ratios, the larger the productivity ratio, the greater the negative impact of the expense. Operating expense is the numerator in two of the ratios and operating expense less pension expense is the numerator in two. Therefore, the ratio becomes larger as the expense increases. The positive and negative effects of these four ratios are the opposite of those illustrated in Figure 1. The fifth ratio in the labor productivity classification, net sales to stockholders' equity, becomes larger with improvement in productivity. In the first four ratios, positive benefits are indicated by the beginning of a downward trend or the continuation of a stable or a nondiscernible trend. Negative effects are indicated by the beginning of an upward change in the ratios' trend. Support for the benefit concept exists when no increasing trends are begun at the point of pension plan initiation. These continuation trends through the
year of pension plan initiation indicate that the inclusion of pension cost would not cause the total of operating expenses, and thus the ratios, to increase. Therefore, cost of the plans are, at least, equalled by benefits to the firms.

Any movements in the fifth productivity ratio are analyzed in the same manner as were the profitability and liquidity ratios. This ratio, net sales to stockholders' equity, indicates benefits to the firm with increases in the ratios' size.

The ratios are analyzed on a univariate basis. Previous studies have shown that each of the accounting ratios are of interest in labor discussions. Overall benefits, in the three categories, are declared when at least 50 percent of the firms in the test-group show ratios indicating positive financial effects, i.e., benefits are greater than or equal to the cost of the pension plan.

**Matched-Pairs Comparisons**

Two additional analyses were made. For these comparisons, a pair of control groups were selected from the same time periods and industries as the experimental group discussed earlier. Control group one includes firms without pension plans for the time period of the study. Control group two contains firms indicating pension plans throughout the entire time period examined. The comparisons of the test-group with the two control groups help to demonstrate the significance of ratio changes for firms moving from a state of no pension plan to a state with a pension plan.
For analysis purposes, firms without pension plans were matched with the firms from the original sample group. The same matching process was conducted between the original sample group, which began pension plans during the time period examined, and control group two, which had pension plans throughout the same period of time. In both cases, the matching process technique was similar to that used by Beaver to predict firm failures. Beaver matched firms, "from the same industry and approximately the same asset size." 

The industries for the two matched-pair groups were determined by using the Standard Industrial Code "four-digit" classification technique. Within the industry, firms were paired by the amount of total assets. The financial ratios for the two control groups were also standardized by their industry average and a three-year moving-average was computed for each ratio.

The reference point in the matched-pairs comparison is the year the firm in the original sample initiated its pension plan. At that point the same original sample group trends were observed for the control groups. This process indicates whether the changes exhibited in the firms beginning plans are also present in firms with and without plans. Ratio variations for the companies in the original sample group are attributed to pension plan initiation when similar variations are not present in its two matched-pair companies. A chi-square test for two independent samples is utilized to determine the similarities between the test-group firms' ratios and each of the two control group's ratios.
Pension Plan Termination

No tests are made in this study to determine the effect of pension plan terminations. In the mid-1970's, many companies actually did terminate their pension benefit plans. This action was possibly a result of requirements set forth in the Pension Reform Act of 1974. In the first five months following the effective date of the Pension Reform Act, 4,000 notices of termination were filed with the Pension Benefit Guarantee Corporation.7

Two reasons exist for not testing the possible effects of pension plan terminations. First, the terminated private pension plan is possibly replaced by some other, compensating, employee benefit. This action could cancel the effect of the decreased benefits. Second, the massive termination of plans in the mid 1970's resulted in little published accounting data being available for testing.

Summary

Data for determining whether benefits are observable in financial statements were collected from Standard & Poor's COMPUSTAT tape. APB Opinion, No. 8 requires that plans be disclosed along with the provision, for the period, of any pension cost. All COMPUSTAT manufacturing companies which began reporting pension expense on their financial statements between 1967 and 1974 were included in this study.

Fifteen accounting ratios were computed in order to observe the effects of pension plan initiations on the sampled firms' financial statements. The accounting ratios utilized in this study were standardized by dividing the individual firms' ratios by computed industry
averages of the ratios. In addition, a three-year moving-average was computed for each ratio utilized in this study. These smoothing techniques are used to isolate the ratio variations caused by pension plan implementation. The ratios used cover three basic financial areas: profitability, labor productivity, and liquidity.

The standardized average ratios were plotted for each sampled firm, to observe ratio variations caused by initiating a pension plan. These plots were traced across the year of plan initiation and grouped into six basic classes—upward trend begun, downward trend begun, a leveling (or nondiscernible) trend begun, upward trend continued, downward trend continued, and a level (or nondiscernible) trend continued. This classification process was used to determine the relationships between pension plan cost and its benefits to the offering firm.

A one-to-one comparison was made across these same time periods with matched-pairs of firms not having pension plans and with matched-pairs of firms which had pension plans throughout the time period of the study. The matched-pairs of the two groups were selected by their industry classification and asset size. Ratio variations in original sample group companies are attributed to pension plan initiations when similar variations were not present in its two matched-pair companies.

A univariate analysis is used in this study. The study does not group ratios to determine if benefits are present in various ratio combinations, nor are tests conducted to determine the effect of pension plan termination on companies.
FOOTNOTES

Chapter III


3. Ibid., p. 90.


6. Ibid.

CHAPTER IV

RESULTS OF THE STUDY

Fifteen accounting ratios were computed from financial statement data collected from Standard & Poor's COMPSTAT tape. Three-year moving-averages of industry-standardized ratios were plotted over the time period beginning in 1967 and ending in 1977. The purpose of the analysis is to observe the effects of pension plan initiations on manufacturing companies. These ratios cover three basic financial areas: profitability, labor productivity, and liquidity. The manufacturing firms in this sample were matched with two matched-pairs sample groups—those having pension plans and those not having plans. The matched-pairs in the two groups were selected by their industry classification and total asset size.

Selection of the Samples

Opinion, No. 8 requires annual pension cost information to be disclosed in the firms' financial statements. The original test-group sample was selected from those companies which began reporting pension cost after not indicating the expense previously. Two control groups were also selected. Control group one includes manufacturing firms not reporting pension costs during the time period of this study. Control group two was selected from manufacturing firms reporting pension plan cost throughout the time period examined. All COMPSTAT
manufacturing firms that have pension information in the patterns described above, and all other data necessary to compute the ratios discussed in Chapter II, are included in the three sample groups. This selection process resulted in 67 firms being included in the sample representing pension plan initiating companies. Control group one, firms without plans, had 27 firms and control group two, firms with plans, included 62 companies. The firms in the test-group and their matched-pairs in the two control groups are listed in the Appendix.

The year of plan initiation was defined as the first year pension data appeared on the test-group firms' published income statements. These same years were used to observe trends in the ratios of the two matched-pairs control groups. Data were collected for the years 1967 through 1974. However, no firms were included if their pension plans were started in 1967 or 1968. This procedure allowed for observation of trends before the year of pension plan initiation. Table II lists by year the number of sampled firms beginning pension plans in each of the years 1969 through 1974.

When observing ratio changes or trends, the entire sample of manufacturing firms initiating pension plans was examined as one group. This process effectively designated the year of pension plan initiation as year "0" with years after being 1, 2, 3, etc. and years before being -1, -2, etc. The same process was used with both control groups. The positive and negative effects of economic events or trends of specific years are reduced by using the year of pension plan initiation
as the focal-point year for all the sampled firms.

TABLE II

THE NUMBER OF SAMPLED FIRMS INITIATING PENSION PLANS BY YEAR

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1969</td>
<td>3</td>
</tr>
<tr>
<td>1970</td>
<td>28</td>
</tr>
<tr>
<td>1971</td>
<td>16</td>
</tr>
<tr>
<td>1972</td>
<td>10</td>
</tr>
<tr>
<td>1973</td>
<td>9</td>
</tr>
<tr>
<td>1974</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>67</td>
</tr>
</tbody>
</table>

Movement of the Ratios

Graphs of each company's moving-average ratios were grouped into six trend categories in order to observe the effects, at the time of plan initiation, on firms' profitability, labor productivity, and liquidity. A sample of the graphs of ratios is included in the Appendix. The categories of trends and the implications of the various ratios being grouped into the trend groupings were discussed in Chapter III. The six categories of ratio movements are:

1. Upward trend begun or increased
2. Downward trend begun or increased
3. Stable trend begun
   (or ratio began to move with no discernible trend)
4. Upward trend continued at the same rate
5. Downward trend continued at the same rate
6. Stable trend, or no discernible trend, continued

Positive effects of pension plan initiations are observed in each
of the profitability and liquidity ratios, as well as the net sales/stockholders' equity ratio in the labor productivity class, by an upward trend beginning, continuing, or increasing; a downward trend continuing at the same or decreasing rate; or a level, or nondiscernible, trend continuing. A negative effect is observed in these ratios by the beginning of a downward trend, a decrease in an upward trend, or the beginning of a flat, or nondiscernible, trend after an upward trend. The existence of "continuing" trends across the time of pension plan initiation is treated as neither a positive nor a negative movement. For the labor productivity ratios, with the exception of net sales/stockholders' equity, positive effects are observed with the beginning of a downward trend, a decrease in an upward trend, or no change in the trend. Negative effects of pension plan initiations are observed by an upward trend beginning, or increasing, or a downward trend decreasing. As with profitability and liquidity ratios, the classification of the labor productivity ratios as one of the three "continuing" trends is indicative of neither a positive nor a negative movement. This "neither positive nor negative" movement indicates that cost equalled benefits in the pension initiating firm.

The Test-Group. The results of plotting the test-group are presented in Table III. Eight profitability ratios were observed across the year of pension plan initiation for 67 manufacturing firms. For the 536 profitability ratios examined, 141 were designated as illustrating positive effects; 97 indicated negative effects; and 298 ratios indicated neither positive nor negative effects on profitability. Five
TABLE III

THE EFFECTS OF PENSION PLAN INITIATION ON THE RATIOS OF THE TEST-GROUP FIRMS

<table>
<thead>
<tr>
<th></th>
<th>Positive Effects</th>
<th>Negative Effects</th>
<th>Neither Positive nor Negative Movements</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Profitability Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>141</td>
<td>97</td>
<td>298</td>
<td>536</td>
</tr>
<tr>
<td>Percent</td>
<td>26%</td>
<td>19%</td>
<td>55%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Labor Productivity Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>80</td>
<td>67</td>
<td>188</td>
<td>335</td>
</tr>
<tr>
<td>Percent</td>
<td>24%</td>
<td>20%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Liquidity Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>32</td>
<td>18</td>
<td>84</td>
<td>134</td>
</tr>
<tr>
<td>Percent</td>
<td>24%</td>
<td>13%</td>
<td>63%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Labor productivity ratios per firm resulted in 335 ratios being observed. Eighty indicated positive effects; 67 indicated negative effects; and 188 ratios indicated neither a positive nor negative effect following the initiation of the pension plan. Two liquidity measures were computed for the 67 manufacturing firms in the test-group. Of these 134 ratios, 32 showed positive movements, 18 indicated negative effects, and 84 of the ratios indicated neither positive nor negative effects on these firms' liquidity.

The same pattern of effects is present in each of the three ratio groupings. The positive effects are indicated in about one-fourth of
the cases and negative effects in one-fifth or less of the cases. In all of the three ratio classes the third group of effects—neither positive nor negative—is indicated in over one-half of the cases. The 15 ratios for all three sample groups are listed in the Appendix with the number of positive, negative, and "neither" movements indicated for each ratio.

Three of the eight profitability ratios were "cash flow" ratios. These three ratios utilized the same denominators as the three "operating profit" profitability ratios. No consistent differences were observed over time between the two sets of ratios.

Labor productivity ratios were computed so that two included pension cost in the numerator and two excluded pension cost. Consistently, the graphs of the ratios excluding pension cost paralleled the movements of the two ratios including the cost. No significant difference is observable in the results of these labor productivity computations.

The Control Groups. The results for control group one are presented in Table IV. The 27 companies in control group one had 48 of the profitability ratios indicating positive movements and 40 indicating negative. Over the same period, 128 profitability ratios indicated neither positive nor negative ratio movements. In examining the 54 liquidity ratios for control group one firms, 14 displayed positive movements, 7 displayed negative ratio movements, and 33 demonstrated neither a positive nor a negative trend. A somewhat different relationship is seen when the labor productivity ratios were calculated. Twenty-one ratios indicated positive trends, while 40 of the ratios indicated
TABLE IV
THE OBSERVED EFFECTS ON THE TWO CONTROL GROUPS
AFTER THE TEST-GROUP FIRMS INITIATE
PENSION PLANS

<table>
<thead>
<tr>
<th></th>
<th>Control Group One (without pension plans)</th>
<th>Control Group Two (with pension plans)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive Effects</td>
<td>Negative Effects</td>
</tr>
<tr>
<td></td>
<td>Number</td>
<td>Percent</td>
</tr>
<tr>
<td>Profitability Ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>48</td>
<td>22%</td>
</tr>
<tr>
<td>Percent</td>
<td>40</td>
<td>19%</td>
</tr>
<tr>
<td></td>
<td>128</td>
<td>59%</td>
</tr>
<tr>
<td>Labor Productivity Ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>21</td>
<td>15%</td>
</tr>
<tr>
<td>Percent</td>
<td>40</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>.74</td>
<td>55%</td>
</tr>
<tr>
<td>Liquidity Ratios</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number</td>
<td>14</td>
<td>26%</td>
</tr>
<tr>
<td>Percent</td>
<td>7</td>
<td>13%</td>
</tr>
<tr>
<td></td>
<td>33</td>
<td>61%</td>
</tr>
</tbody>
</table>
negative trends, and 74 showed trends neither positive nor negative in direction. This is the only case where the ratios indicated more negative than positive ratio movements.

The results of control group two ratios are presented in Table IV. All of the ratio classifications and comparisons in control group two indicated the same pattern as did the test-group's ratios. Control group two was comprised of 62 manufacturing companies. Of the eight profitability ratios, positive ratio movements were present in 126 of the calculated ratios; 88 of these ratios indicated negative movements; and 282 of the ratios indicated neither a positive nor a negative profitability trend. Labor productivity for control group two was observed with a total of 310 ratios; 58 of these indicated positive productivity trends; 50 indicated negative trends; and 202 neither positive nor negative movements. For the liquidity ratios (124 ratios), 37 showed positive trends, 27 showed negative, and 60 indicated neither. The trend patterns are presented in the Appendix for the test-group, control group one, and control group two for each of the 15 ratios.

The two control groups indicated movements similar to the test-group. Table V displays the chi-square values resulting from examining the similarities between the test-group and both of the control groups. A chi-square test for two independent samples was conducted to determine if the test-group's ratios' classifications were significantly different from those of control group one and control group two. The test hypothesis is:
$H_0$: There is no significant difference in the movements of the ratios between the test-group and each of the control groups.

The alternative hypothesis is:

$H_0$: The test-group ratio movements are significantly different from the ratio movements in each of the control groups.

**TABLE V**

CHI-SQUARE VALUES INDICATING SIMILARITIES BETWEEN THE TEST-GROUP AND THE CONTROL GROUPS

<table>
<thead>
<tr>
<th>Test-Group to Control Group One</th>
<th>Ratio Classification</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td></td>
<td>.47368</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td></td>
<td>4.08593</td>
</tr>
<tr>
<td>Liquidity</td>
<td></td>
<td>.11226</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Test-Group to Control Group Two</th>
<th>Ratio Classification</th>
<th>Chi-Square Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td></td>
<td>.08235</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td></td>
<td>1.69526</td>
</tr>
<tr>
<td>Liquidity</td>
<td></td>
<td>5.00798</td>
</tr>
</tbody>
</table>

The chi-square critical value at the .05 level is 5.99
Since all of the chi-square values are less than the critical value, at the .05 level, there appears to be no significant difference between the movements of the ratios for the test-group and each of the control groups.

**Pairing of the Samples**

Conclusions concerning the results reported in the previous section can only be considered after the test-group firms have been paired with companies in the two control groups. When ratio trends change in the test-group, the change is only considered a result of pension plan initiation if the ratio does not change in the same manner as its matched-pair. As discussed in Chapter III, matching was based on industry classification and total assets.

Table VI contains the percentages in each of the ratio classifications indicating positive, negative, or neither positive nor negative movements for all three groups.

**Control Group One.** The matched-pair comparisons resulted in 27 matched-pair firms from the test-group and control group one. The ratios of the matched-pair firms showed similar trends for 26 percent of the profitability ratios, 23 percent of the labor productivity ratios, and 35 percent of the liquidity ratios. Similar trends are considered to exist when the control groups' ratios indicate the trend continuing or a different trend beginning at the same time the test-group's ratios indicated these same respective movements.

However, the above percentages include the "continuing" trends
TABLE VI

THE PERCENTAGE EFFECTS ON THE TEST-GROUP AND THE TWO CONTROL GROUPS AFTER THE TEST-GROUP FIRMS INITIATE PENSION PLANS

<table>
<thead>
<tr>
<th></th>
<th>Positive Effects</th>
<th>Negative Effects</th>
<th>Neither Positive nor Negative Movements</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Profitability Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test-Group</td>
<td>26%</td>
<td>19%</td>
<td>55%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group One</td>
<td>22%</td>
<td>19%</td>
<td>59%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group Two</td>
<td>25%</td>
<td>18%</td>
<td>57%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Labor Productivity Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test-Group</td>
<td>24%</td>
<td>20%</td>
<td>56%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group One</td>
<td>15%</td>
<td>30%</td>
<td>55%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group Two</td>
<td>19%</td>
<td>16%</td>
<td>65%</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Liquidity Ratios</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test-Group</td>
<td>24%</td>
<td>13%</td>
<td>63%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group One</td>
<td>26%</td>
<td>13%</td>
<td>61%</td>
<td>100%</td>
</tr>
<tr>
<td>Control Group Two</td>
<td>30%</td>
<td>22%</td>
<td>48%</td>
<td>100%</td>
</tr>
</tbody>
</table>

throughout the time period. A "continuing" trend is one where there has been no change during the time period examined. When ratios continue their trends across the time of pension plan initiation, no effects of pension plan can be observed. The percentages of similarities fall when the "continuing" trends are removed from consideration. The resulting percentages are:

- Profitability: 6 percent
- Labor Productivity: 4 percent
- Liquidity: 11 percent
The figures represent the percentages of similar trends between the test-group and control group one after the test-group firms began their pension plans. Because each of these percentages is small, changes in trends of the test-group's ratios are considered to be caused by factors not affecting the companies making up control group one.

Control Group Two. Sixty-two companies were selected as matched-pairs for firms in the test-group. Each of these companies' financial statements indicated pension cost for the entire period of this study. The results of this pairing are very similar to the pairing with control group one. Ratios, which continue their trends across the time of pension plan initiation, indicate no observable effects of pension plan initiations. The percentages of similarities decrease when the "continuing" trends are removed from consideration. The percentages after removing the "continuing" trends are:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profitability</td>
<td>7 percent</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td>4 percent</td>
</tr>
<tr>
<td>Liquidity</td>
<td>6 percent</td>
</tr>
</tbody>
</table>

Each of these percentages are small, as was the case with control group one; therefore, the original test-group's ratios' trends are considered to be caused by factors other than those affecting the companies included in control group two.

Summary

Sixty-seven manufacturing firms initiating pension plans between 1969 and 1974 were included in the test-group sample. For each of the
three ratio classifications—profitability, labor productivity, and liquidity—more than 80 percent of the ratios indicated that no negative effect was apparent after the firms' year of pension plan beginning. The chi-square test for two independent samples was used to examine the similarities between the test-group and each of the control groups. Each control group showed movements not significantly different from the test-group at the .05 level.

However, the results reported in these observations can only be considered after the test-group firms have been paired with companies in both of the two control groups. The percentages of similarities in actual ratio changes between the two control groups and the test-group are small. Therefore, movements in the test-group's ratios appear to be caused by factors other than those present in either of the two control groups.
This study has observed fifteen financial ratios of 67 corporations which initiated pension plans for their employees between 1969 and 1974. The year of plan initiation was defined in this study as the first year pension data appeared on the test-group firms' published income statements. Fifteen ratios were grouped into three categories (profitability, labor productivity, and liquidity), for the purpose of observing the effects of plan initiation on firms' financial statements.

The Conclusions of the Study

1. Profitability, in this study, was measured by eight profitability ratios. Pension plans, in most cases, had no observable effects on profitability. When effects were observable, most of these were positive. Therefore, no profitability effects are apparent after the initiation of a pension plan.

2. Labor productivity, measured by five productivity ratios, most frequently indicated no observable effects when pension plans were started. However, when trends of labor productivity were observed, most of these observable effects were positive. Therefore, no labor productivity effects are apparent after the initiation of a pension plan.
3. Liquidity was measured by two liquidity ratios. As with the other two ratio classifications, most of the companies' ratios indicated neither a positive nor a negative effect after the initiation of a pension plan. In instances when effects on liquidity were observable, most were positive effects. Therefore, no liquidity effects are apparent after the initiation of a pension plan.

4. Most frequently, the effects of the cost of pension plans are not observable. When the ratios' trends are observable, most of these are positive. Therefore, for the firms examined, the benefits to the firms initiating pension plans appear to be either at least equal to the cost of these pension benefit plans, or that there is no relationship between the changes in the studied ratios and the initiation of pension plans.

The Effects on Profitability

When examining profitability after beginning pension plans in the test group firms, most (81 percent) of the companies' ratios appear not to indicate negative effects. The test-group, control group one, and control group two all seem to indicate the same ratio movements (over one-half with positive effects and approximately one-fifth negative). However, in a closer examination, when profitability ratios changed after the initiation of pension plans, few of these ratios changed like either control group one or control group two firms. In most cases, profitability seemed unaffected or positively affected by pension plan initiations.
Pension plan initiations appear not to have had negative effects on corporate profitability in the short-run. Profitability ratios are measures of the overall efficiency of the firms. Thus, profitability ratios include the effects of both the pension expense and labor's reactions to the plan's initiations. Since negative effects were not generally noticed in these ratios, it would appear that the benefits of the plan may be at least compensating for the additional cost of pension funding.

The Effects on Labor Productivity

Five labor productivity ratios were computed for the companies which initiated pension plans. Most of these ratios indicated that the initiation of pension plans had neither a positive nor a negative effect on labor productivity. Four of the productivity measures have operating expenses as the numerator. Two of these included pension cost and two did not. The ratios including pension cost consistently reacted the same as the ratios excluding pension cost.

Most of the labor productivity ratios (80 percent) do not appear to indicate negative pension plan effects. Therefore, companies initiating pension plans appear not to have experienced negative effects on labor productivity. Labor productivity ratios are more specific in their measurements than profitability measures. The labor productivity measures concentrate on operating expenses. The expenses measured in this study are examined both including and excluding pension cost. Because these labor productivity ratios do not appear to be generally
negatively affected, the increased operating expenses caused by the implementation of pension plans appear to be at least offset by increased benefits to the firm.

The Effects on Liquidity

Two measures were used in observing liquidity changes as a result of pension plan initiation. Almost two-thirds of the ratios of the test-group firms indicated neither positive nor negative effects after pension plans were started. Of the ratios which did change, almost twice as many ratios experienced positive liquidity effects as experienced negative effects.

Most frequently (87 percent of the cases), no observable negative effects were present after firms initiated pension plans. Since pension plans do cause outflows, firms must have reduced other current asset outflows, or reduced the use of current liabilities. These reduced expenditures could possibly have resulted from increased labor efficiency and/or reduced turnover. This was also indicated by the labor productivity ratios.

The Implications of the Study

Financial information from 67 manufacturing firms was examined to determine if the effects of these firms initiating pension plans was observable in financial statements. The examination indicated that most financial ratios showed neither a positive nor a negative movement in the short-run because of pension plan initiation. The effects that were observable were almost always positive effects. This was true in all three ratio classifications. Therefore, firms appear not to be
affected by pension plan initiation in the short-run.

Pension plans benefit organizations' employees and their security at retirement age. Employee pension plans can offer financial returns to their organizations. Benefits to the employees should aid in reaching many of the organizations' goals. Companies are aware of this fact. When making capital investment decisions, corporate administrations evaluate the expected returns as well as the cost of the investment. Unless the expected benefits are at least equal to the cost, the company would not make the investment. This cost/benefit analysis is also applicable to employee benefits investments. Management is interested in recovering its invested cost and earning financial benefits from "employee" investments, as well as capital investments. The results of this study seem to indicate that, in most cases, the benefits of pension plans offered to company employees at least equal their cost, or that no relationship exists between the changes in the studied ratios and the initiation of the pension plan. This appears to be evidenced in companies' financial statements by the fact that most firms initiating pension plans are either essentially unchanged, or improve their financial ratios after plan initiation.

Cost/benefit analysis is widely used in analyses by business organizations. As mentioned in Chapter I, pension costs are material and becoming increasingly a major expenditure of businesses. The results of this study seem to indicate that the benefits from initiating employee pension plans are also large and, in most of the cases examined, the benefits appeared to at least equal the pensions' cost.
The Limitations of the Study

The conclusions of this research must be accepted in relation to the limitations of the methodology. All companies used in the three groups were COMPUSTAT firms, and their financial data were taken from these tapes. COMPUSTAT firms are, in many cases, older and larger corporations. Younger and smaller companies may not be affected by pension initiations in the same manner.

The conclusions of this research should not be considered to have predictive ability, nor indicate what would happen to specific firms when they institute pension plans for their employees. Even though ratio standardizations and moving-average computations were utilized, the conclusions must be limited to the time period examined. In 1974, the Pension Reform Act was passed. This legislation affected the accounting for pension funds, as well as actions of the granting company. Many companies in the mid-1970's terminated their pension benefit plans. This action was most likely a result of the requirements instituted by the Pension Reform Act.

The conclusions of this research cannot be assumed to be opposite for those firms which halted their pension plans. In the event that firms' pension plans were terminated, the plan was most likely replaced by some other compensating employee benefit. This action could cancel the effect of the decreased benefits. No examination was made of these firms since the massive termination of plans in the mid-1970's has resulted in little accounting data being available for observation.
The five ratios used in observing labor productivity are only surrogates for actual labor productivity effects. Productivity would best be measured by output per employee-hour. However, this study utilized only financial information. Operating expenses and operating expenses minus pension cost were used as numerators in four of the five labor productivity ratios. Total labor cost was used as the financial data surrogate for productivity in previous labor-related research. Operating expenses were used in this study because labor cost data are not generally available and operating expense data are readily available. The extraneous factors and influences present in "operating expenses" may have biased the results of the study.

Pension plans, as well as other labor benefits, can affect employees' behavior. Employee morale, job satisfaction, and turnover are three areas that could be affected by implementing a pension plan. This research centered on the observable effects on companies' financial statements, and did not directly study the effects on employee behavior.

Three-year moving-average ratios were utilized in this study for the purpose of reducing individual-firm and economy-wide effects. This study is primarily interested in detecting any significant ratio variations due to pension plan implementation, while ignoring other variations. This necessary ratio smoothing could have, however, camouflaged the effects of pension plan initiations.

This study's observations of accounting ratios examined only the movements of various ratios in the short-run, i.e., the short-run effects of pension plan initiations. Long-term observations may
demonstrate that ratios of firms which begin pension plans move across time to become more like firms which have had pension benefit plans for a long period of time.
BIBLIOGRAPHY


APPENDIX A

Appendix A contains a list of all of the companies included in the samples utilized in this study. The companies are listed by their three sample groups: the test-group (firms which began reporting pension cost); control group one (firms not indicating pension cost); and control group two (companies which reported pension cost throughout the time period of this study).
COMPANIES INCLUDED IN THE TEST-GROUP

Bates Mfg. Co., Inc.
Dome Petroleum, Ltd.
North Canadian Oils, Ltd.
Ranger Oil, Ltd.
Reserve Oil and Gas
Scurry-Rainbow Oil, Ltd.
Technical Operations, Inc.
Zapata Corp.
Anthony Industries, Inc.
Federal Co.
Fanny Farmer Candy Shops, Inc.
Russell Stover Candies, Inc.
Avondale Mills
Opelika Mfg. Corp.
Donnkenny, Inc.
Lilli Ann Corp.
Lynnwear Corp.
Marlene Industries Corp.
Pioneer Systems, Inc.
Puritan Fashions Corp.
Salant Corp.
Wilson Brothers
Georgia-Pacific Corp.
Ply-Gem Industries
Pentrol Industries
New Idria, Inc.
Domtar, Inc.
Technical Tape, Inc.
Fairmont Chemical Co., Inc.
Belco Petroleum Corp.
British Petroleum Co.
Crystal Oil Co.
Holly Corp.

Husky Oil Ltd.
Cetece Corp.
Genstar, Ltd.
Welded Tube of America
Continental Materials Corp.
Rusco Industries, Inc.
Signode Corp.
Massey Ferguson, Ltd.
Unarco Industries, Inc.
Omark Industries
New Hampshire Ball Bearings
Riley Co.
Burgess Industries
U. S. Filter Corp.
Dataproducts Corp.
Thomas Industries
Sony Corp.
Conrac Corp.
Jetronic Industries, Inc.
Servo Corp. of America
Electronic Engineering Co.
Sealectro Corp.
Sigma Instruments
Safeguard Industries, Inc.
Standard Motor Products, Inc.
United Aircraft Products, Inc.
Fleetwood Enterprises
Systron-Donner Corp.
Anken Industries
Talley Industries, Inc.
VSI Corp.
Compudyne Corp.
COMPANIES INCLUDED IN CONTROL GROUP ONE

Natomas Co.
Barnwell Industries
 Consolidated Oil and Gas Co.
 Buttes Gas and Oil Co.
 Numac Oil and Gas
 Standard-Pacific Corp.
 Bluebird, Inc.
 Courtaulds, Ltd.
 Alba-Waldensian, Inc.
 Angelica Corp.
 Leslie Fay, Inc.
 Brody (B) Seating Co.
 Bowater Corp., Ltd.
 Alcolac, Inc.
 Asamera Oil Corp.
 Keller Industries, Inc.
 Cordon Intl.
 Tenney Engineering, Inc.
 Binks Mfg. Co.
 Esquire Radio and Electron, Inc.
 Watkins-Johnson
 AAR Corp.
 Nuclear Data
 Hi-G, Inc.
 Solitron Devices, Inc.
 Bearings, Inc.
 Napco Industries, Inc.
COMPANIES INCLUDED IN CONTROL GROUP TWO

Kaneb Services, Inc.
Louisiana Land and Exploration
Felmont Oil Co.
Apache Corp.
General American Oil Co. of Texas
Home Oil Co.
Morrison-Knudsen
Hormel (Geo. A.) and Co.
Tootsie Roll Industries, Inc.
MacAndrews and Forbes
Reeves Brothers, Inc.
Liberty Fabrics of N. Y., Inc.
Garan, Inc.
Movie Star, Inc.
Adams-Millis Corp.
Wayne-Gossard Corp.
Munsingwear, Inc.
Jantzen, Inc.
Bobbie Brooks, Inc.
Russ Togs, inc.
Weyerhaeuser Co.
Pope and Talbot, Inc.
Cosco, Inc.
American Seating Co.
Great Northern Nekoosa Corp.
Glatfelter (P. H.) Co.
Park Chemical Co.
Clark Oil and Refining Corp.
Standard Oil Co. (Indiana)
Bow Valley Industries
Total Petroleum of North America

Witco Chemical Corp.
Clopay Corp.
Plymouth Rubber Co.
U. S. Gypsum Co.
Hofmann Industries, Inc.
Bernz-O-Matic Corp.
Eastern Co.
CECO Corp.
Portec, Inc.
McNeil Corp.
Teleflex, Inc.
Parker-Hannifin Corp.
Buffalo Forge Co.
Peabody International Corp.
Barry Wright Corp.
Esquire, Inc.
Lafayette Radio Electronic Corp.
Zenith Radio Corp.
Motorola, Inc.
Harris Corp.
Sparton Corp.
GTI Corp.
Unimax Group, Inc.
Lynch Corp.
Kysor Industrial Corp.
Standard Products Co.
Maul Technology Corp.
Instron Corp.
Hunt (Philip A.) Chemical
Bulova Watch Co.
American Technical Industries
Appendix B contains a list of each of the 15 ratios utilized in this study. The ratios are classified into three groups: profitability, labor productivity, and liquidity. A listing of the number of firms in each of the sample groups indicating positive, negative, and neither positive nor negative movements appears with each of the ratios.
### The Effects of Pension Plan Initiations on Each of the Three Sample Groups' Firms' Ratios

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THE EFFECTS OF PENSION PLAN INITIATIONS ON EACH OF THE THREE SAMPLE GROUPS FIRMS' RATIOS (continued)

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APPENDIX C

The graphs presented in the appendix are plots of four test-group firms. Also presented are the plots of ratios of the test-group firms' respective matched-pairs from control group one and control group two firms. The year of pension plan initiation is indicated on the X-axis of each of the test-group firms' graphs. The graphs are presented in the following sequence: the test-group firm, the matched-pair firm from control group one (firms without pension plans), and finally, the matched-pair firm from control group two (firms with pension plans). The specific ratios plotted on each graph are indicated in the legend at the bottom of each graph.
ASAMERICA OIL CORP

YEAR
0.00 1.00 2.00 3.00
AVERAGE VALUES


OE/CGS ★
OE-P/CGS □
OE/NS△
OE-P/NS ×
NS/SE○
BOW VALLEY INDS

YEAR


AVERAGE VALUES

0.00 0.50 1.00 1.50 2.00 2.50 3.00

OF/CGS *
OE-P/CGS □
OE/NS □
OE-P/NS ×
NS/SE φ
RESERVE OIL & GAS

AVERAGE VALUES

YEAR


CR *

DPS □
VITA

Charles Bruce Swindle, the author of this dissertation, was born on June 1, 1951 in Bastrop, Louisiana. His parents are Moody and Elaine Swindle. He graduated from Ouachita Parish High School in 1968. He graduated with a Bachelor of Science in Accounting in January 1972 and a Master of Business Administration in May 1973. Both of these degrees were earned from Northeast Louisiana University.

The author worked in public accounting and private accounting. After completing his M.B.A., the author was an Instructor of Accounting at McNeese State University for two years. After leaving McNeese, the writer returned to school as a full-time doctoral candidate. He is presently a member of the American Accounting Association and an associate member of the National Association of Accountants.

Bruce Swindle is married to the former Debra Lynne Miles, and has one daughter, Alicia Marie.