COMMON STOCK PRICE PREMIUMS FOR VOTING CONTROL

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
RAYMOND C. HELWIG
1973

This is to certify that the

thesis entitled

COMMON STOCK PRICE PREMIUMS FOR VOTING CONTROL

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D degree in Finance - Business

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Date 2/1/73

O-7639

ABSTRACT

COMMON STOCK PRICE PREMIUMS
FOR VOTING CONTROL

By

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This study examines the price premiums paid for control stock, defined as additional amounts paid for types or amounts of stock which facilitate voting control, as compared with the price of otherwise comparable stock (of the same company) which does not facilitate control. Three methods of obtaining or retaining voting control which are studied are (1) cash tender offers, (2) private purchases of large blocks of stock, and (3) classified common stock.

Fifty-three cash tender offers, thirty-two private purchases of large blocks of stock, and twenty-nine companies with classified common stock are studied. Multiple regression analysis is used with cash tender offers and private purchases of large blocks of stock. The classified common stocks are analyzed both on a time series basis with the aid of charts, and on a cross-section basis using two by two tables and the chi-square test.

The dependent variable in each case is the premium as measured by the price ratio, defined as the ratio of the

price of control stock to the price of non-control stock. For cash tender offers the price ratio is ratio of tender offer price to market price (close or bid) two business days before announcement of offer. The price ratio for private purchases of large blocks of stock is the ratio of block sale price to market price two business days before date of agreement. The price ratio for classified common stocks is the ratio of market price of voting common to market price of non-voting (or reduced voting) common of the same company. Several independent or explanatory variables are selected for the analyses, including some variables suggested by other writers as possibly important.

The largest and most consistent premiums are found for cash tender offers, with classified common stocks next. Private purchases of large blocks of stock have the lowest mean and widest range of premiums.

The regression equations explain a substantial portion of the variation in stock price premiums, both for cash tender offers and for private purchases of large blocks of stock.

Support is found, in all three methods studied, for the hypothesis that the percentage premium for control stock is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor. Dividend policy is an important factor in the size of price premium on the voting shares of classified common stock.

Other writers have suggested that high liquidity makes a company attractive for takeover. The findings of this study suggest an opposite effect--low liquidity (as measured by current ratio or quick ratio) serves as a warning sign which motivates investors to get control and to pay a higher premium for control.

A book value per share which is high in relation to market price is strongly associated with a relatively high premium for private purchases of large blocks of stock, but not for cash tender offers, and little if at all for classified common stock. Possible reasons for these differences are suggested.

A wide prior year's price range is associated with a larger premium for cash tender offers, but with a smaller premium for private purchases of large blocks of stock. Possible reasons for these opposite results are considered.

In private purchases of large blocks of stock, corporate purchasers paid higher premiums than individual purchasers, and corporate sellers received higher premiums than individual sellers.

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A THESIS

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

DOCTOR OF PHILOSOPHY

Department of Accounting and
Financial Administration

1973

G80273

ACKNOWLEDGMENTS

I thank the members of my committee--Professors Harry G. Brainard, Milton B. Dickerson, and Alan E. Grunewald, Chairman--for their helpful guidance and constructive comments.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Purpose of the Study

One purpose of this study is to determine the price premium paid for control stock of various corporations under the following three methods of obtaining or retaining voting control:

1. cash tender offers
2. private purchases of large blocks of stock
3. classified common stock

The price premium paid for control stock is defined as an additional amount paid for a type or amount of stock which facilitates voting control, as compared with the price of otherwise comparable stock (of the same company) which does not facilitate control.

Another purpose is to explain the varying values of the stock price premium for each of the above three methods of obtaining or retaining control. A number of additional variables, selected for this purpose, are examined to determine the possible influence of each variable upon the size of stock price premium.

A third purpose is to make a search of literature relating to the value of control, and to relate the empirical findings of this study to the findings and analysis of others.

Need for the Study

Each of the three methods studied is an important means of obtaining or retaining voting control. However, very little empirical research has been published about any of these methods. Further, despite the fact that the methods are to some extent interchangeable, nothing has been found which compares and contrasts them.

Information about these methods is needed by investors, not only those seeking to obtain or retain voting control of a corporation, but also those concerned about the possible effects of others' desire for control upon the price of their shares.

Investors interested in acquiring control need to know not only the method which may be best to use in a given situation, but also the premium likely to be required. Other investors would want to know what premium they might expect to receive on shares of a certain company if a contest for control should develop.

Methods of Obtaining or Retaining Voting Control

There are four main methods of obtaining or retaining control of a corporation, of which one breaks

down into four sub-classifications. The four main methods are:

1. Direct purchase of shares
   a. privately-negotiated purchase of large blocks of stock
   b. purchase of shares on the open market
   c. cash tender offer
   d. exchange offer of securities of offering company
2. Merger not preceded by purchase of shares
3. Proxy contest
4. Classified common stock.

Two of the above main methods are not included in the study: merger not preceded by purchase of shares, and proxy contest. Merger not preceded by purchase of shares implies an acquiescence on the part of the management of the acquired company. This acquiescence may be heavily influenced by factors other than the exchange terms. Further, because the securities issued in exchange often include a newly-issued convertible preferred stock, it is difficult to establish the value received per share of the acquired company; trading in the new security may not begin until considerably after the date of announcement of the offer. A proxy contest does involve cost to those attempting to capture control. However, complete data on costs incurred by these insurgents are believed to be unavailable.

Also, two of the four sub-classifications of direct purchase of shares are excluded from the study: purchase of shares on the open market, and exchange offer of securities of offering company. The problem in studying the purchase of shares on the open market would be obtaining

and interpreting information. The price paid for control in this method is the average differential paid as the large-scale buying drives the market price above the level which would prevail in the absence of such buying. The price paid in this method would be difficult to accurately determine, because of the usual lack of availability of information about the amounts acquired and prices paid (particularly prices paid). Further, it would be impossible to determine what prices would otherwise have prevailed. The reason for the exclusion of exchange offer of securities is similar to one of the reasons for excluding merger: the securities issued in exchange often include newly-issued securities, such as debentures, convertible preferred stock, and warrants. It is difficult to accurately determine the value of these new securities as of the date of announcement of the offer.

Reasons for Control Having Value

The value of being able to control a corporation varies with the circumstances of each corporation and the circumstances and desires of those persons seeking control. There appear to be three reasons that control of a corporation might have value:

1. There may be a possibility of increasing the value of the stock by improving the company's profitability or image, by merging it with another company, or by liquidating it. This

is probably the most important reason for seeking control of a corporation, and the one which inspires this study.

2. Perquisites of control may be available. For example, the person with control may be able to have himself or a relative installed as an officer at a level of status and compensation (perhaps including stock options) higher than the person could obtain elsewhere. The status and fees of being a director are usually available to one having control. However, it is believed that perquisites are not usually a major motive; they are not examined in this study.
3. There may be a possibility of reducing competition, though any such attempt is likely to run afoul of the anti-trust laws. It might be possible, for example, to secure a source of supply of raw materials (perhaps at a favorable price) by gaining control of a supplier. A market for a company's product might be assured by gaining control of a customer or prospective customer. Control need not be direct to be effective; it may be indirect. For example, individuals who already control one company may seek to gain

control of a supplier to, or a customer of that company. Even if reducing competition were a motive, the motive would probably be carefully concealed; it is not examined in this study.

Hypotheses

Following is a list of hypotheses:

1. For a block of stock (or a type of stock) which carries a large potential for voting control (hereafter called control stock), there tends to be a price premium relative to the price of amounts (or types) of shares which carry little potential for voting control.

2. The percentage premium for control stock is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor.

3. The percentage premium for control stock is greater when there is a relatively great possibility of profitable liquidation (as roughly indicated by a relatively high ratio of book value per share to market price).

4. The percentage premium for control stock is greater when there is a relatively large unused debt capacity (as roughly measured by percent of capitalization comprised by long-term debt).

5. The percentage premium for control stock is greater when the corporation is relatively liquid (as roughly measured by the quick ratio or current ratio).

6. The percentage premium for control stock is greater when the market price is relatively low.

7. The percentage premium for control stock will be greatest for unlisted companies and lowest for NYSE-listed companies.

8. The percentage premium for control stock will be greater when the price of the stock varied widely in the prior year (as measured by the ratio of prior year's high price to prior year's low price).

9. In a tender offer, the percentage premium is greater when the market price is low in relation to the previous year's high.

10. In a tender offer, the party making the offer correctly forecasts management endorsement of or opposition to the offer, and the percentage premium is larger when opposition is forecast (as revealed by subsequent actual opposition).

11. In a tender offer, the percentage premium is greater for offers that are relatively successful (as measured by the ratio of shares purchased through the offer to shares offered to buy).

12. In a tender offer, the percentage premium is greater when the length of the offer is relatively short (as measured by number of days from date of announcement of offer through original expiration date of offer).

13. In a tender offer, the percentage premium is greater when the proportion of shares sought is relatively large (as measured by shares offered to buy as percentage of shares outstanding).

14. In a private purchase of a large block of stock, the percentage premium is greater when the block is relatively large (as measured by the number of shares in the block as a percentage of number of shares outstanding).

15. In a private purchase of a large block of stock, the percentage premium is greater when the seller is a corporation than when the seller is an individual.

16. In a private purchase of a large block of stock, the percentage premium is greatest when the purchaser is a corporation other than the issuer, less when the purchaser is an individual (or individuals), and least when the purchaser is the issuer.

17. In a private purchase of a large block of stock, the percentage premium is greatest for those transactions followed by merger with a corporation other than the purchaser, less for transactions followed by merger with the purchaser, even less for transactions followed by a cash tender offer, and least for transactions followed by no such change in status of minority shareholders.

18. With classified common stock, the percentage premium of the voting shares is greater when the ratio of the number of voting shares to the number of non-voting (or reduced-voting) shares is relatively low.

Variables

The main purpose of the study is to determine the price premium paid for control stock and factors affecting that premium. Therefore the dependent variable used in studying each of the three methods of obtaining or retaining voting control is derived from a price ratio: the ratio of the price of control stock to the price of non-control stock. The exact nature of this variable varies with the method and is explained in the chapter discussing each method.

Hypotheses numbers 2 through 18 listed in the preceding section are designed to state factors which are expected to influence the size of price ratio. In order to test these hypotheses a number of independent or explanatory variables are used. The independent variables used vary for the study of each method and are listed and discussed in the chapter describing each method.

CHAPTER II

CASH TENDER OFFERS

Review of Literature

Reasons for Making Offers.--In an essay on corporate control, Oliver E. Williamson analyzes "the four incentives for corporate control identified by Manne."

1. the possibility of realizing market power by acquiring a rival firm
2. technical efficiency (economies of scale in production, distribution, etc.)
3. the possibility that the management may be incompetent or inefficient . . .
4. the incentive to capture the salaries and perquisites of management which displacing the incumbents would permit[1]

Williamson argues that incentives numbers 1 and 2 are ordinarily obtained through merger, while there is a "wider range" of possibilities for incentive number 3. One of those possibilities is the cash tender offer.[2]

In his discussion of the cash tender offer, Williamson stresses detectable inefficiency of incumbent management

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[1]Oliver E. Williamson, "Corporate Control and the Theory of the Firm," Economic Policy and the Regulation of Corporate Securities, ed. by Henry G. Manne (Washington: American Enterprise Institute for Public Policy Research, 1969), p. 308.

[2]Ibid., p. 309.

and introduces the concept of an inefficiency threshold. He argues that where a desire to displace inefficient management is the motivating factor for a tender offer, a certain significant degree of management inefficiency must exist before a tender offer will be made. There are a number of possible reasons for the existence of this threshold. There may be barriers to entry into the market for corporate control, which, apart from size of the subject firm, have not yet been clearly defined. Secondly, (and, Williamson feels, more importantly) there are difficulties in detecting management inefficiency. Third, the costs (other than the premium) may be substantial. These costs include not only transaction costs, but also what he terms transition costs. Transition costs involve the adverse side effects of a change in management, such as decreased performance by middle management as a consequence of feeling threatened by the change. Further, the use of a tender offer requires a premium that will be perceived by existing stockholders as significantly large in order to give a reasonable chance of having the minimum number of shares tendered which the offerer desires.[1]

The management inefficiency required to make a change of management attractive may not necessarily be due to lack of management competence. It may also be due to competent management that "pursues goals which are in partial conflict with stockholder objectives."[2]

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[1] Ibid., pp. 311-316. [2] Ibid., p. 309.

Empirical Studies.--In 1967 a study of tender offers was reported by Samuel L. Hayes, III and Russell A. Taussig. The authors compiled a list of 280 external cash tender offers made during the ten-year period from July 1, 1956 to June 30, 1966.[1]

One purpose is to find characteristics which distinguish the companies which were the target of cash tender offers from companies for which no cash tender offer was made during the ten-year period. For this part of the study they selected at random 50 cash tender offers from the entire list of 280. One characteristic of those companies is that earnings in the five-year period before the offer had either been fluctuating widely, trending downward, or included loss years. Another characteristic is a relatively low rate of return on stockholders' equity. Dividend cuts are another characteristic. A relatively high quick ratio also is typical of the target companies. The authors describe the pattern of characteristics as representing "inept or at least overly-conservative management." They imply that the cash tender offers often are made because those making the offer feel that new management should be found to try to make more profitable use of the assets.[2]

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[1] S. L. Hayes, III and R. A. Taussig, "Tactics of Cash Takeover Bids," Harvard Business Review, VL (March-April, 1967), pp. 135, 148.

[2] R. A. Taussig and S. L. Hayes, "Are Cash Take-Over Bids Unethical?" Financial Analysis Journal, XXIII (January-February, 1967), pp. 107-111.

Another objective of the Hayes and Taussig study is to analyze factors associated with the amount of premium--the amount by which the tender offer price exceeded the price of the stock. In selecting the sample for this part of the study they categorized 83 of the 280 offers as contested (identifiable opposition by incumbent management of the target company) and selected 50 of the contested offers for detailed study.[1] Therefore, their study of premiums excludes the large number of cash tender offers where management of the target company either endorsed the offer or announced no position either for or against the offer.

Using this sample of 50 resisted cash tender offers they note that the premiums range from zero to 44%, with a median of 16%. They selected a number of variables which they compare with the size of the percentage premium through use of contingency tables. The variables include offer success or failure, the market price of the stock, and the length of the offer.[2]

On the basis of their limited analysis of size of premium, the authors suggest the need for further research in this area by saying "we suspect that differences in the size of the bid premiums can be explained statistically by a combination of variables . . . . Until someone is

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[1]Hayes and Taussig, op. cit., pp. 141, 148.

[2]Ibid., pp. 140-41.

successful in isolating and precisely weighting the critical variables, however, we conclude that the setting of the premium, while crucial to the success of the bid, is likely to remain an imprecise art."[1]

A 1971 book by George D. McCarthy and Robert E. Healy includes a report of their study of 75 cash tender offers for common stock of companies listed on the New York Stock Exchange which were made during the period from January 1, 1965 to April 28, 1967. (This period precedes the one used for this study.) They examine characteristics of the companies which seem to make them vulnerable to tender offers; they also study the outcomes of the tender offers. They calculate premiums of offer price above market price and find a median of 21% with a range of 2% to 53%.[2]

Lynn E. Dellenbarger, Jr. studied fifty mergers occurring in the eight-year period between 1950-1957 which involved the exchange of common stock only, and where all constituent companies were listed on the New York Stock Exchange prior to the merger.[3] He focuses on the exchange ratio as the dependent variable and explains the exchange ratios through the use of multiple regression analysis.

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[1] Ibid., p. 148.

[2] George D. McCarthy and Robert E. Healy, Valuing a Company (New York, N. Y.: Ronald Press Company, 1971), pp. 313-19, 322-25.

[3] Lynn E. Dellenbarger, Jr., Common Stock Valuation in Industrial Mergers (Gainesville: University of Florida Press, 1966), p. 7.

Of the five independent variables which he uses, one is by far the most dominant: "the ratio of the common stock market prices for the quarter just prior to the initial official action." Next in importance is "the ratio of the average of earnings per share for the five years prior to the merger." Of lesser importance are the other three variables: "the ratio of the earnings per share in the last full year prior to the merger," the ratio of book values per share, and the ratio of dividends per share. The ratio of market prices is quite highly correlated with each of the other four independent variables, and the author notes that this correlation may partially explain the lack of greater dominance of these variables used in the regression results.[1]

In addition to the five independent variables used in the regression analysis, Dellenbarger also employs five of what he terms "modifying factors": earnings trend, earnings stability, financial leverage, cash assets, and over-all financial strength. He uses these factors to explain the unexplained variations resulting from predictive use of his regression equations. He concludes that earnings trend, and to a lesser extent financial leverage and cash assets, do help to explain the variations unexplained by the regression equations. However, these factors seem important only when there are

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[1] Ibid., pp. 70, 84-137.

extreme differences (with regard to one or more of these factors) between the constituent corporations.[1]

Dellenbarger does some further analysis which is of particular relevance to this study. For his group B (a subgroup of 45 mergers remaining after excluding 5 with a constituent company having an earnings deficit within 5 years prior to the merger) he finds that in 36 of these 45 mergers the smaller constituent received a premium above market price. That is, the exchange ratio was more favorable to the smaller company than it would have been if the exchange ratio had been based solely on the ratio of market prices. Further analysis of his appendix table containing this data shows that the premiums range up to 43%, with a median of 13.5%. In 26 of these 36 cases, the premiums are between 11% and 25%. Fifteen of the cases fall within the relatively narrow range of 11% to 15%.[2]

There is a strong similarity between these premiums found by Dellenbarger and the sizes of premiums on cash tender offers reported by Hayes and Taussig. These premiums might be regarded as a premium for control if it is assumed that in these mergers the larger constituent company gained control of the smaller. This is probably a realistic way of looking at the situation in most cases, not only from the viewpoint of management but also from the viewpoint of stockholders. It is likely that in a

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[1] Ibid., pp. 95-137. [2] Ibid., pp. 145, 154-155.

merger of companies of disparate size, the top management of the smaller company, if it remains with the surviving company at all, will find itself in a subordinate position. The stockholders of the smaller company also might have more at stake. In the merged surviving company the operations of the larger constituent will dominate, and the proportionate interest in the smaller constituent will be smaller than before the merger. Both the management and controlling stockholders of the smaller company might therefore demand a premium for surrendering control over its assets and operations. Conversely, the management and controlling stockholders of the larger company might be willing to pay a premium to acquire control of the smaller company.

Strategy.--In 1967 a study by Martin J. Whitman entitled "The Strategy of Tender Solicitations" was published by Blair & Co., Inc., members of the New York Stock Exchange. As a how-to-do-it manual on how to make a tender offer succeed, it gives insight into factors other than the size of the price premium which may affect the outcome of the offer. One piece of advice is to avoid active opposition by management, which may require a higher premium, and may diminish the chances of obtaining control.[1]

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[1]Martin J. Whitman, The Strategy of Tender Solicitations (New York: Blair & Co., Inc., 1967), p. 3.

We may not be able to tell what the offeror has in mind by the terms of the offer; for example, although the offeror would probably prefer not to be obligated to buy any stock unless a certain minimum amount is tendered, he is urged not to make such a minimum a condition of his tender offer.[1]

Price premiums usually range from 10% to 30% above the market price, but "since investors are dollar per share conscious as well as percentage conscious, the lower the price of the stock, the greater the percentage premium that should be offered." Other factors to be considered are management's attitude, stock ownership, the amount of stock desired, the stock's price history, and the outlook for earnings and dividends.[2]

Cash Tender Offers Studied

Fifty-three cash tender offers made for the common stock of companies are statistically analyzed in order to study the premium offered above market price and the factors which help to explain the variations in the amount of this premium.

All cash tender offers reported by Standard & Poors Called Bond Record during all of 1968 and the first half of 1969 are examined. Of the 94 cash tender offers reported

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[1] Ibid., pp. 4-12.

[2] Ibid., p. 23.

during this eighteen months period, 53 are included in the final analysis. A few of the 41 exclusions are made because analysis of published information (such as statements by management of the company making the offer) suggests that the offer was made for a reason other than an attempt to obtain or strengthen voting control. For example, in the case of an offer of $18 per share for the stock of Benrus watch, the offer was "a formality to comply with the securities laws and no response is expected." It followed an agreement by the family described as principals of Benrus to sell all or most of their stock at $18 per share.[1] This was the only tender offer reported where a negative premium existed: the market price was $20.

However, most of the 41 exclusions are made because data is unobtainable for one or more of the variables used in the study. Many are due to the lack of published daily market price quotations for the stock; without daily price quotations it is not possible to calculate the key variable being studied--the ratio of the tender offer price to the market price.

Variables Employed

The variables employed are listed and defined in Table 2.1. The price ratio, which is analyzed as the dependent variable, is the ratio of the tender offer price to the market price (close or bid) two business days

[1] Value Line Investment Survey, 8-2-68, p. 456.

TABLE 2.1.--Cash Tender Offers: Variables Employed.

Variable Number	Code	Name	Definition
1	PREM	Price Ratio	Tender offer price as percentage of market price (close or bid) two business days before announcement of offer (MKT)
2	EXCH	Exchange	Listing status: (1) NYSE, (2) other exchange, (3) unlisted
3	MKT	Market price	Market price (close or bid) two business days before announcement of offer
4	ROR	Rate of return	Net income as percentage of net worth (prior year)
5	QUIC	Quick Ratio	Ratio of cash, short-term marketable securities and accounts receivable to current liabilities
6	DEBT	Debt Ratio	Ratio of long-term debt to total of long-term debt, preferred stock, and common stock equity
7	ETRD	Earnings trend	Ratio of average earnings for two prior years to average earnings for the two years which were four and five years prior
8	EDIR	Earnings direction	Direction of prior years earnings per share: (1) increase, (2) no change, or (3) decrease from year before that
9	BVMK	Book Value to Market Price	Ratio of book value per share to market price (MKT)

10	HIMK	High to market price	Ratio of prior year's high price to market price (MKT)
11	RANG	Price range	Ratio of prior year's high price to prior year's low price
12	MGTR	Management's reaction	Management's reaction to offer: (1) endorsement (2) neutrality or (3) opposition
13	LGTH	Length of offer	Number of days from date of announcement of offer through original expiration date of offer
14	WANT	Shares sought	Shares offered to buy as percentage of shares outstanding
15	GOT	Shares purchased	Ratio of shares purchased through offer to shares offered to buy

before announcement of the offer. This variable is a ratio converted to percentage form. To get the actual premium 100% is deducted from the value of this variable. The two day period is chosen for two reasons. First, it is reported as having been used in previous research on the size of tender offer premiums.[1] The use of the same period facilitates comparison of the size of premiums found with those findings. Secondly, two days appears to be a reasonable compromise in dealing with two conflicting risks: the risk of a very short period is that word of the offer may have gotten out prematurely and caused the market price to start to reflect the higher tender offer price; the risk of a longer period is that factors other than the tender offer might have influenced the market price between the date chosen and the date of announcement of the offer.

In order to attempt to explain the variation in the size of the premium, 14 independent or predictor variables are used. These variables were arrived at by considering suggestions by other writers as to what might be important and by examination of a number of other possibilities suggested by financial theory. Selection was made on the basis of a desire for wide coverage, plus a desire to avoid duplication or overlap which might subsequently be reflected in high simple correlation between two or more of the independent variables. In order to avoid the possibility of impaired reliability, the independent variables were

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[1]Hayes and Taussig, op. cit., p. 140.

selected solely on the basis of logic; such factors as degree of simple correlation with the dependent variable were not utilized in the selection.[1]

Method of Analysis

A major goal of this study is to determine the extent to which each independent variable explains the variation in the dependent variable. In each case the dependent variable has been influenced by many variables acting in concert. Therefore, in order to study the influence of any individual variable, it is necessary to hold all of the other independent variables constant--thus eliminating the effects of differences in the values of each of these other variables. One method for conducting this type of analysis is multiple linear regression.[2]

Regression Analysis.--The major output of multiple linear regression is a prediction equation called a multiple regression equation. The predicted value of the dependent variable is on one side of the equation; on the other side are a constant plus two or more other terms, each of which consists of an independent variable multiplied by the net regression coefficient for that variable.

For predictive purposes it is this multiple regression equation that would be used. In order to predict the value of the dependent variable for a given observation, the

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[1]M. Ezekiel and K. A. Fox, Methods of Correlation and Regression Analysis (3rd ed.; New York: John Wiley and Sons, Inc., 1959), pp. 186, 195-196, 436.

[2]Ibid., pp. 151-52.

value of the independent variables for that observation would be plugged into the equation.

However, for measuring the relative contribution of each independent variable in accounting for the variation in the dependent variable, the equation is not directly useful. The net regression coefficients cannot be meaningfully compared with each other because the size of each is influenced by the unit of measure employed for that variable. For example, if height is an independent variable, the use of inches instead of feet as the unit of measure would greatly affect the size of the net regression coefficient for that variable.

In order to make possible comparison of the relative contribution of each independent variable, beta coefficients are calculated; the net regression coefficients are normalized through adjustment by standard deviations of the dependent variable and independent variable.[1] The resulting beta coefficients for each independent variable may then be meaningfully compared.

Stepwise Procedure.--A number of methods are available for selecting the regression equation that best fits the observations of the sample being studied. One of these methods, stepwise linear regression is recommended by the authors of one book on the subject as being the best.[2]

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[1] Ibid., p. 196.

[2] N. R. Draper and H. Smith, Applied Regression Analysis (New York: Wiley, 1966), pp. 163-177.

It is a variation of the forward selection procedure. In both of these methods variables are inserted one at a time until the regression equation is satisfactory. The order of insertion is determined by selecting for insertion at each step the independent variable with the largest partial correlation coefficient with the dependent variable; this selection is made by trying all possibilities. When no variable remains which meets the criterion established for entry, the procedure terminates. The stepwise procedure differs by re-examining at every step each variable entered at an earlier step; it may no longer make an important contribution because of its relationships with other variables now in the regression; in that event, the variable is removed from the regression equation.[1]

Two Groups.--The 53 cash tender offers used consisted of 41 for the stock of non-financial corporations and 12 for the stock of financial corporations. The latter are insurance companies, with the exception of one finance company and one mutual fund management company. The presence of the financial companies poses two problems. One problem is that two of the independent variables used, QUIC (Quick Ratio) and DEBT (Debt Ratio) are considered not applicable to the financial companies. The second problem is that the presence of the financial companies may be unacceptably destructive of the homogeneity of the sample. These two problems are solved by using two groups

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[1] Ibid.

for the computer analysis. Group A includes all 53 observations. For this group the variables QUIC and DEBT are omitted from the analysis. Group B is a sub-group of Group A. It includes only the 41 observations of non-financial corporations; in the analysis of this group all variables are used, including QUIC and DEBT.

Findings

Price Ratio.--Table 2.2 shows the distribution of the values of price ratio for group A, which includes all 53 cash tender offers studied. In terms of premiums (price ratio minus 100%) the median is 16.7% and the mean 18.2%. There are three offers with premiums under 5% and three of 40% or over. The range is from 1.9% to 46.7%. Regression analysis is used to explain this variation in the independent variable.

Regression Steps.--Table 2.3 shows certain information regarding each of the nine regression steps for Group A. The variable which is entered at each step is shown, along with information on the cumulative effect of all variables entered through that point. The nine steps indicate that nine of the 12 independent variables used for Group A made a significant contribution. The second column shows the variables that were entered and the order of their entry. The third column (R^2) shows the cumulative extent to which the variables in the equation at that step

TABLE 2.2.--Distribution of Actual Values of Price Ratio Group A.

Actual Value of Price Ratio (percent)	Number of Observations
100.0 - 104.9	3
105.0 - 109.9	9
110.0 - 114.9	11
115.0 - 119.9	14
120.0 - 124.9	6
125.0 - 129.9	2
130.0 - 134.9	3
135.0 - 139.9	2
140.0 - 144.9	2
145.0 - 149.9	1
Total	53

Range = 101.9% to 146.7%
Median = 116.7%
Means = 118.2%

explain the variance in the dependent variable. As each additional variable was entered, the value of R^2 improved from .08 (with only the independent variable GOT) to .32 (with all nine variables). The next column shows how the constant varies from one regression equation to another; of course, the regression coefficients vary from one step to another also, but they are not shown in this table. The last column is calculated by the F-test for significance of regression. The value, which varies between 2.5% and 5.0% means that there is no more than a

TABLE 2.3.--Regression Steps, Stepwise Addition of Variables, Group A.

Step Number	Variable Entered	R^2	Constant	Significance Level
1	GOT	.08	122.1	5.0%
2	LGTH	.12	125.1	5.0%
3	RANG	.19	113.5	2.5%
4	MKT	.21	117.5	2.5%
5	BVMK	.24	122.3	2.5%
6	EXCH	.26	118.7	2.5%
7	EDIR	.29	113.4	2.5%
8	HIMK	.31	120.0	5.0%
9	MGTR	.32	117.8	5.0%

5% probability that the regression results could have been obtained by random sampling from the same population.[1]

Table 2.4 shows the same type of information for Group B as Table 2.3 does for Group A. The Group B regression also terminated with nine variables in the regression equation, even though the number of independent variables available for Group B was 14--two greater than for Group A. The results in Group B are better than Group A in two respects. First the value of R^2 attained is higher--.43 compared with .32. Second, Group B's final regression equation has a higher level of significance--2.5% versus 5.0%. Further, with Group B if one is willing to settle for an R^2 of .38 instead of the .43 obtained in

[1]Ezekiel and Fox, op. cit., p. 397.

TABLE 2.4.--Regression Steps, Stepwise Addition of Variables, Group B.

Step Number	Variable Entered	R^2	Constant	Significance Level
1	GOT	.14	122.6	2.5%
2	RANG	.23	110.8	1.0%
3	LGTH	.30	110.8	0.5%
4	MKT	.36	116.9	0.5%
5	BVMK	.38	121.6	0.5%
6	EXCH	.39	118.4	1.0%
7	EDIR	.41	114.2	1.0%
8	HIMK	.42	118.2	2.5%
9	WANT	.43	120.6	2.5%

Step No. 9, he can use the regression equation at Step No. 5 and obtain a significance level of 0.5%.

Regression Results.--Table 2.5 shows the regression equations achieved in the final step for both Group A and Group B (step no. 9 in both cases). The regression equation consists of the constant and each regression coefficient of each variable multiplied by the value of that variable. For Group A the equation takes the following form:

$$\begin{aligned} PREM = {} & 117.77 - 3.07\ GOT + 1.81\ EXCH - 0.06 \\ & MKT + 2.01\ EDIR - 4.21\ BVMK - 7.57 \\ & HIMK + 6.92\ RANG + 1.11\ MGTR - 0.28 \\ & LGTH \end{aligned}$$

TABLE 2.5.--Results of Regression Analysis, PREM is Dependent Variable.

Independent Variable	Group A: All Observations		Group B: Non-financial Companies		Consistent with Hypothesis?
	Regression Coefficient	Beta Coefficient	Regression Coefficient	Beta Coefficient	
GOT	-3.07	-0.16	-4.45	-0.27	No
EXCH	1.81	0.16	1.32	0.13	Yes
MKT	-0.06	-0.15	-0.08	-0.25	Yes
ROR					
EDIR	2.01	0.20	1.31	0.15	Yes
BVMK	-4.21	-0.19	-5.58	-0.19	No
HIMK	-7.57	-0.17	-4.28	-0.12	No
RANG	6.92	0.26	7.01	0.33	Yes
MGTR	1.11	0.10			Yes
LGTH	-0.28	-0.34	-0.18	-0.33	Yes
WANT			-0.03	-0.12	No
Constant	117.77		120.58		
Coefficient of multiple determination (R^2)	.32		.43		
F test of significance: F value	2.22		2.56		
Significant at 5% level?	yes		yes		
Significant at 2.5% level?	no		yes		

For Group B the regression equation is:

$$\begin{aligned} PREM = 120.58 &- 4.45\ GOT + 1.32\ EXCH - 0.08\ MKT \\ &+ 1.31\ EDIR - 5.58\ BVMK - 4.28\ HIMK \\ &+ 7.01\ RANG - 0.18\ LGTH - 0.03\ WANT \end{aligned}$$

Because the regression coefficient for each variable is influenced by the units in which that variable is measured, the beta coefficients are more useful for clues as to the relative importance of each variable in the regression equation. The association between each independent variable and the dependent variable (PREM) is positive unless a minus sign appears before the beta coefficient, in which case it is negative. The last column shows whether or not the direction of this association is consistent with the hypothesis concerning that variable.

Of the ten independent variables which entered at least one of the two regression equations, two show moderate association, two weak association, and six very weak association. The two variables showing moderate association are length of offer (LGTH) and price range (RANG). Length of offer shows a moderate negative association with price ratio, which is in the direction expected. One hypothesis is that the percentage premium is greater when the length of offer is relatively short (as measured by number of days from date of announcement of offer through original expiration date of offer).

Price range (RANG), the other variable showing a moderate association with the price ratio, has a positive direction of association which is consistent with one of the hypotheses: that the percentage premium for control stock is greater when the price of the stock varied widely in the prior year as measured by this ratio.

The two variables showing weak association are shares purchased (GOT) and market price (MKT). Shares purchased is negatively associated with price ratio, which is inconsistent with one of the hypotheses: that the percentage premium is greater for offers that are relatively successful (as measured by the ratio of shares purchased through the offer to shares offered to buy). Market price shows weak negative association with price ratio, which is consistent with the hypothesis that the percentage premium for control stock is greater when the market price is relatively low.

Of the six variables entering at least one of the two regression equations and showing only very weak association with the price ratio, three show association in the direction consistent with a hypothesis; these three are earnings direction (EDIR), exchange (EXCH), and management reaction (MGTR). The three independent variables showing very weak association in the direction inconsistent with a hypothesis are book value to market price (BVMK), high to market price (HIMK), and shares sought (WANT).

In summary, both of the variables showing moderate association do so in directions consistent with their hypotheses; one of the two variables showing weak association does; and three of the six variables showing very weak association are consistent with their hypotheses. Four variables do not show sufficient association with price ratio to enter either regression equation: rate of return, earnings trend, quick ratio, and debt ratio. (Quick ratio and debt ratio have an opportunity to enter only one of the two regression equations--that for group A.)

Analysis of Residuals.--The next step is analysis of the residuals, or unexplained variations. One method is analyzing the out-on-a-limb predictions made by the regression equation. The four predictions for Group A of less than 110% (observations 13, 29, 30, and 83) and the four predictions of 125% and higher (observations 15, 17, 23, and 24) are shown in Table 2.6. Of the four large predictions, two (23 and 24) do not go far enough, while the other two (15 and 17) go too far. Of the four small predictions, one (30) does not go far enough, while three (13, 29, and 83) go too far.

Another method of analyzing the residuals is to look at the observations with the largest residuals and try to see what may have been the cause. Table 2.7 shows the four observations for Group A with unexplained variations of 13.0% or more. None of these cases involves the

TABLE 2.6.--Unexplained Variations for Observations with Predicted Value of Price Ratio Under 110.0% or Over 124.9%, Group A.

Observation Number*	Actual Value %	Predicted Value %	Unexplained Variation %
13	114.8	109.1	5.7
15	121.7	125.5	-3.8
17	119.3	126.0	-6.7
23	140.4	131.8	8.6
24	139.1	135.3	3.8
29	116.7	109.7	7.0
30	106.7	107.9	-1.3
83	118.2	109.2	9.0

Median Unexplained Variation (disregarding sign) = 6.2%

Mean Unexplained Variation (disregarding sign) = 5.7%

*Companies are identified by observation number in Appendix table.

TABLE 2.7.--Observations with Unexplained Variations of 13.0% or More from Value of Price Ratio Predicted by Regression Equation for Group A.

Observation Number*	Actual Value %	Predicted Value %	Unexplained Variation %
1	101.9	117.7	-15.8
21	107.5	121.9	-14.4
80	146.7	119.2	27.5
82	144.4	121.9	22.5

*Companies are identified by observation number in Appendix table.

out-on-a-limb predictions shown in Table 2.6 and previously discussed. On the contrary, these four cases have predicted values grouped relatively closely around the mean actual value of PREM (118.2%)--with a range of 117.7% to 121.9%. Three of these four cases are due to extreme actual values of PREM: under 105% or 140% or over; only six observations from all of group A have such extreme values. In the other case, the direction of prediction from the mean is wrong; in observation number 21 the actual value of PREM is relatively low (107.5%) but a moderately high prediction is made (119.2%).

Simple Correlations.--Simple correlations between pairs of variables are of interest largely for purposes of considering why certain independent variables do not enter a regression equation. Table 2.8 shows such correlations of .40 or higher. Three of these variables do not enter the regression equation for the group for which they show simple correlation of .40 or higher with another independent variable which does enter that regression equation. Rate of return (ROR), which enters neither equation, shows high correlation (-.58 and -.80) with book value to market value (BVMK) which enters the equation for both groups. Quick ratio (QUIC) shows a .50 correlation with price range (RANG) for group B; quick ratio does not enter the equation for this group (the only group for which it is used) and price range does. Shares sought (WANT)

TABLE 2.8.--Pairs of Variables Having Simple Correlations of .40 or Higher with Each Other.

Variables	Correlation	
	Group A	Group B
ROR with BVMK	-.58	-.80
EXCH with MKT		-.45
QUIC with RANG	NA	.50
WANT with MGTR		-.42
WANT with LGTH		.43

shows a -.42 correlation with management reaction (MGTR) for group B; management reaction does not enter that equation, while shares sought does.

Price Action Prior to Announcement.--In the discussion of variables employed, one shortcoming mentioned of using market price two business days before announcement of the offer, is the risk that word of the offer may have gotten out prematurely, causing the market price to start to reflect the higher tender offer price. Table 2.9 shows that during the five day period between one week before announcement there were 38 instances of gains (percentages under 100) compared with 15 of decline or no change (percentages of 100 or over). For 12 offers the rise was 6.5% or more (100 ÷ 93.9 = 106.5%). In contrast only three offers show a price drop of 4% or more. However this greater frequency of gain seems to be largely attributable

TABLE 2.9.--Market Price One Week Before Announcement of Offer as Percentage of Market Price Two Days Before (Number of Offers).

	Market Direction During Five Day Period*			
Percentage	Total	Rally	Decline	Mixed
104.0 and over	3	3		
102.0 to 103.9	3	2	1	
100.0 to 101.9	9	6	3	
98.0 to 99.9	10	6	3	1
96.0 to 97.9	9	7	2	
94.0 to 95.9	7	4	2	1
92.0 to 93.9	5	5		
90.0 to 91.9	4	4		
Under 90.0	3	2	1	
Total	53	39	12	2

*"Trading Swings, Based on 425 Industrials," Standard & Poor's Stock Guide, Year End, 1968, and Year End, 1969, p. 7.

to the fact that 39 of these five day periods occurred during periods of general market advance, as compared with 12 occurring during periods of market decline (as measured by Standard & Poor's index of 425 industrials).[1]

The greater frequency of occurrence of offers during rallies during the period studied is due to two factors. First, there were 337 elapsed days of rallies and only 209 elapsed days of declines.[2] Second, the

[1]"Trading Swings, Based on 425 Industrials," Standard & Poor's Stock Guide, Year End, 1968, and Year End, 1969, p. 7.

[2]Ibid.

relative frequency of announcements of offers during rallies was 1.73 times that during declines. (There were 39 announcements during rallies, and 14 during declines).

In order for the predominance of price gains during the five day periods to be attributed to the preponderance of market rallies, there should be statistically significant association between the percentages and whether they occurred during rallies or during declines. Data abstracted from Table 2.9 shows that for periods during rallies there are 17 with percentages of 98 and over, and 22 under 98; for periods during declines there are 7 with percentages of 98 and over, and 5 under 98. The value of Chi square calculated for a 2 by 2 table (not shown) including this data is .801, indicating that the association is not significant at the .10 level. However, this lack of statistical significance may be due to the fact that the classification rallies versus declines reflects a stock market index, while the direction of movement of individual stocks (even those in the index) is much more diverse; during a rally many stocks reach their individual peaks and start declining before the index starts to decline.

Discussion of Findings

Both regression equations explain a substantial amount of the variation in the price ratios of the cash tender offers and do so with very satisfactory significance levels. The better of the two equations, that for Group B

(non-financial companies) has an R^2 of .43 and is significant at the 2.5% level.

Six hypotheses are supported in this part of the study by association in the expected direction between independent variables and the price ratio. Length of offer and price range hypotheses are supported with moderate association. Market price shows weak association; three variables show very weak association: earnings direction, exchange, and management reaction.

Length of Offer.--The moderate negative association between length of offer and price ratio means that a relatively long length of offer (number of days from date of announcement of the offer through the original expiration date) is associated with a relatively small premium. The rationale for this hypothesis is that a short offer length will require a relatively large premium to move stockholders to act rapidly. A related possibility is that a large premium and short offer length may sometimes be used together to achieve a blitz effect and give the opposition little time to act.[1]

Price Range.--Price range shows a moderate positive association with price ratio which means that when the prior year's high price was high in relation to the prior year's low price, the premium is relatively high. A

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[1]Whitman, op. cit., pp. 23-24.

relatively-wide prior year's price range could indicate a relatively-high degree of general investor uncertainty regarding the value of the shares. Also a wide price range may make an individual stockholder more uncertain as to what his stock is worth. Therefore, he will be more uncertain as to whether a given tender offer premium is attractive. A likely response to this uncertainty is to do nothing--which means not tendering his shares. A relatively-large premium is therefore required to overcome this uncertainty.

Market Price.--Market price shows a weak negative association with price ratio. The negative sign indicates that the higher the market price the lower is the premium (which is expressed as a percentage of market value). This finding is consistent with what Hayes and Taussig reported having been told by investment bankers, and their findings using a contingency table analysis.[1] The reasoning in support of a higher percentage premium when the market price is relatively low is that the stockholder trying to decide whether or not to tender his shares tends to think of number of dollars premium per share as well as the percentage premium. If so, a 10% premium for a stock with a market price of $8.00 would give a premium of $.80 and this might appear less adequate than a 10% premium for a stock with a market price of $100, which would be $10.00.

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[1]Hayes and Taussig, op. cit., p. 140.

Whitman also suggested this tendency in discussing strategy.[1]

If many investors do behave in this manner it would appear to be somewhat irrational. Indeed, a case can be made for being willing to accept a smaller percentage premium on stocks with a lower market price. This case is based on the fact that the tender price is all net to the stockholder, while if he sells his stock on the market he must pay a commission. Assuming that he sells one or more round lots, his commission will be higher as a percentage of the price when the price is low. For example, neglecting the surcharge, which was not in effect during the period under study, the commission on a 100 share round lot sale at $8.00 per share would be $15.00, which is 1.875%. The commission on a 100 share round lot sale at $100 per share would be $49.00, which is .49%. Thus one could argue that a rational investor would be willing to accept a premium 1.385 percentage points lower on an $8.00 stock than on a $100 stock.

McCarthy and Healy do not analyze the relationship between market price and price ratio. However their tabular presentation of data for the 75 offers they studied makes possible contingency table analysis similar to that used by Hayes and Taussig for these variables. A

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[1]Whitman, op. cit., p. 23.

contingency table (not shown) constructed from their data shows that of the 32 offers with premiums under 20%, 16 had market prices of $30 and over, and 16 under $30. Of the 43 offers with premiums of 20% and over, 19 had market prices of $30 and over, and 24 under $30.[1] The value of Chi square calculated from this table is .249, showing that association between the variables is not statistically significant, even at the .50 level.

Earnings Direction.--Earnings direction shows a very weak positive association with price ratio. This variable has three possible values: a value of 1 indicates an earnings per share increase from the previous year, a value of 2 no change, and a value of 3 a decrease from the previous year. Therefore the positive association means that a relatively large premium is associated with a decrease in earnings per share. This effect is consistent with the hypothesis that the percentage premium for control stock will be greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor. The rationale of this hypothesis is that the ability to change management (which voting control confers) is more sought after when performance has been relatively poor. The investor who can get control of the company is then impelled to do so in order to change management policies and try to

[1]McCarthy and Healy, op. cit., pp. 322-25.

improve performance, and thereby increase the value of his shares.

Exchange.--Exchange has a very weak positive association with price ratio. This variable has three possible values, with the lowest for stocks listed on the New York Stock Exchange, the intermediate value for those listed on other exchanges, and the highest value for unlisted stocks. The positive association of this variable with price ratio therefore means that tender offers for unlisted stocks tend to have higher premiums than offers for NYSE--listed stocks.

One possible reason is that exchanges other than NYSE are regarded as less-efficient markets than NYSE, and in turn the over-the-counter market for unlisted securities is regarded as less-efficient than any of the stock exchanges. The market price at any given moment may be regarded as a better measure of the actual value of the stock to the extent that the market price has been determined in a more-efficient market. NYSE market prices would be regarded as better indicators of value than market prices on other exchanges, and prices on these other exchanges would be regarded as better indicators of value than over-the-counter prices. Since the purpose of the premium is to convince stockholders that they are being offered more for their shares than they are worth on the market, a lower premium would be required above the more highly-regarded NYSE market prices.

An additional possible factor in the association is that for unlisted stocks the bid price was used, while for listed stocks the actual closing transaction price was used. To the extent that there is a spread between the bid and asked prices of unlisted stocks, the use of the bid price would tend to understate the market price and thereby overstate the premium.

Management Reaction.--Management reaction has a very weak positive association with price ratio. One hypothesis (with which the direction of association is consistent) is that the party making the tender offer will correctly forecast management endorsement of or opposition to the offer, and that the premium will be larger when opposition is forecast. A possible reason that the association is not stronger is that it is based on announced opposition by management. In many cases it may be known that management is opposed, and the premium increased accordingly, but opposition is not announced. McCarthy and Healy lend credence to this possibility by suggesting that a management which does not control a substantial amount of stock in its company, and whose performance has been poor, is necessarily restrained in any resistance, because the chances of success of the offer are high and "a belligerent attitude could lead to the speedy unemployment of incumbent management."[1]

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[1] Ibid., p. 311.

Out-on-a-Limb Predictions.--The regression equations make out-on-a limb predictions which fare quite well. Of eight predicted values of price ratio under 110.0 or over 124.9 for Group A, only one is in the wrong direction from the mean of actual values of price ratio. Further, the largest residual, or unexplained value, of any of these eight predictions is 9.0%.

Price Action Prior to Announcement.--The use of market price two business days before the date of announcement of offer appears to be satisfactory for calculating the price ratio. For 12 of the 53 offers the rise in price in the five day period, from one week before announcement of offer to two days before, was 6.5% or more. These price changes seem to be related to general market changes during the same period.

Only two of the nine residuals of ten or more for Group A (Table 2.7) seem likely to be attributable to word of the offer getting out before the close of trading on the second business day before the date of announcement. Observation number 4 rose 17.8% in price in the five day period despite the fact that it was a time of general market decline. It would appear that word of the offer may have gotten out in advance. Had it not been for this price rise, the price ratio would have been 125.8% instead of the 106.8% actually calculated. This would also explain observation 4 having a residual of -12.5% resulting from a

predicted value of 119.2% (Table 2.7). Observation number 72 is another offer on which advance word may have gotten out, although the rise was not nearly as large as for number 4. The rise during the five day period was 6.9%, and this occurred during a period of mild market rally. Had the price not risen the price ratio would have been 111.7%--much closer to the 115.2% predicted than the actually calculated 104.5% which resulted in a residual of -10.8% (Table 2.7).

Book Value to Market Price.--Four independent variables which entered one or both regression equations (for Groups A and B) show association with price ratio in the direction opposite to that expected--inconsistent with the hypothesis that each variable is intended to test. Shares purchased shows weak association with price ratio; very weak association is shown by book value to market price, high to market price, and shares sought.

Book value to market price shows a very weak negative association with price ratio which means that a high ratio of book value to market price is associated with a relatively low premium. This result is opposite to that expected. It has been said that a company interested in acquiring control of another company looks for a situation with a high ratio of book value to market price. McCarthy and Healy point out that 29 of 70 companies subjected to offers had a book value per share higher than market

price.[1] However, the rejection of this hypothesis is consistent with the findings of Hayes and Taussig that such companies seem no more subject to cash tender offers than companies with a low ratio.[2]

High to Market Price.--High to market price has a very weak association with price ratio, which means that when the market price is low in relation to the prior year's high price, the premium is relatively low. The opposite had been expected. The rationale of the hypothesis is that a given premium over the current market price will look less attractive to the stockholder if the market price is low in relation to the previous year's high. The stockholder may feel that "it will come back." On the other hand, there is a possible explanation for the opposite result obtained. If the market price is low in relation to the prior year's high, the stockholder may be discouraged with the stock and may welcome the opportunity to dispose of it at even a small premium above the current market price.

Shares Sought.--Shares sought has a very weak negative association with price ratio, which means that the higher the percentage of outstanding shares sought, the lower is the premium. At first this statement appears

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[1]McCarthy and Healy, op. cit., p. 315.

[2]Taussig and Hayes, op. cit., p. 140.

to be illogical--instead we might expect that the more shares we seek the higher the premium we would need to offer. However, there is not necessarily a positive association between the percentage of shares offered to buy and the percentage desired to buy. On the contrary, one source of strategy suggests that it can be a mistake to offer to buy as many shares as you want; instead it may be better to offer to buy a much smaller number and reserve the right to buy more shares if more are tendered.[1] Therefore, some offers for a low percentage of shares may actually indicate great desire to have shares tendered and may therefore involve a relatively high premium.

Shares Purchased.--Shares purchased shows a weak negative association with price ratio, which means that a relatively high premium is associated with a relatively low ratio of the number of shares purchased through the offer to the number of shares offered to buy. The opposite was expected: that a relatively high percentage premium will be associated with offers that are relatively successful. The explanation for the unexpected negative association may lie in the denominator of the fraction used to compute shares purchased: the number of shares offered to buy. Here is the same problem already discussed in connection with shares sought: there is not necessarily a positive association between the percentage of shares

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[1]Whitman, op. cit., p. 11.

offered to buy and the percentage desired to buy. There may actually be a negative association; some offers for a low percentage of shares may actually indicate great desire to have shares tendered.

Rate of Return.--Four independent variables do not contribute enough to explaining the price ratio to enter either regression equation. These four variables are rate of return, earnings trend, quick ratio, and debt ratio. (The last two are tested only with group B.)

Rate of return does not enter the regression equation for either group A or group B. One hypothesis is that rate of return on equity is one of the measures of management performance, and that a poor performance, as measured by a relatively low rate of return would be associated with a relatively high premium. As indicated in the discussion of earnings direction, the rationale of this hypothesis is that the ability to change management (which voting control confers) is more sought after when performance has been relatively poor. Earnings direction gives very weak support for this hypothesis. Why does rate of return fail to give any support? One possible explanation is the high intercorrelation of rate of return with another independent variable, book value to market price. By far the highest correlation between any two variables is between these two; the figure is -.58 for group A and -.80 for group B (Table 2.8). Intercorrelation between the variables may reduce the additional contribution

of one variable; the first of these two variables entered may provide a significant contribution; then, when the second variable is tried with the first already in the equation, the second does not provide a sufficient additional contribution to be entered.[1]

The question remains as to why rate of return and book value to market value are so highly negatively correlated with each other. Considerable negative correlation would be expected for the following reasons: (1) The denominator in the fraction used to calculate rate of return (net worth) is closely related to the numerator in the fraction used to calculate book value to market price (book value per share). Given the absence of preferred stock, these two items will vary directly. (2) The denominator of book value to market price (market price) would be expected to vary (in the same direction, but not necessarily the same degree) with the numerator of rate of return (net income). Market price would be low in relation to book value when the rate of return is relatively poor; if net assets are earning a relatively low rate of return, then a relatively low market evaluation should be placed on those net assets.

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[1]Draper and Smith, op. cit., pp. 169-72. Frederick C. Mills, Statistical Methods (3rd ed.; New York: Henry Holt & Co., 1955), pp. 648-52.

Earnings Trend.--Earnings trend enters neither the group A nor group B regression equations. The purpose of this variable is to measure earnings trend over a five year period. One hypothesis is that the percentage premium for control stock will be greater when management performance, as measured by a variable such as earnings trend, is relatively poor. As mentioned in the discussion of earnings direction, the rationale of this hypothesis is that the ability to change management (which voting control confers) is more sought after when performance has been relatively poor. Unlike earnings trend, earnings direction did show a very weak positive association with price ratio. Why did earnings direction enter in while earnings trend did not? It is possible that earnings direction is a more sensitive indicator of cause for stockholder disappointment. Year-to-year earnings comparisons receive great publicity and apparently considerable emphasis by many investors. Consequently a decrease of earnings per share from the previous year might be expected to have a more measurable impact than the longer-term comparison which is provided by earnings trend.

Quick Ratio.--Quick ratio is another variable which does not enter the regression equation for group B. (It is not used in analyzing group A for reasons explained under "Method of Analysis.") One hypothesis is that the premium for control stock will be relatively high when the

corporation is relatively liquid (as measured by the quick ratio). The quick ratio was selected as the one variable to measure liquidity because it seemed more satisfactory than other measures for which data would be available for all companies. Also, it is the measure used by Hayes and Taussig in finding that takeover-prone companies had "surplus liquid assets."[1] In addition to the shortcomings of the quick ratio as a measure of liquidity, another possible explanation for its lack of contribution is its intercorrelation with price range (Table 2.8). At .50 this intercorrelation is second in group B to the -.80 between rate of return and book value to market price, which has been discussed. Another reason is that there may be offsetting forces at work with regard to this variable's association with price ratio. In addition to the influence already discussed, it is possible that a low quick ratio, perhaps below some level popularly considered normal, may be regarded as a warning sign of possible failure, and that this warning sign will impel stockholders to try to get control of the company to try to save it and their investments; the result would be a tendency to pay a higher premium for those companies with a low quick ratio.

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[1]Hayes and Taussig, op. cit., p. 142.

Debt Ratio.--Debt ratio does not enter the regression equation for group B. (Like quick ratio it was not used for the analysis of group A.) One hypothesis is that the percentage premium for control stock will be greater when there is a relatively large unused debt capacity (as roughly measured by percent of capitalization comprised by long-term debt). Hayes and Taussig used a similar hypothesis with regard to vulnerability to takeover attempts, but they also found no statistical support for it.[1]

In addition to the limitations of this ratio as a measure of unused debt capacity, there is also the possible problem of offsetting forces, as in the case of the quick ratio. A debt ratio above some level may be considered a warning sign by investors who may thereby be impelled to get control of the company to protect their investments.

Another type of offsetting force with regard to debt ratio is the possibility that investors will not regard a high debt ratio company as unattractive for takeover because it lacks excess debt capacity which could be put to use to borrow money and attempt thereby to improve earnings per share through financial leverage; instead they will regard the company as attractive for takeover because of the financial leverage which already exists;

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[1] Ibid.

this possibility is greatest when unfavorable financial leverage exists, because the incentive for turning the company around and changing the unfavorable leverage to favorable leverage is greater than if no financial leverage exists. The result of this offsetting force would be a tendency for positive association between debt ratio and price ratio, that is a higher premium paid for companies with a relatively high debt ratio.

Extreme Values.--Extreme values of the price ratio pose problems for the predictions of the regression equation. Group A has six observations with price ratios under 105% or 140% or over (Table 2.2). Three of these six have residuals (unexplained variations) of 13% or more (Table 2.7). This phenomenon would be expected in using regression equations with a relatively low R^2 (group A is .32, group B .43). Since the equations can explain only part of the variation in price ratios, they do poorest at identifying the relatively few extreme values of this variable.

CHAPTER III

PRIVATE PURCHASES OF LARGE BLOCKS OF STOCK

The private purchase of a large block of stock from an individual stockholder appears on the surface to be an ideal way to obtain voting control of a corporation, particularly under certain circumstances.

One advantage is that it can usually be done with much less publicity than the cash tender offer or proxy contest, which require wide publicity. Negotiations for a large block can be carried on privately, and if the negotiations fail, may never be disclosed. If the sale is completed, the transaction is likely to be required to be reported to the Securities and Exchange commission for publication in its monthly Official Summary of Security Transactions and Holdings. Such a report is required if either the buyer or the seller of the block has been or becomes (through purchase of the block) an insider, defined as an officer or director or holder of 10% or more of any class of the corporation's equity securities.

If such disclosure is required, the report must include the number of shares bought and/or sold, whether

the sale (or purchase) was a private transaction, and the number of shares owned after the sale (or purchase). The price at which the transaction took place is not reported. Unless one of the parties to the transaction chooses to announce it, or unless the financial press publicizes the transaction after seeing it in the Official Summary, it is likely to largely escape notice.

Review of Literature

Possible legal and ethical problems involved in this type of transaction have received considerable attention in legal periodicals. The question raised in these articles is if, and if so under what circumstances, a controlling stockholder should be permitted to accept a price for his shares which is not made generally available to other shareholders.

Perlman v. Feldman.--Considerable attention is given to the case of Perlman v. Feldman, decided on appeal by the United States Court of Appeals, Second Circuit, in 1955. Henry G. Manne suggests that "there are few serious legal problems with any of the direct purchase techniques" (for obtaining control). However, he notes the influence of Adolf A. Berle's contentions (in 1933 and 1958 writings) that control is a corporate asset and any premium received by an individual for the sale of control belongs in equity to all shareholders. A number of legal writers have continued to press for such a rule. He says, however,

that "the courts have refused to follow this thesis, and there are numerous judicial statements to the effect that one may claim a premium for control." Even in what he regards as the difficult Perlman v. Feldmann case, he maintains that "The court was explicit, however, that the seller could retain that part of the premium received for control not covering the power to allocate steel."[1]

In a 1971 article reconsidering the case of Perlman v. Feldmann and its implications for the sale of control bocks, Leonard J. Conolly notes that neither this case nor any other has upheld the corporate asset theory of control, which suggests that control is an asset belonging to the corporation--not to selling stockholders. He says that there are two types of situations that can make sale of control illegal: (1) where the circumstances suggest trouble for the corporation or (2) where a sale of directorships is implied. Discussing this second type of situation, he says, "Many agreements for the sale of a controlling block of shares include provisions for the immediate transfer of board control, usually by means of seriatim resignations and appointments of nominees of the buyer." In such a situation the key factor determining whether or not such a transaction is legal is the proportion of shares acquired:

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[1]Henry G. Manne, "Mergers and the Market," Journal of Political Economy, LXXIII (April, 1965), p. 116.

> If a premium is paid for an absolute majority of the outstanding shares under an agreement with a typical seriatim-resignation clause, the courts seem inclined to attribute the premium to the voting control incident to the majority block. Other factors remaining equal, this appears to be lawful. But if a premium is paid for an insignificant fraction of the outstanding shares under a contract containing a similar provision, the premium cannot be attributable to control since a small number of shares do not ordinarily represent voting control. The courts will then attribute the premium to the resignations of the directors. This is an unlawful sale of directorships.[1]

Other Cases.--The greatest uncertainty as to legality or illegality occurs when the proportion of outstanding shares purchased is significant, but less than a majority. In the case of Essex Universal Corporation v. Yates, the proportion of outstanding shares sold was 28.3%, and the three concurring opinions left doubt as to whether a sale of this magnitude could be held to constitute working control. Conolly suggests that the block must be large enough to carry control with it "as a practical certainty." Even under these circumstances there remains some uncertainty. The decision on Ferraioli v. Cantor held that if a seller of a controlling block at a premium invites any minority stockholder to participate, he must invite all. Moreover, "certain judges have shown varying degrees of sympathy" for the notion that a "buyer of controlling shares should be required to make an offer to

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[1]Leonard J. Conolly, "Perlman v. Feldmann and the Sale of Control--A Brief Reconsideration," Business Lawyer, XXVI (April, 1971), pp. 1261-63.

purchase the minority shares . . . at the same price . . ." Conolly says that whether this approach will gain wide acceptance remains to be seen.[1]

A 1968 case not cited by Conolly also pertains to the sale of control. Christophides v. Porco was brought under section 10(b) of the Securities Exchange Act of 1934 and SEC Rule 10-b. (The case of Ferraioli v. Cantor cited by Conolly was also brought under these sections.) In his opinion dismissing the suit, the judge held that:

> Similarly, a purchaser is free to offer a premium for a block of control stock. This is so, even though control stock is purchased pursuant to a plan to acquire the remainder of the shares at a lower price, if, by private purchase or the normal economics of the marketplace, this can be achieved. It is only where faud, deceit or manipulation enter that a violation of state law or of Rule 10b-5 occurs.[2]

Brown v. Halbert.--The largest premium paid for control which was uncovered in this part of the study is 138%, reported in the 1969 court case of Brown v. Halbert. Halbert and his wife owned 53% of the outstanding common stock of a savings and loan association; he was also president, chairman of the board of directors, and manager. Halbert was approached by the president of another savings and loan association and was asked whether his association was for sale. Halbert replied, "No, the Association is

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[1] Ibid., pp. 1263-70.

[2] Christophides v. Porco, 289 F. Supp. 405 (D. C. N. Y. 1968).

not for sale. However, my wife and I would entertain selling our stock." Halbert stated a price of two and one-half times book value, which was eventually accepted, producing a price of $1548.05 per share. Halbert agreed to permit the purchasers to inspect the books, and to refrain from paying dividends.[1]

Only after the sale had been negotiated were minority stockholders informed. Halbert then assisted the purchasers in buying the minority stock. (The court held that at all times the purchasers had intended to acquire the minority stock.) However, the offer to minority stockholders was $300 per share--19% of the amount paid Halbert for his control block. Apparently few if any minority stockholders accepted this offer. The purchasers subsequently took control of the association and acquired all but a few of the minority shares at prices ranging from $611 to $650 per share. These prices were 40% to 42% of the price paid Halbert, and were close to the book value per share.[2] The implied premium above the highest price paid to minority stockholders ($650) is 138%. (The $1548 paid is 238% of $650.)

Testimony by the expert valuation witnesses for Brown established fair market values of the majority stock at $1154 per share and the minority at $944 per share.

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[1]Brown v. Halbert, 76 Cal. Rptr. 781 (Cal. App. 1969).

[2]Ibid.

This differential implies a fair premium of 22% for the control stock. It is notable that not even the witness for Brown contended that no premium should exist for the control block. The court held that Halbert violated his triple fiduciary duty by selling his stock at a price so disproportionate to that available to minority stockholders and by selling to purchasers who radically changed the policy of the association (by announcing that there would be no dividends for ten to twenty years) in a way that tended to depress the price of the stock. The court held that Halbert could not retain the advantage he derived and ordered that the difference be computed between the amount received by Halbert and that received by the minority holders, and that this difference (plus interest) be paid to minority stockholders in proportion to their holdings.[1]

Conclusions from Literature.--It would appear from this literature that, due to the uncertainty involved, prospective buyers of large blocks of stock might be reluctant to make such purchases at a premium unless they wish to extend similar offers to all stockholders. It is even more likely that prospective sellers of large blocks would be reluctant to sell at a premium unless they can convince the purchaser to extend the same offer to other stockholders. Further, when purchases of large blocks are

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[1] Ibid.

made at a premium without a similar offer to other stockholders, it is very likely that both the purchaser and seller will attempt to conceal the terms of the transaction. Aside from the legal questions involved, it appears that the ethics of such transactions are doubted by some judges and other scholars. Therefore it is not surprising that data on price is available for only a minority of those stock transactions.

Transactions Studied

All transactions are studied which are listed in 1966, 1967 and 1971 issues of Official Summary of Security Transactions and which meet the following additional criteria:

1. transaction designated as private sale
2. transaction at least 10,000 shares of common stock
3. transaction at least 5% of the common shares outstanding
4. number of shares sold by seller greater than his holdings after sale
5. no offsetting purchases during month of sale
6. sale price available

The Official Summary is published monthly by the United States Securities and Exchange Commission and is based on reports required to be filed with the SEC by a purchaser or seller of equity securities who falls into one or more of the following categories:

1. officer
2. director
3. beneficial holder of 10% or more of any registered equity security

Lack of information as to price at which the sale took place requires elimination of two-thirds of the transactions which meet the other criteria. Thirty-three companies remain. One of these is eliminated because it is the only financial company and would require that two of the independent variables not be used. The result is thirty-two companies studied.

Variables Employed

Table 3.1 lists names of the variables with their definitions. Variables 1 and 2, and 7 through 12 are similar in nature and purpose to variables used in the study of cash tender offers. Variable 1, the price ratio, is the dependent variable whose variation in value is to be explained. Variable 6, the current ratio, is used for the same purpose as the quick ratio in the cash tender offer study. Variable 5, block size, is used for a purpose similar to that of shares sought in the cash tender offer study. Variables 3, 4, and 13 are new (different from any used in the cash tender offer study) and the hypotheses in the introductory chapter which they are designed to test deserve explanation at this point.

Purchaser.--The hypothesis that a corporate purchaser will tend to pay a higher premium than an individual purchaser is based on the expectation that a corporate purchaser will be more likely to have merger in mind than an individual purchaser, and will be in a better position to

TABLE 3.1.--Private Purchases: Variables Employed.

No.	Code	Name	Definition
1	PREM	Price ratio	Ratio of block sale price to market price
2	EXCH	Exchange	Listing status: (1) NYSE, (2) ASE, (3) Midwest SE, (4) unlisted
3	SELL	Seller	Seller: (1) corporation, (2) individual(s)
4	PURC	Purchaser	Purchaser: (1) corporation, (2) individual(s), (3) issuer
5	SIZE	Block size	Number of shares sold as percentage of shares outstanding
6	CURR	Current ratio	Ratio of current assets to current liabilities
7	DEBT	Debt ratio	Ratio of long-term debt to total of long-term debt, preferred stock, and common stock equity
8	ROR	Rate of return	Net income as percentage of net worth
9	EDIR	Earnings direction	Direction of prior year's earnings per share: (1) increase, (2) no change, or (3) decrease from year before that
10	BVMK	Book value to market price	Ratio of book value per share to market price.
11	MKT	Market price	Market price (close or bid) two business days before date of agreement
12	HILO	Price range	Ratio of prior year's high price to prior year's low price
13	SUBS	Subsequent status	Subsequent status of minority stockholders: (1) no change, (2) cash tender offer, (3) merger with purchaser, (4) merger with corporation other than purchaser

profit from merger. An issuer repurchasing a block of stock is likely to pay even less, due to the possibility that factors other than control are involved in the purchase.

Seller.--The hypothesis that a corporate seller will tend to get a higher premium than an individual seller is based on analysis similar to that in the preceeding paragraph concerning the purchaser. A corporate holder may have more attractive alternatives to selling the stock than an individual holder; also the individual holder may be more likely to have other motives for selling than a premium, such as need to diversify an investment portfolio.

Subsequent Status.--The hypothesis that transactions followed by merger or cash tender offer are more likely to involve high premiums than those followed by no change in the status of minority shareholders, is based on the belief that the subsequent occurrence of these events will help identify transactions where they were most envisioned by the purchaser in negotiations, and where they therefore caused the purchaser to be willing to pay a relatively high premium.

Method of Analysis

Price ratio, the ratio of block sale price to market price, is the dependent variable. Stepwise deletion of variables is used to determine the extent to which each

independent variable explains the variation in price ratio. Under this method of regression analysis, all of the independent variables are entered in the initial step, and a regression equation obtained. For each subsequent step, one independent variable is deleted and a new regression equation calculated based only upon the remaining variables. The order of deletion of variables is determined by the relative contribution which each variable is able to make; the variable deleted is the one whose deletion will reduce R^2 least, as determined by trying all possibilities. At each step, the coefficient of determination (R^2) and the F-test for significance are calculated for the regression equation. The procedure continues until all independent variables have been deleted.

From the several resulting regression equations, one is selected as being best, based on the values of R^2 and the F-test for significance. That equation is examined to see which of the independent variables are included, and to determine the relative contribution of each. The residuals (unexplained variation between observed value of each of the observations and the value predicted by the regression equation) are examined for this regression equation, not only to get a better feel for the fit of the equation, but also to detect patterns in the observations which may be responsible for the fit not being better than it is. The raw data are also examined for possible clues

to factors interfering with fit, and for other information relevant to the study.

Findings

Price Ratios and Date of Transaction.--Table 3.2 shows the wide range of price ratios found for the private purchases of large blocks of stock (31.4% to 137.5%). Twelve of the transactions were at premiums of 10% or more above market price. But five were more than 10% below market price. Almost half were within 10% of the market price (15 of the 32 transactions).

The differing distributions of the first two columns of Table 3.2 show that the price ratios for transactions selected from the 1971 issues of Official Summary (second column) tend to be significantly lower than those selected from the 1966 and 1967 issues (first column). The median for the earlier group is 107.3%, compared with 100.0% for the later group. Table 3.3 summarizes this same data in a 2 by 2 table. Taking a premium of .1% as insignificant, 17 of 21 transactions in the earlier group occurred at a premium, compared with only 3 of 11 companies in the later group. Stated another way the observed frequency in the upper left cell is 17, compared with an expected frequency of 13.13. The Chi square test, after application of Yates' correction for continuity, shows that the relationship between price ratios and time period of transaction is statistically significant at the .01 level.

TABLE 3.2.--Actual Values of Price Ratio, Transactions before November 3, 1967 and after March 16, 1969 (Number of Transactions).

Price Ratio %	November 22, 1965 to November 2, 1967	March 17, 1969 to June 25, 1971	Total
Under 70.0%	1	1	2
70.0 - 79.9	0	2	2
80.0 - 89.9	1	0	1
90.0 - 99.9	2	2	4
100.0 - 109.9	8[a]	3[b]	11
110.0 - 119.9	6	2	8
120.0 - 129.9	2	0	2
130.0 - 139.9	1	1	2
Total	21	11	32
Mean	106.3	96.0	102.7
Median	107.3	100.0	106.6
Range	31.4 - 137.5	62.0 - 133.3	31.4 - 137.5

[a]Range this cell is 101.9 to 107.4

[b]Range this cell is 100.0 to 100.1

TABLE 3.3.--Comparison of Price Ratio with Date of Transaction (Number of Transactions).

Price Ratio %	November 22, 1965 to November 2, 1967	March 17, 1969 to June 25, 1971	Total
101.9 and over	17	3	20
100.1 and under	4	8	12
Total	21	11	32

Chi square (with Yates' correction for continuity) = 6.73

df = 1; significant at .01 level.

Regression Results.--Table 3.4 shows the regression steps described in the discussion of method of analysis. The first row shows that with all 12 independent variables in the regression equation the R^2 is .39, but the significance level is an unsatisfactory 46.4%. In steps 2 through 6, as variables EDIR, EXCH, DEBT, SIZE, and SUBS are deleted, R^2 remains at .39 and the significance level improves to 7.3%. Deleting these variables increases the statistical significance without reducing the explanatory power of the regression equation. This regression equation in step number 6 appears to be the best equation for the purposes of this study. Each of the next three deletion steps causes the significance level to improve slightly more, but at the cost of a decline in R^2. Beyond step number 9 the deletion of additional variables is clearly disadvantageous, because not only does R^2 continue to drop (and even more rapidly) but also the significance level starts to deteriorate.

Table 3.5 shows the coefficients for the independent variables which are in this regression equation for step number 6. This best regression equation consists of the step 6 constant (141.9) plus the regression coefficients, and takes the following form:

$$\begin{aligned} PREM = {} & 141.9 - 10.31\ SELL - 7.73\ PURC - 9.53 \\ & CURR - 0.16\ ROR + 27.81\ BVMK + 0.21\ MKT \\ & - 5.84\ HILO \end{aligned}$$

TABLE 3.4.--Regression Steps, Stepwise Deletion of Variables.

Step No.	Variable Deleted	R^2	Constant	Significance Level
1		.39	148.6	46.4%
2	EDIR	.39	148.8	36.0%
3	EXCH	.39	149.7	26.4%
4	DEBT	.39	149.9	18.2%
5	SIZE	.39	148.3	11.8%
6	SUBS	.39	141.9	7.3%
7	MKT	.36	147.2	6.3%
8	SELL	.32	128.6	6.1%
9	CURR	.29	117.5	5.1%
10	PURC	.23	110.2	6.4%
11	BVMK	.14	121.1	11.5%
12	ROR	.05	109.8	21.7%
13	HILO	.00	102.7	100.0%

For comparing the relative contribution of each of these variables, the Beta coefficients are useful. The two most important variables, both showing strong association with the price ratio, are the ratio of book value per share to market price (BVMK) and the price range (HILO).

Book Value to Market Price.--The ratio of book value to market price shows a strong positive association with the price ratio, which is in the direction expected. One hypothesis is that the greater the possibility of profitable liquidation, as roughly measured by this ratio, the greater will be the percentage premium for control stock.

TABLE 3.5.--Coefficients for Step No. 6, Stepwise Deletion of Variables.

Independent Variable	Regression Coefficient	Beta Coefficient	Consistent with Hypothesis?
SELL	-10.31	-.23	yes
PURC	- 7.73	-.31	yes
CURR	- 9.53	-.37	no
ROR	- 0.16	-.30	yes
BVMK	27.81	.53	yes
MKT	0.21	.21	no
HILO	- 5.84	-.42	no

Table 3.6 shows some further analysis of the variable book value to market price (which shows the strongest association with price ratio in the best regression equation). All observations with a ratio of book value to market price greater than one are listed, grouped by listing status. It appears from this table that the variables exchange and book value to market price have a synergistic effect upon price ratio. Although the mean book value to market price for unlisted observations (1.45) is higher than for New York Stock Exchange listed observations (1.32), the price ratio for the unlisted group (95.6%) is lower than for the NYSE group (122.8%). Further, the lowest price ratio in the NYSE group (114.3%) is higher than the highest (111.7%) in the unlisted group. It is possible that the types of investors who purchase large

TABLE 3.6.--Observations with Ratio of Book Value to Market Price Greater than 1.00. Grouped by Listing Status.

Observation Number*	Book Value to Market Price	Price Ratio
New York Stock Exchange		
29	1.38	133.3%
6	1.31	120.7
11	1.26	114.3
Group mean	1.32	122.8
Midwest Stock Exchange		
31	1.17	117.7
Unlisted		
30	1.61	100.1
24	1.54	111.7
27	1.21	75.1
Group mean	1.45	95.6

*Companies are identified by observation number in Appendix table.

blocks of stock privately can more readily detect a value criterion such as the ratio of book value to market value when the company is listed; one factor in such a situation could be the use of computerized data banks for screening purposes; data banks are more likely to include listed than unlisted securities.

Price Range.--The price range shows a strong negative association with the price ratio. This finding is inconsistent with one of the hypotheses, which is that the percentage premium for control stock will be greater

when the price of the stock varied widely in the prior year as measured by this ratio.

Other Variables Showing Association with Price Ratio.--Three other independent variables show moderate association with the price ratio: current ratio, purchaser, and rate of return. Current ratio shows negative association with the price ratio--a direction opposite to that expected; a hypothesis is that the percentage premium will be greater when the corporation is relatively liquid. Purchaser shows a moderate negative association. This direction is consistent with one of the hypotheses: that in a private purchase of a large block of stock, the percentage premium is greatest when the purchaser is a corporation other than the issuer, less when the purchaser is an individual (or individuals), and least when the purchaser is the issuer. The third variable showing a moderate association is rate of return--showing a negative association which is also consistent with a hypothesis: that the percentage premium for control stock will be greater when management performance (as measured by criteria such as this) has been relatively poor.

The other two variables which are in the regression equation at step number 6 show weak association; they are seller and market price. Seller shows a weak negative association, consistent in direction with a hypothesis: that the percentage premium for control will be greater

when the seller is a corporation than when the seller is an individual (or individuals). Market price shows a weak positive association; the direction of association of this variable is opposite to that expected, as one of the hypotheses is that the percentage premium for control stock will be greater when the market price is relatively low.

In summary, three of the five independent variables in this best regression equation showing either strong or moderate association are consistent in direction with hypotheses. One of the two independent variables showing weak association does so in a direction inconsistent with a hypothesis. In addition, five other independent variables did not show sufficient association with price ratio to be included in the best regression equation; these five, appearing in the variable deleted column for steps 2 through 6 in Table 3.4 are the following:

Earnings direction
Exchange
Debt ratio
Block size
Subsequent status

Analysis of Residuals.--The next step is analysis of the residuals, or unexplained variations. When the residuals are totaled for observations 22 through 32, which represent the later group of transactions, the sum is -41.0 for the 11 observations or a mean residual for these 11 of -3.73. Since the sum of residuals for the entire group of 32 observations must be zero, the regression

equation is predicting a value which is, on the average, 3.73 percentage points too high for this later group of transactions.

Another way of examining the residuals is to see what happened to the out-on-a limb predictions made by the regression equation. Table 3.7 shows the eight observations for which a value of price ratio was predicted of either under 90.0 or over 119.9. All but two had a residual of at least 10.0%, and one of 58.0%. However all eight of the predictions were in the correct direction from the sample mean of 102.7; that is for every one of these observations both the actual value and predicted value lie on the same side of the mean.

Table 3.8 shows the six observations with the largest residuals--those of 13.0% or more. For three of these observations the prediction was in the wrong direction; that is the actual value and predicted values lie on opposite sides of the mean; the three observations are numbers 8, 20, and 30. The other three predictions were in the right direction but did not go far enough away from the mean. Three observations (numbers 5, 8, and 20 had residuals greater than 17.6%. Only two (numbers 5 and 22) of the six observations with the largest residuals resulted from the out-on-a limb predictions listed in Table 3.6.

TABLE 3.7.--Unexplained Variations for Observations with Predicted Value of Price Ratio under 90.0% or over 119.9%.

Observation Number*	Actual Value (%)	Predicted Value (%)	Unexplained Variation (%)
5	31.4	89.4	-58.0
11	114.3	126.1	-11.8
15	84.2	76.6	7.6
22	74.6	88.5	-13.9
25	90.4	84.6	5.8
27	75.1	87.8	-12.7
29	133.3	120.5	12.8
32	62.0	72.0	-10.0

Median unexplained variation (disregarding sign) = 12.3%

Mean unexplained variation (disregarding sign) = 16.6%

*Companies are identified by observation number in Appendix table.

TABLE 3.8.--Observations with Unexplained Variations of 13.0% or more from Predicted Value of Price Ratio.

Observation Number	Actual Value (%)	Predicted Value (%)	Unexplained Variation (%)
5	31.4	89.4	-58.0
6	120.7	107.5	13.2
8	137.5	97.3	40.2
20	127.9	100.8	27.1
22	74.6	88.5	-13.9
30	100.1	117.7	-17.6

*Companies are identified by observation number in Appendix table.

Simple Correlations.--Simple correlations between pairs of variables are of interest largely for purposes of considering why certain independent variables may not have entered the best regression equation. Table 3.9 shows such correlations of .40 or higher.

TABLE 3.9.--Pairs of Variables Having Simple Correlations of .40 or Higher with Each Other.

Variables	Correlation
EXCH with MKT	-.46
EXCH with HILO	.56
PURC with SUBS	-.50
DEBT with ROR	-.44
DEBT with HILO	.50
ROR with HILO	-.77

Discussion of Findings

The best regression equation explains a substantial amount of the variation in the price ratios of private purchases of large blocks of stock and does so at a satisfactory level of significance. The value of R^2 for the equation is .39 and the significance level is 7.3%.

Four hypotheses are supported in this part of the study by association in the expected direction between independent variables and the price ratio. Book value to market price is supported with strong association. Rate

of return and purchaser are supported with moderate association. Seller is supported with weak association.

Book Value to Market Price.--The ratio of book value to market price shows strong positive association with the price ratio, which is in the direction consistent with the hypothesis that the greater the possibility of profitable liquidation (as roughly indicated by a relatively high ratio of book value per share to market price), the greater is the price ratio. Further, there seems to be a synergistic effect between book value to market price and exchange with regard to the effect on price ratio.

It appears from these findings that those who make private purchases of large blocks of stock may tend to be considering liquidation as an alternative to continuing to operate the company after control is obtained. The synergistic effect of exchange may indicate that such prospective purchasers can more readily detect a value criterion such as the ratio of book value to market value when the company is listed on the New York Stock Exchange; one factor may be the use of computers and computerized data banks for screening purposes, since data banks are more likely to include listed than unlisted companies.

Since it is bargaining between holder of a large block of stock and the prospective purchaser which determines the price ratio, it is possible that sellers of large blocks are quite book value conscious and therefore

tend to demand a higher premium when the book value per share is high in relation to the market price. Like prospective purchasers, prospective sellers would tend to view liquidation of the company as an alternative to sale of their shares.

Rate of Return.--Rate of return (net income divided by net worth) shows a moderate negative association with the price ratio, which is in a direction consistent with the hypothesis that the percentage premium for control is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor. Often a holder of a control block would be in a position to bring about a change in management. However, it is understandable that a long-term major stockholder seeing the company deteriorate, might prefer to sell control and let someone else make management changes than to get involved in a probably unpleasant task involving long-time acquaintances.

Purchaser.--Purchaser has a moderate negative association with price ratio, which is consistent in direction with one of the hypotheses: that in a private purchase of a large block of stock, the percentage premium is greatest when the purchaser is a corporation other than the issuer, less when the purchaser is an individual (or individuals), and least when the purchaser is the issuer. A corporation other than the issuer has at least

one more alternative than other purchasers: it can merge the company it controls with itself; this additional alternative is probably worth paying more of a premium than other purchasers would be willing to pay. Another possibility is that a corporation will find it easier to finance the purchase of a large block of stock than will individuals or the issuing corporation.

Seller.--Seller is weakly correlated in a negative direction with price ratio, which is consistent with the hypothesis that the percentage premium in private purchase of a large block of stock is greater when seller is a corporation than when the seller is an individual (or individuals). The rationale is similar in one respect to the foregoing discussion of purchaser; just as a corporation acquiring control has the option of merging, a corporation considering sale of a large block of stock in another corporation has an alternative--merging with the controlled corporation; this option is not available to an individual seller.

Another reason for smaller premiums in the case of sales by individuals is that the individuals may have reasons for being willing to part with control that would be less applicable to a corporate seller; one example is a desire to retire; another is a need for diversification of investment portfolio.

Variables Not in Regression Equation.--Why did the following five independent variables fail to show sufficient association with the price ratio to be included in the best regression equation?

Earnings direction
Exchange
Debt ratio
Block size
Subsequent status

One possibility is that some of these variables have a relatively high simple correlation with one or more variables which are in the best regression equation. Table 3.9 shows that three deleted variables show such correlation. Exchange is moderately correlated with two variables in the best regression equation: -.46 with market price, and .56 with price range. The second deleted variable, debt ratio, is moderately correlated with rate of return (-.44) and price range (.50), both of which are in the best regression equation. The third deleted variable is subsequent status, which has a -.50 correlation with purchaser, which is in the best regression equation.

In addition to their possible influence on which variables enter the best regression equation, the simple correlations between pairs of variables are of interest in themselves. The negative correlation between exchange and market price is not surprising--issues listed on the New York Stock Exchange are expected to tend to have higher market prices than those listed on the American Stock Exchange, or unlisted. Similarly, the positive association

between exchange and price range indicates that issues listed on the New York Stock Exchange tend to have a narrower price range than other issues.

The negative association between purchaser and subsequent status indicates that when the purchaser is the issuer or an individual, there is less likelihood of an event such as tender offer or merger, than when the purchaser is a corporation. This relationship seems logical.

The negative association of debt ratio with rate of return suggests unfavorable financial leverage, with those firms having a high debt ratio showing a lower rate of return on net worth. Perhaps unfavorable financial leverage tends to be characteristic of companies in which private purchases of large blocks occur. The next (and last) two relationships shown in Table 3.9 seem consistent with this implication of unfavorable financial leverage in the companies studied. The positive association of debt ratio with price range seems logical because if a high debt ratio increases risk, one would expect the extent of stock price reaction to a given event to be magnified. The negative relationship between rate of return and price range follows logically from the previous two relationships; since debt is negatively associated with rate of return, and debt is also positively associated with price range, rate of return is negatively associated with price range. This last correlation is surprisingly strong (-.77);

however it seems to possess additional logic of its own. A company with a low rate of return may have greater variation in the price of its stock because of uncertainty and speculation as to the prospects for improvement; investors might regard a low rate of return as a temporary situation, while considering an average level of rate of return to be a stable situation more likely to continue in the future.

Another reason that certain variables are not in the best regression equation may be offsetting forces at work with regard to a given variable. For example, one hypothesis is that the premium for control will be higher when there is a relatively large unused debt capacity--as measured by a low debt ratio. If investors feel that opportunities for favorable financial leverage have been neglected, they might be willing to pay a larger premium to get control so they can have the corporation borrow money and attempt to thereby improve reported earnings per share. On the other hand, debt ratio could have the opposite effect on price ratio: a high debt ratio (perhaps only above some level considered normal) might be regarded as a danger sign which would impel investors to get control of the company in an effort to protect their investments. These offsetting effects could prevent the debt ratio from showing sufficient association with the price ratio to be included in the best regression equation.

Current Ratio.--A second aspect of the findings to be examined is the fact that in the best regression equation, three of the seven independent variables have association with the price ratio in a direction that is inconsistent with a hypothesis. One of these variables is the current ratio, showing negative association while positive association is expected. The reason for this situation may be similar to a possible reason that debt ratio did not remain in the regression equation--there may be offsetting forces at work. The hypothesis that a high current ratio would be associated with a high price ratio is based on the expectation that relatively high liquidity would make takeover of control more attractive. However, there is another possibility--that a low current ratio, at least below some level considered normal, may be regarded as a danger sign which will cause stockholders to want to get control to try to protect their investments. If such motivation exists, and is stronger than the motivation to take over a liquid company, then the negative association found between current ratio and price ratio is logical.

Market Price.--Another variable associated in a direction inconsistent with a hypothesis is market price, showing weak positive association while negative association is expected. One possible reason for lack of a negative association is that with private purchases of large blocks, both buyer and seller are likely to be

relatively sophisticated and therefore more likely to consider percentage premiums above market price than dollar premiums. It is also possible that an irrational market overvalues lower-priced stocks relative to higher-priced stocks, and that sophisticated block purchasers therefore will pay higher premiums for higher-priced stocks.

Price Range.--The third variable in this category is price range, which shows strong negative association with price ratio instead of the positive association expected. The strength and direction of association of the price range is surprising, especially in view of the findings in the study of cash tender offers; in that study price range is one of two variables showing strongest association with price ratio, and the association is positive, as hypothesized. The reasoning behind the hypothesis in both studies is that if the price of the stock varied over a wide range in the previous year, investors will be more uncertain as to the value of the stock than if the stock price stayed within a relatively narrow range; therefore a larger premium above the present market price will be required to overcome this uncertainty and induce the holders to sell.

Perhaps uncertainty of this type characterizes the typical investor at whom a cash tender offer is aimed, but not the large block holder who is the potential seller in a private purchase of a large block of stock; perhaps

these large block holders are more sophisticated than the typical investor, and less uncertain as to the value of their holdings. Also, there is the possibility that the large block holder may possess inside information which reduces his uncertainty as to the value of the stock.

Fit of Regression Equation.--Another aspect of the findings needing consideration is why the fit of the best regression is not better: why the value of R^2 is not higher than .39, and why there is so much unexplained variation of observed values from predicted values. (One factor is probably the existence of a few extreme values of price ratio, particularly those less than 100%.) As noted in Table 3.2, 9 of the 32 observations have price ratios under 100%, 5 of which are under 90%. Further, while there are only two observations under 70%, one of these is 31.4%--and this is the only observation under 80% for the 21 transactions in the earlier time period.

The statistically significant difference between price ratios in the earlier transactions and the later transactions is probably an important factor preventing better fit of the best regression equation. These differences are shown in Tables 3.2 and 3.3. One possible reason for these differences between the two periods is increasing concern with possible legal and ethical objections to accepting a premium for a large block without making that premium also available to minority shareholders. Two of the court cases cited earlier in this chapter occurred

after the earlier group of transactions, but before most of the later group. Another possible reason for the higher premiums in the earlier period is that the conglomerate phenomenon which was flourishing during the earlier period had diminished considerably by the later period. The higher level of conglomerate activity in the earlier period may have increased the competition for control of companies through large block transactions, heightened the sellers' expectations as to premium for control blocks, and increased purchasers' willingness to pay high premiums.

The individual nature of these transactions is another likely hurdle to a better fit. Several independent variables are used in an effort to explain as much of the change in the value of price ratio as possible; however, there are limitations on the number of variables which can be used; some relevant considerations would be difficult to obtain information about, and some information which is available is difficult to quantify sufficiently to be useful in this type of analysis. Sellers may have individual needs and desires, such as varying tax and liquidity situations and differing plans (such as a desire to retire). Purchasers are also likely to have varying types and strengths of motivation, such as a desire for power. Finally buyers and sellers may have varying attitudes toward a risk peculiar to this type of transaction--the risk that it may be considered illegal or unethical under some circumstances to accept a premium for control

stock which is not available to minority stockholders. This legal-ethical problem is covered in detail in the first part of this chapter.

Further study of the transactions having the largest unexplained variations (listed in Table 3.7) suggests possible reasons for the two observations which had very large unexplained variations and also predictions which were in the wrong direction from the mean: numbers 8 and 20. Observation number 8 was unusual in that it represented a purchase by the parent company, which though small, was sufficient to raise the parent company's ownership to 80% and thereby permit consolidation for U. S. income tax purposes. This situation probably was a major factor in the price ratio of 137.5%--largest in this study--despite the prediction of 97.3%.

Observation number 20 was another case with a large price ratio (127.9%) but a prediction much smaller (100.8%). Here the competition for the company seems to have been unusually great; the sellers were officers of another company which then terminated merger discussions, permitting merger with the purchaser. Situations of these types are examples of the many individual influences which can hamper the fit of the best regression equation.

CHAPTER IV

CLASSIFIED COMMON STOCK

Classified common stock is relatively rare, but when utilized may facilitate obtaining and/or retaining voting control of a corporation. Unlike the cash tender offer or the private purchase of a large block of common stock, it seems more likely to be used to retain control than to obtain control.

As the name implies, classified common stock results from dividing the common stock into two (or possibly more) classes; each class can then be given distinctive characteristics. However, the type of individual characteristics which can be imparted to each class is sharply limited if each class is to retain its status as common stock. A key characteristic of common stock is that it is the residual equity; it is entitled to no preference as to dividends or distributions in liquidation. If a material preference is given to one class, it is no longer common stock. Therefore it is necessary to distinguish classified common stocks from other types of classified stocks which may be preferred stocks or hybrid types.

This part of the study deals with classified common stocks having classes which do not differ materially except as to voting rights. Voting rights are one usual characteristic of common stock; however, the removal of voting rights from one class appears to do less damage to its status as common stock than would the changing of most other characteristics. This opinion is based on the observation that voting rights are relatively unimportant to many stockholders. In the absence of a proxy contest, management routinely receives adequate proxies to carry out its will. Even with a proxy contest (which is relatively rare) management's ability to use corporate funds for proxy solicitation gives it a tremendous advantage. Further, it seems likely that many stockholders lack either the experience, time, or interest to inform themselves of the issues and to utilize their votes effectively.

Companies Studied

Three main sources are used for the selection of companies studied: Moody's Manuals, Bank and Quotation Record and Financial Post.

The Moody's Manuals used are Moody's Industrial Manual, 1968, and Moody's Bank and Finance Manual, 1969. The blue page sections which give a listing and ten-year price range of stocks and bonds are examined to find companies having classified common stocks. The following selection criteria are applied to the stocks found:

1. Price information must be available on both classes at least at monthly intervals for some years since 1964.

2. Both classes must be residual equity with voting rights the sole difference between classes.

In order to use an alternate source and to update the sample, the entire June, 1972 issue of Bank and Quotation Record is examined to find additional classified common stocks; these stocks are subjected to the same two selection criteria mentioned in the preceding paragraph.

Many Canadian securities (including those listed on Canadian stock exchanges) are not included in Bank and Quotation Record. Therefore to find additional Canadian companies, all of the stock listings (including over-the-counter issues) in the July 22, 1972 issue of Financial Post are examined. A high proportion of the Canadian classified stocks differed other than as to voting rights. The non-voting shares would typically have a dividend preference of approximately $.25 per year; after both classes have received that amount they participate equally in dividends. Classified stocks of this type are included providing they have consistently paid at least the amount of preference to both classes for the last several years. For these companies it is felt that any distorting effect of the dividend preference on the market prices would be small.

In some cases one class is made distinctly inferior to the other class with regard to voting rights, while still having such rights. For example, in the case of Investors Diversified Services, Inc., both classes have one vote per share, but the Class A Common participates four times as much as the Class B Common in dividends, other distributions, and upon liquidation.[1] From the standpoint of voting power, the result is similar to giving the Class A one vote per share, the Class B one-quarter vote per share, and making them the same in all other respects. This company is accepted for the sample and the price of the Class B is compared with one-quarter of the price of the Class A.

Another type of reduced-voting security which is accepted for the sample is exemplified by Presidential Realty Corp. Both the Class A Common and Class B Common have one vote per share. However, they each vote as a class, with the class A electing two-thirds of the directors, and the class B electing the other one-third. Since there are approximately three times as many class B as class A shares outstanding, the class B has clearly inferior voting rights.[2]

The total sample of 29 consists of all companies found which meet these criteria. This number is small in

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[1] Moody's Bank and Finance Manual, 1969, p. 970.

[2] Ibid., p. 1366.

relation to the number of companies which have classified stock. However, in a high proportion of cases there are important differences between classes (other than voting rights) which might be expected to influence their prices and make them useless for studying the value attributed to voting rights. Some are similar to preferred stocks.

Many companies are eliminated because of the lack of price information on one or both classes. It is not surprising that in many cases of classified common stocks no price information is available on the voting common. The purpose of such classification is usually to enable one group of stockholders to retain control of the corporation. Therefore the voting common is often closely held by such a group and no market exists for the stock. Even for some companies which have both classes listed on Canadian stock exchanges, the trades in the voting stock are so infrequent that it is not possible to calculate price ratios (which require near-simultaneous prices of both voting and non-voting stocks).

Variables Employed

Table 4.1 lists names of the variables employed, with their definitions. The third through seventh variables on the list (debt ratio through market price) are similar in nature and purpose to variables used in the study of cash tender offers. As with that study, debt ratio and quick ratio are considered not applicable to financial companies.

TABLE 4.1.--Classified Common Stocks: Variables Employed.

Variable Name (and abbreviation, if any)	Definition
Price Ratio	Ratio of price of voting common to market price of non-voting (or reduced-voting) common.
Shares Ratio	Ratio of number of voting shares outstanding to number of non-voting (or reduced-voting) shares outstanding.
Debt Ratio	Ratio of long-term debt to total of long-term debt, preferred stock, and common stock equity.
Quick Ratio	Ratio of cash, short-term marketable securities, and accounts receivable, to current liabilities.
Book Value to Market Price	Ratio of book value per share to market price of non-voting (or reduced-voting) common.
Rate of Return	Net income as percentage of net worth.
Market Price	Market price of non-voting (or reduced voting) common.
Dividends per Share	Dividends per common share in calendar year (same for both classes for all companies in sample).
Net Working Capital to Total Assets (NWC/Total Assets)	Ratio of net working capital to total assets
Sales to Total Assets (Sales/Total Assets)	Ratio of year's sales to end-of-year total assets.

Price Ratio.--The price ratio is the dependent variable for which it is desired to explain variation in value. For each of the 29 companies forming the sample, price quotations for each class of common stock are obtained as of June 30 (or as near that date as possible) for each year 1965 through 1972 (to the extent available). For each company a price ratio is computed for each year: the ratio of the price of the voting common to the price of the non-voting (or reduced-voting) common.

Shares Ratio.--The shares ratio is the ratio of the number of voting shares to the number of non-voting (or reduced voting) shares. The smaller this ratio is, the greater is the total number of shares (voting and non-voting combined) which can theoretically be controlled by ownership of a given number of voting shares. For example, assume that a company has one million common shares outstanding and that 50% of the voting shares are required to control the company. If the ratio of voting to non-voting shares is 4 (4 to 1), there would be 800,000 voting shares and 200,000 non-voting shares. A total of 400,000 voting shares would be required to control the company. On the other hand, if the shares ratio is .25 (.25 to 1), there would be 200,000 voting shares and 800,000 non-voting shares. Only 100,000 voting shares would be required to control the company.

One hypothesis is that the premium for voting stock will tend to be greater when this shares ratio is

relatively low. In this example, if a person were willing to pay a total premium (above the price of non-voting shares) of $1,000,000 to get control of the corporation, he would be willing to pay a premium of only $2.50 per share if the ratio of voting to non-voting shares were 4, but $10.00 per share if the ratio were .25. The per share premium in both cases is calculated by dividing the total premium he is willing to pay ($1,000,000) by the number of voting shares required to control the company (400,000 and 100,000 respectively).

Dividends per Share.--Dividends per share is included as an independent variable because although another performance measure, rate of return, is included, dividends are discretionary with those in control of a corporation, and because dividends represent a tangible cash payment to stockholders. Even if the rate of return is very good, dividends might be kept low or omitted--the result could be dissatisfaction on the part of some shareholders who might thereby be motivated to attempt to get voting control of the corporation to alter the dividend policy.

Other Variables.--The last two variables listed, net working capital to total assets and sales to total assets, are selected from variables used by Altman in his study of prediction of corporate bankruptcy.[1] They are

[1]Edward I. Altman, "Financial Ratios, Discriminant Analysis, and the Prediction of Corporate Bankruptcy," Journal of Finance, XXIII (September, 1968), pp. 589-609.

used for approximately half of the companies to determine whether they provide additional help in explaining the price ratio. NWC/total assets is used as a liquidity measure supplemental to the quick ratio (like the quick ratio it is not applicable to financial companies). Sales/total assets is a performance measure to supplement rate of return and dividends per share.

Method of Analysis

Time Series Analysis.--Of the 29 companies in the sample, 24 have sufficient data to warrant charting the variables over a period of years. The criteria used in deciding which companies to chart are either 5 years or more of data, or at least three years of data with substantial variation in the price ratio. (All but one of the 24 companies charted meets the 5-year criterion.)

In charting variables for each year, the price ratio used is as of June 30 of that year (or as near to that date as obtainable). The independent variables include income statement and/or balance sheet information--these data are for the fiscal year ended prior to June 30. For example, the June 30, 1972 price ratio is plotted at year 1972; for a company on a calendar year basis the period used for other variables plotted at year 1972 is the year ended December 31, 1971, for a company using a fiscal year ending April 30, the 12 months ended April 30, 1972 would

be used; for a company using a fiscal year ending September 30, the 12 months ended September 30, 1971 would be used.

With the exception of Brown-Forman, absolute values of the variables are charted. For Brown-Forman, relative values of each variable are charted, with 1965 = 100, to see whether relative values are advantageous. Relative values do not seem to possess material advantages for this study, so they are not used for the other companies charted.

After the companies are charted the problem remains of analyzing each chart in a systematic way and summarizing the results of that analysis. The method decided on is comparing one independent variable at a time with the price ratio. For each year plotted, the directions of change (from the previous year) are noted, as well as whether the changes are in the same or opposite directions. For the entire period of the chart, the criterion is whether either changes in the same direction or changes in the opposite direction predominate. In order for possible positive association to be inferred, the directions of change must be the same at least 5 out of 7 times, or in the following number of times when data for fewer than 7 periods are available: 4 out of 6, 4 out of 5, 3 out of 4, 3 out of 3, or 2 out of 2. Inference of possible negative association is based on similar requirements. Then, for each variable, companies having positive associations are enumerated, as are the companies showing negative associations between that variable and the price ratio. This

summarization makes it possible to determine the extent of any support for the hypothesis which that independent variable is used to test.

Cross-Section Analysis.--In order to supplement this analysis, which is on a time series basis, a cross-section analysis is used for each independent variable for which there are at least 18 sample companies with adequate data (available value for this variable for the latest year as well as a 1972 price ratio). Each of these independent variables is compared one at a time with the price ratio by means of 2 by 2 contingency tables. Each of these tables permits visual inspection of the association or lack of association between one independent variable and the price ratio. (The pairing of variables was done as explained in connection with charting methods.)

For each table the chi square test is performed to test the significance of the relationship between the two variables. For tables where the chi square test suggests a significant relationship, chi square is recomputed using the Yates correction for continuity.[1]

Findings

Table 4.2 summarizes the analysis of the 24 charts (which are located alphabetically in the Appendix) by the

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[1]Samuel B. Richmond, Statistical Analysis (2d ed.; New York: Ronald Press, 1964), pp. 300-01.

TABLE 4.2.--Classified Common Stocks, Companies for which Charts Suggest Possible Association of One or More Independent Variables with the Price Ratio.

Company*	Market Price	Rate of Return	Quick Ratio	NWC/ Total Assets	Sales/ Total Assets	Debt Ratio
Brown-Forman			+	NA	NA	+
Cannon	-			NA	NA	
H. Corby		+				
Cutter			-			
Duncan	-	-		NA	NA	
Harding	-		-	-	-	
Loblaw	+				-	
Niagara	+		+		NA	
Plymouth	+			NA	NA	
Resorts			+	NA	NA	
Rolland					-	
Supertest			+		-	
Traders	-		NA	NA	NA	NA
Universal	-			NA	NA	
Versatile	-	-	NA		-	+

+denotes possible positive association with price ratio
-denotes possible negative association with price ratio
NA variable not analyzed for this company
*Company names are listed in Appendix C.

method previously described. Only the 15 companies in the table show possible association of one or more independent variables with the price ratio. Only the six independent variables listed in the table columns show association with the price ratio for one or more of the 24 companies.

Market Price.--One hypothesis is that the percentage premium for control stock is greater when the market price is relatively low, that is, that the association is negative. Possible negative association is displayed in the charts of six of the 24 companies. The six are denoted by minus signs in the market price column of Table 4.2. On the other hand, three of the companies (indicated by plus signs in the same column) show positive association--opposite to that hypothesized.

The strongest case for the hypothesis is illustrated by the chart of Harding. There are eight observations for each of the two variables, price ratio and market price, giving seven possible changes in each variable. In all but the first period (1965-1966) there are changes in the opposite direction. In addition, another look at the chart reveals that the two times that the market price was highest (around $22 in 1966 and 1972) the price ratio was near its low--between 1.05 and 1.07; the year the price was lowest ($9.00 in 1970) the price ratio was highest--1.22.

Another company illustrating rather strong support for this hypothesis is Traders. Of the seven periods,

five show changes in the opposite direction for the two variables--all but the 1966-67 and 1971-72 periods. The changes in both variables are quite large for the periods 1967-68, 1968-69, 1969-70, and 1970-71. This company had a price ratio of less than 1 every year except 1972, which means that every other year the voting stock sold for less than the non-voting. A possible explanation for this situation may be the ownership of 81% of the voting shares of Traders by Canadian General Securities Ltd.[1] One result of this ownership could be strong control by Canadian General which would reduce the incentive for Canadian General to acquire additional voting shares, as well as lessen the appeal to other investors. Another result of this ownership could be a thinner market for the voting shares than many investors would prefer.

Comparison of these two variables on a cross section basis fails to lend any support for the hypothesis. Table 4.3 shows that the 9 companies with price ratios of 1.05 and over are quite evenly distributed between stocks priced under $15 and stocks priced $15 and over, as would be expected for this sample if there is no association between market price and price ratio. The observed frequency in the upper left cell is five--close to the expected frequency of 4.32 ($\frac{12}{25} \times 9 = 4.32$).

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[1] Moody's Bank and Finance Manual, 1970, p. 1897.

TABLE 4.3.--Comparison of 1972 Price Ratio with Market Price, 25 Classified Common Stocks (Number of Companies).

Price Ratio	Market Price		Total
	Under $15	$15 and over	
1.05 and over	5	4	9
Under 1.05	7	9	16
Total	12	13	25

Chi square = .32; df = 1; not significant at .05 level.

Rate of Return.--One hypothesis is that the rate of return is negatively associated with the price ratio--that a high price ratio is more likely to exist when the rate of return is relatively low. Table 4.2 shows that very little support for this hypothesis is found in the analysis of the charts. Only two companies show possible negative association, and in each case this is based on relatively few time periods.

However, Table 4.4 shows that there is some possible support for the hypothesis based on cross-section analysis. Although not statistically significant at the .05 level, possible negative association is visually apparent. Although there are 11 each of lower return (under 10.0%) and higher return (10.0% and over) companies, 5 out of 7 of the companies with price ratios of 1.05 and over are lower return companies--an observed frequency in the upper left cell of 5 compared with an expected frequency of 3.5 ($\frac{11}{22} \times 7 = 3.5$).

TABLE 4.4.--Comparison of 1972 Price Ratio with 1971 Rate of Return, 22 Classified Common Stocks (Number of Companies).

	Rate of Return		
Price Ratio	Under 10.0%	10.0% and over	Total
1.05 and over	5	2	7
Under 1.05	6	9	15
Total	11	11	22

Chi square = 1.89; df = 1; not significant at .05 level.

Greater negative association between price ratio and rate of return shows up when the same data are used to construct another table with the class limit of the price ratio changed from 1.05 to 1.10. The resulting table 4.5 shows that all four of the companies with a price ratio of 1.10 and over have a rate of return under 10.0%. This observed frequency of four in the upper left cell compares with an expected frequency of two ($\frac{11}{22} \times 4 = 2$). It appears that the results shown in this table could be considered statistically significant; the chi square test does not show significance at the .05 level after applying the Yates' correction for continuity. However, significance at the .10 level is indicated by this test. Further, the Yates correction is said to over-correct.[1]

[1]Richmond, op. cit., p. 301.

TABLE 4.5.--Comparison of 1972 Price Ratio with 1971 Rate of Return, 22 Classified Common Stocks. Revised to Change Class Limit of Price Ratio to 1.10 (Number of Companies).

	Rate of Return		
Price Ratio	Under 10.0%	10.0% and Over	Total
1.10 and over	4	0	4
Under 1.10	7	11	18
Total	11	11	22

Chi square (without Yates' correction) = 4.89; df = 1
Chi square (with Yates' correction for continuity) = 2.76; df = 1
Significant at .10 level but not at .05 level.

Quick Ratio.--The hypothesis regarding this variable is that the price ratio is greater when the company is relatively liquid, as roughly measured by this ratio. Overall, based on both the time series and cross-section analysis, this hypothesis does not seem to be supported; in fact greater support seems to lie in the opposite direction--that the price ratio is greater when the company is relatively illiquid.

Table 4.2 reveals that based on the criteria established for analyzing the charts, four of the companies seem to lend support to the hypothesis. However, for one of these four companies, Niagara, the chart shows that the highest price ratios occurred in 1969 and 1970 when the quick ratios were lowest.

Table 4.6 is the basis for the previous statement that there seems to be greater support for an opposite hypothesis--that the price ratio is greater when the company is relatively illiquid. Although not statistically significant at the .05 level, possible negative association between the price ratio and the quick ratio is apparent in the table. Although an equal number of companies (nine) have a quick ratio under 1.50 and 1.50 and over, six of the nine companies with a price ratio 1.03 and over are companies with a quick ratio under 1.50. Stated another way, to observed frequency in the upper left cell is six, compared with an expected frequency of 4.5 ($\frac{9}{18}$ x 9 = 4.5).

Possible association in this direction is even more evident from Table 4.7, which is based on the same data as Table 4.6, but with the class limit of the quick ratio reduced from 1.50 to 1.00. Five of the six companies with a quick ratio under 1.00 have price ratios of 1.03 or over. The expected frequency in this upper left cell is 3 ($\frac{6}{18}$ x 9 = 3). The value of chi square (4.00) is substantially higher than with the class limit of Table 4.6; however, after recalculating chi square with Yates' correction for continuity the value is 2.26, still not statistically significant at the .05 level.

Net Working Capital to Total Assets.--This ratio is calculated for 12 of the companies in the sample and analyzed on a time series basis. Only the chart for Harding

TABLE 4.6.--Comparison of 1972 Price Ratio with 1971 Quick Ratio, 18 Classified Common Stocks (Number of Companies).

	Quick Ratio		
Price Ratio	Under 1.50	1.50 and over	Total
1.03 and over	6	3	9
Under 1.03	3	6	9
Total	9	9	18

Chi square = 2.00; df = 1; not significant at .05 level.

TABLE 4.7.--Comparison of 1972 Price Ratio with 1971 Quick Ratio, 18 Classified Common Stocks. Revised to Change Class Limit of Quick Ratio to 1.00.

	Quick Ratio		
Price Ratio	Under 1.00	1.00 and over	Total
1.03 and over	5	4	9
Under 1.03	1	8	9
Total	6	12	18

Chi square (without Yates' correction) = 4.00; df = 1
Chi square (with Yates' correction for continuity) = 2.26; df = 1
Not significant at .05 level.

suggests possible association with the price ratio. The Association is in a negative direction, as is the case with Harding's quick ratio--both opposite to the directions hypothesized.

Sales to Total Assets.--This variable is calculated for 10 of the companies in the sample. Table 4.2 reveals that five of the ten companies show negative association with the price ratio based on analysis of the charts. Since this ratio is used as an additional measure of management performance, the direction of association is consistent with the hypothesis that the percentage premium for control stock will be greater when management performance has been relatively poor.

Debt Ratio.--One hypothesis is that the percentage premium for control stock is greater when there is relatively large unused debt capacity (as roughly measured by a low debt ratio). This hypothesis means that price ratio and debt ratio should be negatively associated. However, no support for this hypothesis is found.

The time series analysis of charts, summarized in Table 4.2, shows only two companies having association between price ratio and debt ratio--and the association is positive instead of the negative association hypothesized. For many of the other companies the debt ratio did not change enough during the observed periods to permit analysis of this variable.

Table 4.8 shows that the cross section analysis reveals no association between debt ratio and price ratio.

TABLE 4.8.--Comparison of 1972 Price Ratio with 1971 Debt Ratio, 18 Classified Common Stocks (Number of Companies).

	Debt Ratio		
Price Ratio	Under 15%	15% and over	Total
1.03 and over	4	5	9
Under 1.03	5	4	9
Total	9	9	18

Chi square = .22; df = 1; not significant at .05 level.

Dividends Per Share.--The criteria for determining possible association in the analysis of the time series charts are not appropriate for this variable; dividend changes usually did not occur frequently enough to produce enough changes in the value of this variable. Consequently none of the sample companies meets these criteria. However, further analysis of the charts does seem to suggest an inverse relationship between dividends and price ratio. For example, in the case of Chesapeake the two years of price ratios greater than 1.00 (1970 and 1972) occurred after the dividend had been eliminated. Similarly, the only two years that Plymouth showed price ratios above 1.06

were the 1.16 and 1.13 of 1971 and 1972, after the dividend had been eliminated.

Rolland shows a similar possible association after dividends were increased from $.30 in calendar years 1964 and 1965 to $.40 in calendar years 1966 through 1969. The price ratio dropped from 1.21 in 1967 to 1.07 in 1968. However, there is a time lag, as these dates indicate.

A much more persuasive case for the significance of dividends is evident from the cross section analysis of Table 4.9. Five of the six companies paying no dividends in the prior year have price ratios of 1.03 and over. Only 7 of the 19 dividend payers fell in that price ratio category. Stated in another way, the observed frequency in the upper left cell is 5, while the expected frequency is 2.88 ($\frac{6}{25}$ x 12 = 2.88). The chi square test indicates statistical significance at the .01 level.

Shares Ratio.--As in the case of the debt ratio, the shares ratio for many companies did not change enough during the observed periods to permit adequate analysis of this variable on a time series basis. However, in the case of Presidential the price ratio was generally higher in years 1969 and later after the shares ratio had gradually dropped from .59 to .33.

Table 4.10 shows that cross section analysis reveals no association between shares ratio and price ratio.

TABLE 4.9.--Comparison of 1972 Price Ratio with Prior Year's Dividends, 25 Classified Common Stocks (Number of Companies).

	Prior Year's Dividends		
Price Ratio	No Dividends	Dividends	Total
1.03 and over	5	7	12
Under 1.03	1	12	13
Total	6	19	25

Chi square (with Yates' correction for continuity) = 7.61
df = 1; significant at .01 level.

TABLE 4.10.--Comparison of 1972 Price Ratio with 1971 Shares Ratio, 23 Classified Common Stocks (Number of Companies.

	Shares Ratio		
Price Ratio	50% and Under	Over 50%	Total
1.03 and over	6	5	11
Under 1.03	6	6	12
Total	12	11	23

Chi square = .05; df = 1; not significant at .05 level.

Book Value to Market Price.--This variable is plotted on only a few of the charts but included are Plymouth and Resorts which have wide variations in this variable between substantially less than 1.00 and substantially more than 1.00, as well as large fluctuations in price ratio. However not even these two charts gave evidence of association between these two variables.

Table 4.11 shows no evidence of association between these two variables based on cross section analysis, with the class limit of the price ratio set at 1.03. However, when the class limit is raised to 1.10 and the same data used, the result is Table 4.12. None of the eleven companies with a ratio of book value to market price under .90 has a price ratio of 1.10 and over. This observed frequency of zero in the upper left cell compares with an expected frequency of 1.91 ($\frac{11}{23} \times 4 = 1.91$). However, the chi square test with Yates' correction for continuity indicates that the association is not statistically significant at the .05 level.

Discussion of Findings

Rate of Return.--The hypothesis for which the study of classified common stocks provides greatest support is that the percentage premium for control stock is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth)

TABLE 4.11.--Comparison of 1972 Price Ratio with 1972 Ratio of Book Value to Market Price, 23 Classified Common Stocks (Number of Companies).

	Ratio of Book Value to Market Price		
Price Ratio	Under .90	.90 and over	Total
1.03 and over	5	6	11
Under 1.03	6	6	12
Total	11	12	23

Chi square = .05; df = 1; not significant at .05 level.

TABLE 4.12.--Comparison of 1972 Price Ratio with 1972 Ratio of Book Value to Market Price, 23 Classified Common Stocks. Revised to Change Class Limit of Price Ratio to 1.10 (Number of Companies).

	Ratio of Book Value to Market Price		
Price Ratio	Under .90	.90 and over	Total
1.10 and over	0	4	4
Under 1.10	11	8	19
Total	11	12	23

Chi square (without Yates' correction) = 4.44; df = 1
Chi square (with Yates' correction for continuity) = 2.41; df = 1
Not significant at .05 level.

has been relatively poor. Rate of return shows statistically significant negative association with price ratio, which is in the direction consistent with the hypothesis.

Dividends Per Share.--Dividends per share is used as an additional measure of management performance and shows strong and statistically significant negative association with price ratio, which is in the direction consistent with the hypothesis. Companies paying no dividends in the prior year are much more likely to have their voting shares selling at a premium of at least 3% above their non-voting (or reduced-voting) shares than are companies which paid dividends in the prior year. Failure of a company to pay dividends may be regarded by stockholders as constituting poor management performance for two reasons. First, dividends constitute a tangible return to stockholders, and omission of dividends may be due to management's failure to earn enough on the company's assets, or to maintain sufficient liquidity, or both. Secondly, even if earnings and liquidity are adequate, the omission of dividends may be regarded (sometimes justifiably) as intended to serve the interests of management or controlling stockholders rather than other stockholders; one cause of this situation may be management or controlling stockholders who are in high income tax brackets and would prefer to see funds retained for reinvestment in the hope of lower-taxed capital gains, instead of paid out in higher-taxed dividends.

Sales to Total Assets.--The ratio of sales to total assets is used as a supplemental measure of management performance on a time series basis for ten of the companies in the sample. Five of the ten companies show changes in this ratio which are predominantly in the opposite direction from changes in the price ratio; in other words, for these companies, when sales have declined in the prior year in relation to assets, the price ratio tends to increase from the previous year. This association is consistent with the hypothesis, because increases in sales from the prior year are a popular measure of management performance and a widely-publicized statistic, and total assets often remains relatively constant from one year to the next.

Book Value to Market Price.--The ratio of book value to market price seems to show positive association with price ratio based on cross-section analysis, although the association is not statistically significant at the .05 level. The direction of this association is consistent with the hypothesis that the percentage premium for control stock is greater when there is a relatively great possibility of profitable liquidation (as roughly indicated by a relatively high ratio of book value per share to market price).

Methods Limitations.--One possible reason for lack of greater support for other hypotheses may lie in the

limitations in the methods which were appropriate for the type of data available in the study of classified common stocks. Both the method used to analyze the time series charts and the 2 by 2 contingency tables used for cross section analysis compare two variables at a time--the dependent variable and one independent variable. However, many or all of the independent variables may be exerting a simultaneous influence on the dependent variable; some of these influences would be expected to occur in opposite directions simultaneously. The result could be the offsetting of, and therefore hiding of, the association of any one independent variable with the price ratio.

It is also possible that certain of the independent variables may be associated with the price ratio only within certain ranges. For example, the greater association shown by Table 4.5 as compared with Table 4.4 would be consistent with a situation whereby a rate of return of at least 10% tends to prevent a price ratio as high as 1.10, but not necessarily a price ratio between 1.05 and 1.10.

Similarly, the data analyzed in Tables 4.6 and 4.7 would be consistent with a situation where the quick ratio is regarded as relatively unimportant unless it is less than 1.00, and that a quick ratio at less than 1.00 would raise a caution flag that would impel shareholders to attempt to get control of the corporation. A situation such as this would be particularly likely to exist with a

variable such as the quick ratio where rules of thumb as to "satisfactory" levels have wide circulation (though not high regard).

Offsetting Forces.--A reason related to the one just discussed is the possibility of offsetting forces at work with regard to a given variable. For example, one hypothesis is that high liquidity is a motivating factor for takeover. Although this hypothesis is not supported by this part of the study, it is possible that there is some such effect but that it is hidden by the opposing effect of low liquidity being regarded as a caution sign and therefore a reason to attempt to get control. It is conceivable that both relatively low and relatively high values of the quick ratio encourage takeover, but for different reasons, and that middle ranges of quick ratio provide no such incentive.

Another example of offsetting forces at work is the case of the debt ratio. One hypothesis is that the premium for control is higher when there is a relatively large unused debt capacity--as measured by a relatively low debt ratio. Such an effect would logically occur when it is felt by investors that opportunities for favorable financial leverage have been neglected. On the other hand, the existence of a relatively high debt ratio could also impel stockholders to want to get control of the company. In itself such a ratio might be regarded as a caution flag--as already discussed in the case of a relatively low quick

ratio. In addition, there is the financial leverage effect. In this case financial leverage already exists--concern about its effects would be the factor motivating takeover attempts. Not only does the financial leverage caused by debt increase the risk of loss, but it also increases the degree to which earnings per share increases with a given increase in earnings before interest and taxes. Therefore, the existence of financial leverage might create a greater incentive to get control of a company and try to improve the earnings performance.

Nature of Securities Markets.--As mentioned early in this chapter, the voting stock is more likely to be closely held than the non-voting stock; one result could be a poorer market for the voting stock than for the non-voting (or reduced-voting) stock. It is likely that many investors would not be much concerned about voting power, but would be greatly concerned with marketability. As a result, the price ratio might be lower than would otherwise prevail, and might become less than 1.00.

It seems necessary to consider the nature of the securities markets, including the decision-making process which investors use. One of the questions debated in the financial journals in connection with the "random walk hypothesis" has been the extent to which investors have knowledge about factors relevant to their investment decisions. The random walk hypothesis is based on the premise that securities markets are efficient, with an

efficient market characterized by large numbers of competing, rational, profit-maximizing investors, and the wide availability of important current information.[1]

If such efficient markets exist for many or most securities, it is possible that classified common stocks are an exception. The relative lack of marketability of some classified common stocks (already discussed) could be both a symptom and a cause of a market which is not efficient--a cause in that once poor marketability exists it tends to perpetuate itself because many additional investors are dissuaded from entering the market because it is poor.

What could be other causes of a market for classified common stocks which is not efficient? Lack of wide availability of important current information could be one factor. Relatively little has been published about classified common stocks, particularly about the price differential between voting and non-voting (or reduced-voting) shares.

Attempts to generalize about the availability of important current information in the securities markets may be misleading because of the ways in which investment information is generated and disseminated. Investment

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[1]Eugene F. Fama, "Random Walks in Stock Market Prices," Financial Analysts Journal, XXI (September-October, 1965), pp. 55-59.

information on a security, such as a brokerage house research report, is often generated in response to already-existing, widespread investor interest in that security. Therefore more information is generated about those securities in which there is large interest than in those in which there is little interest. In many cases lack of interest in a security may be due to lack of information about it; therefore the lack of information about a security tends to be perpetuated.

Dissemination of investment information appears to be similarly related to investor interest. Once information is generated about a security, the extent to which the information is disseminated appears to be related to existing investor interest in that security. Investor interaction appears to be a major factor in determining investor interest. Brokers talk to one another and to investors about a small proportion of securities, investors do likewise. This information seems to create a very high degree of interest in a relatively small proportion of securities, and the relative neglect of others. This varying interest manifests itself in greatly varying trading volume in relation to number of shares outstanding. Large volume of trading in a security may result in further publicity such as inclusion in a "most active" list carried by a large number of newspapers.

It would appear that there is pronounced bimodality in the availability of investment information about

securities, due largely to the influences wbich have just been discussed. If this is true, then the market for securities may be segmented; one part may be relatively efficient, the other part is probably not. Classified common stocks would tend to be in the portion of the market which is less efficient.

Such a situation might help to account for the findings in the study which reveal that of the several variables which seem to have a logical basis for association with the price ratio, the few which show some association are those for which there is relatively great dissemination of statistical data. Even for relatively obscure companies the Wall Street Journal publishes information on sales, net income, and earnings per share. For most companies this information is available on a quarterly basis, and is published with comparative figures for the year-earlier period. Major balance sheet figures are published at least annually. Dividend information is even more publicized. Dividend declarations are announced in a special daily feature of the Wall Street Journal; an adjacent feature lists stocks which will go ex-dividend in the next trading day or two. In addition, most daily stock listings show the indicated annual dividend based on the most recent quarterly dividend declaration. Not until October, 1972, when the Wall Street Journal and some non-financial newspapers began publishing a "PE ratio" column for listed stocks, did earnings information begin to

approach the degree of daily prominence long held by dividends.

As noted in the section on findings, dividends show a far more significant association with the price ratio than any other variable. The only other variable in the cross section analysis reaching statistical significance at even the .10 level is rate of return. The numerator of the fraction used to calculate this variable is net income--one of the few widely-publicized pieces of information previously mentioned. Net income is also the key component for this variable because usually it is more volatile than net worth which is the denominator and only other component.

A study of small-bank stocks provides some additional support for this study's suggestion that when information about certain usually-important factors is not widely available, factors for which information is available become more important. It was found in that study that dividends were very important in determining the relative market price of the stock of a small bank and that market price seemed to be more closely associated with dividends than with earnings. It was suggested that an important reason may have been greater availability of dividend information than of earnings information.[1]

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[1]James C. Van Horne and Raymond C. Helwig, The Valuation of Small-Bank Stocks (East Lansing, Mich.: Bureau of Business and Economic Research, Michigan State University, 1966), p. 42.

CHAPTER V

SUMMARY AND CONCLUSIONS

One purpose of this study is to explain the widely varying stock price premiums found within each of the following three methods of obtaining or retaining voting control:

1. cash tender offers
2. private purchases of large blocks of stock
3. classified common stock

For the first two of these methods, regression equations explain a substantial portion of the variation in stock price premiums. Still, a considerable amount of the variation remains unexplained. The number of independent variables which may be used is limited. Further, some relevant considerations would be difficult to obtain information about, and some information which is available is difficult to quantify sufficiently to be useful in this type of analysis.

Although the combined ability of independent variables to explain the variation in price premiums is important, the individual contribution of each variable is also of interest. Some, such as liquidity measures and

measures of the extent of use of long term debt, are closely related to decision topics in financial management which receive considerable attention in courses from beginning undergraduate to advanced graduate level. They also receive attention in many investment courses.

Common Patterns Among the Three Methods

Price Ratio.--For all three methods of obtaining or retaining voting control, premiums are generally found to be paid for the type or amount of stock which facilitates voting control, as compared with the price of otherwise comparable stock (of the same company) which does not facilitate control. The largest and most consistent premiums are found for cash tender offers, varying from 1.9% to 46.7% with a mean of 18.2%. Next is classified common stock, ranging (as of mid-year, 1972) from a discount of 10% to a premium of 28% with a mean of 4.6%.

Private purchases of large blocks of stock show the lowest mean premium (2.7%) but a very wide range--from a discount of 68.6% to a premium of 37.5%. Considerable uncertainty and debate regarding the legality and ethicality of accepting a premium for a large block without making that premium also available to minority stockholders probably accounts for some of the wide variation in this last method. (The premium as measured by the variable price ratio is the dependent variable in the study of each of the three methods.)

Debt Ratio.--Debt ratio, the ratio of long-term debt to total of long-term debt, preferred stock, and common stock equity, shows a consistent pattern in the studies of each of the three methods studied. In each case it does not support the hypothesis that the percentage premium for control stock is greater when there is a relatively large unused debt capacity, as measured by a relatively low value for this ratio. It does not enter a regression equation for either cash tender offers or private purchases of large blocks of stock, and shows no association with price ratio for classified common stock.

Offsetting forces or alternate hypotheses may be the explanation for lack of association of this variable. Instead of a company being sought after (and a large premium paid) because it has a low debt ratio, it may be sought after because it has a high debt ratio--representing not the potential for financial leverage, but financial leverage which already exists. This possibility is greatest when unfavorable financial leverage exists, because the incentive for turning the company around and changing the unfavorable leverage to favorable leverage is greater than if no financial leverage existed.

There may be a similar effect, which is more directly related to this variable. A relatively high debt ratio (perhaps only above some level which is popularly considered normal) may serve as a warning signal to investors that their investment in the company is subject to

considerable risk. This signal motivates them to attempt to get control of the company and either reduce the debt ratio or reduce risk in other ways, such as by adopting a more conservative policy with regard to investment in assets. This last concept differs in that it is not predicated on the existence of unfavorable financial leverage at the time control is sought.

Liquidity Measures.--Measures of corporate liquidity also show a consistent pattern among the three methods studied, in that the hypothesis concerning them is not supported. The hypothesis is that the percentage premium for control stock is greater when the corporation is relatively liquid (as roughly measured by the quick ratio or current ratio). The quick ratio, used in the study of cash tender offers, fails to enter a regression equation. Current ratio, used in the study of private purchases of large blocks of stock, is in the best regression equation but shows moderate association in the direction opposite to that expected from this hypothesis.

In the study of classified common stock quick ratio is also used; it shows no association on a time series basis; on a cross section basis some association exists in the direction opposite to that expected, but it is not statistically significant. A supplemental measure used for some companies in the study of classified common stock is the ratio of net working capital to total assets;

it shows no association on the time series basis with which it is used.

A factor in the failure of quick ratio to enter a regression equation for cash tender offers is believed to be its moderate positive correlation with another variable which did enter: price range. Also, there seem to be offsetting forces at work which are strong enough to cause some association in the opposite direction from that expected. A low quick ratio, especially below some level popularly regarded as normal, is often regarded as a warning sign to investors. Investors may be motivated by this warning sign to try to get control of the company and change its asset investment policies.

Correlation of Exchange with Market Price.--In both the non-financial companies studied for cash tender offers and the companies subjected to private purchases of large blocks of stock, there is a nearly-identical simple correlation between the listing status and the market price: -.45 and -.46 respectively. This correlation is consistent with expectations that companies with higher-priced shares are more likely to be listed on the New York Stock Exchange than those companies with lower-priced shares, which are more likely to be listed on another exchange or unlisted.

Inconsistencies Among the Three Methods

Rate of Return.--The independent variable rate of return (net income as percentage of net worth) is used for all three methods studied, but the results are inconsistent. The hypothesis which this variable is used to test is that the percentage premium for control stock is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor. The variable does not enter a regression equation for cash tender offers; one reason is believed to be high simple correlation with another variable (book value to market price) which does enter the regression equations. However, another measure of management performance, earnings direction, does enter the regression equations for cash tender offers; this variable is the direction of change of earnings per share from the previous year; it may be a more sensitive indicator of cause for stockholder dissappointment due to the wide publicity given to year-to-year earnings comparisons.

Rate of return does remain in the regression equation for private purchases of large blocks of stock and shows moderate association in the direction consistent with the hypothesis. Although rate of return does not show association with price ratio in the time series analysis of classified common stocks, it does show statistically significant association in the expected direction in the

cross section analysis of that part of the study. Therefore, notwithstanding the foregoing inconsistencies, it appears that there is general support for the hypothesis that the percentage premium for control stock is greater when management performance (as measured by criteria such as rate of return on equity and per share earnings growth) has been relatively poor.

Book Value to Market Price.--The ratio of book value to market price proves to be an important explanatory variable for the study of private purchases of large blocks of stock. It remains in the regression equation and shows strong association in the direction consistent with the hypothesis that the percentage premium for control stock is greater when there is a relatively great possibility of profitable liquidation (as roughly indicated by a relatively high ratio of book value per share to market price). Further, New York Stock Exchange listing appears to have a synergistic effect with this variable upon the price ratio.

This variable also enters the regression equations for cash tender offers, but shows very weak association in the opposite direction to that expected from the hypothesis. In the study of classified common stock this variable seems not to be important in the time series analysis; however, in the cross section analysis it seems to show association in the expected positive direction, even though the association is not statistically significant.

There are two possible reasons for the greatly differing influence of this variable between private purchases of large blocks of stock and cash tender offers. One reason is that the sellers of large blocks may be more book value conscious than the typical investor who is the potential seller in cash tender offers, and that they therefore are more likely to take book value per share into consideration in determining the price at which they are willing to sell. Any such tendency would be logical because if the large block holders who are the potential sellers have or can obtain control based on their holdings, liquidation of the company is an alternative for them as it is for the prospective purchaser.

Another possible reason for the differing results is that private purchasers of large blocks may tend to be more bent on liquidation than those who make cash tender offers. A New York Stock Exchange listing may make companies with a high ratio of book value to market price more detectable.

Market Price.--One hypothesis is that the percentage premium for control stock is greater when the market price is relatively low. This hypothesis is supported by the study of cash tender offers, although the association is weak. However, this variable is also in the best regression equation for private purchases of large blocks of stock but with association (also weak) in the direction opposite to that expected. With classified common stocks there seems

to be some possible association in the expected direction based on time series analysis, but not with cross section analysis.

A possible explanation for the differing results between cash tender offers and private purchases of large blocks of stock is greater sophistication of large block sellers than typical investors who are the prospective sellers in cash tender offers. The unsophisticated investor would be susceptible to dollar illusion with regard to price premium--he would look at the number of dollars of premium instead of converting it into a percentage and emphasizing that. The large block sellers may be more sophisticated and less susceptible to that illusion. As shown by the example in the chapter on cash tender offers, such an illusion results in illogical behavior because of the effect of brokerage commissions in open market sale--the alternative (for most investors) to tendering.

Exchange.--The variable exchange is defined as the listing status of the shares, whether New York Stock Exchange, other exchange, or unlisted. It enters the regression equations for cash tender offers and shows very weak association with price ratio in the direction consistent with the hypothesis that the percentage premium for control stock will be greatest for unlisted companies and lowest for NYSE-listed companies.

This variable is not in the best regression equation for private purchases of large blocks of stock. However, New York Stock Exchange listing appears to have a synergistic effect with book value to market price upon price ratio. One reason may be the moderate negative simple correlation of exchange with two other variables which are in the best regression equation: price range and market price.

There is another possible explanation based on the rationale for this hypothesis which is that exchanges other than the New York Stock Exchange (NYSE) are regarded as less-efficient markets than NYSE, and the over-the-counter market as even less efficient. The market price at any given moment is regarded as a better measure of the actual value of the stock to the extent that the market price has been determined in a more-efficient market. Since the purpose of the premium is to convince shareholders that they are being offered more for their shares than they are worth on the market, a larger premium will be required for stocks trading in the less-efficient markets. Sellers of large blocks of stock may be less uncertain of the value of the shares they own then general investors, even when the shares are unlisted. This lower uncertainty may be due to greater sophistication; it may also be due to inside information. Since they have less uncertainty as to what their non-NYSE shares are worth, a lower premium may be required to induce them to sell.

Price Range.--Price range, defined as the ratio of prior year's high price to prior year's low price shows inconsistencies similar to but more pronounced than those of the variable exchange, probably for reasons which are in part similar. The rationale for this hypothesis is that a wide price range may make a stockholder more uncertain as to what his shares are worth than does a narrow price range. In order to overcome the greater uncertainty associated with a wide price range, a larger premium is required. For cash tender offers this variable enters the regression equations and shows moderate association in the expected direction. However, in the study of private purchases of large blocks of stock the variable is in the best regression equation but shows strong association in the direction opposite to that expected.

One reason for this difference of results may be the greater sophistication of the private sellers of large blocks, as compared with the typical investor who responds to a cash tender offer. A wide prior year's price range might be expected to create less uncertainty for a large block holder as to what his shares are worth than it would for a typical small investor. Inside information available to the large block holder may play a part in this effect.

To the extent that a wide price range represents greater risk in the view of the large block holder, and to the extent that he does not want to hold a large block of a risky security, he may be more anxious to sell the block

and diversify, even at a relatively low premium. Such an effect could account for the strong negative association found between price range and price ratio for private purchases of large blocks of stock.

Other Findings

Cash Tender Offers.--In addition to those findings previously discussed in this chapter, the study of cash tender offers provides others. Length of offer shows a moderate negative association with price ratio, supporting the hypothesis that in a tender offer, the percentage premium is greater when the length of offer is relatively short (as measured by number of days from date of announcement of offer through original expiration date of offer). The rationale is that a short offer length will require a large premium to move stockholders to act rapidly.

Management reaction shows very weak association with the price ratio in the expected direction, meaning that the premium will be larger when opposition by management of the target company is (correctly) forecast. Lack of a stronger association may be due to the reluctance of some managements who oppose an offer to announce their opposition, due to fear for their jobs if the offer succeeds.

The ratio of prior year's high price to market price shows very weak association in the direction opposite to that expected. One hypothesis is that the percentage premium is greater when the market price is low in relation

to the previous year's high; the rationale is that investors will expect the price to "come back." The unexpected result may be due to investors becoming discouraged because the market price is low in relation to the prior year's high, and welcoming the chance to dispose of their shares at even a small premium above the current market price.

Shares sought shows a very weak association in a direction opposite to that expected. The reason may be that some offers for a low percentage of shares may actually indicate great desire to have shares tendered and may therefore involve a relatively high premium. Shares purchased shows unexpected negative association with price ratio, which means that a relatively high premium is associated with a relatively low ratio of the number of shares purchased through the offer to the number of shares offered to buy; as discussed in the chapter on cash tender offers, the reason seems to be related to the one just discussed.

Private Purchases of Large Blocks of Stock.--In addition to findings discussed in the earlier part of this chapter, the study of private purchases of large blocks of stocks provides some other findings. Purchaser is moderately associated with price ratio in the direction consistent with the hypothesis that the percentage premium is greatest when the purchaser is a corporation other than the issuer, less when the purchaser is an individual, and least when the purchaser is the issuer. The rationale is

that control of another corporation provides potential benefits not available to an individual purchasing control, for example, an alternative of merger with the purchaser.

Seller also shows association with the price ratio in the direction expected, although the association is weak. One hypothesis is that the percentage premium is greater when the seller is a corporation than when the seller is an individual. The rationale is similar to that just discussed for purchaser.

Block size is not in the best regression equation. One hypothesis is that the percentage premium is greater when the block is relatively large (as measured by the number of shares in the block as a percentage of number of shares outstanding).

The variable subsequent status also is not in the best regression equation. The reason may be its relatively high simple correlation with purchaser, a variable which is in the regression equation. One hypothesis is that the percentage premium is greatest for those transactions followed by merger with a corporation other than the purchaser, less for transactions followed by merger with the purchaser, even less for transactions followed by a cash tender offer, and least for transactions followed by no such change in status of minority shareholders.

Classified Common Stock.--In addition to the findings with regard to classified common stock discussed earlier in this chapter, there are two additional findings for this

part of the study. Shares ratio shows no association with price ratio either on the basis of time series analysis, or cross section analysis. One hypothesis is that the percentage premium of the voting shares is greater when the ratio of the number of voting shares to the number of non-voting (or reduced voting) shares is relatively low.

Dividends per share is found to be an important factor in the size of price premium on voting shares. On a time series basis changes in dividends usually did not occur frequently enough to produce a sufficient number of changes in the value of this variable for firm conclusions. However, a much more persuasive case comes from the cross section analysis, where it is found that companies paying no dividends in the prior year are much more likely to have their voting shares sell at a premium above the non-voting (or reduced voting) shares than companies which did pay a dividend in the prior year; the results are statistically significant.

It is believed that the relatively great importance of dividends in the case of classified common stock is attributable to the nature of the market for classified common stocks. Relative lack of marketability, and lack of wide availability of important current information may cause dividend information, which is both widely available and broadly disseminated, to receive disproportionate emphasis as a measure of management performance, as well as emphasis as a tangible return to the stockholder.

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APPENDICES

APPENDIX A

CASH TENDER OFFERS STUDIED

Number*	Date of Announcement	Name of Company in which Stock Purchased	Offer Price	Market Price	Price Ratio
1	3-15-68	Grossett & Dunlap, Inc.	41.00	40.25	101.9
2	2-9-68	Raybestos-Manhattan, Inc.	80.00	67.50	118.5
3	3-12-68	Roxbury Carpet Co.	9.00	8.00	112.5
4	7-3-68	American Broadcasting	74.25	69.50	106.8
5	5-6-68	Clevite Corp.	80.00	70.00	114.3
6	5-7-68	DeVilbiss Co.	34.00	31.00	109.7
7	6-4-68	Duffy Mott	40.00	34.38	116.3
8	6-11-68	Huttig Sash & Door Co.	57.00	52.00	109.6
9	5-10-68	Jones & Laughlin Steel	85.00	62.00	137.1
10	7-11-68	Taylor Instrument Cos.	65.00	49.88	130.3
11	5-6-68	Western Union Telegraph	44.00	37.00	118.9
12	8-1-68	Armour & Co.	50.00	45.38	110.2
13.	9-6-68	Bastian Blessing Co.	35.00	30.50	114.8
14	7-19-68	Bowser, Inc.	20.00	17.63	113.4
15	10-10-68	Conn (C.G.) Ltd.	21.00	17.25	121.7
16	8-19-68	Electronic Specialty Co.	39.00	34.25	113.9
17	8-28-68	Pacific Vegetable Oil	17.00	14.25	119.3
18	7-8-68	Superior Coach Corp.	26.00	21.75	119.5
19	8-26-68	Tyler Pipe Industries	40.00	35.00	114.3
20	8-15-68	Waltham Watch Co.	16.00	14.00	114.3
21	1-10-69	Brewer (C.) & Co., Ltd.	50.00	46.50	107.5
22	10-17-68	Conn (C.G.) Ltd.	30.00	22.50	133.3
23	11-12-68	Harley-Davidson Motor	40.00	28.50	140.4
24	11-4-68	Magnetics Inc., Pa.	24.00	17.25	139.1
25	11-19-68	Miehle-Gross-Dexter Inc.	31.00	24.38	127.2
26	10-31-68	Pan American Sulphur Co.	40.00	32.25	124.0

27	11-15-68	Polmer Corp.	30.00	23.00	130.4
28	11-5-68	Ryan Aeronautical Co.	50.00	43.00	116.3
29	12-12-68	Sinclair Oil Co.	145.00	124.25	116.7
30	12-9-68	United States Borax & Ch.	34.00	31.88	106.7
31	12-9-68	Western Air Lines Inc.	45.00	37.00	121.6
32	3-18-69	Amerada Petroleum Corp.	125.00	115.13	108.6
33	1-31-69	Armour & Co.	70.00	59.00	118.6
34	1-24-69	Piper Aircraft Corp.	65.00	52.50	123.8
35	1-28-69	Simplex Wire & Cable Co.	25.50	23.25	109.7
36	2-24-69	Southdown, Inc.	52.00	43.50	119.5
37	2-5-69	UMC Industries Inc.	30.00	25.75	116.5
38	6-2-69	API Instruments Co.	20.00	16.63	120.3
39	4-25-69	Riley Stoker Corp.	35.00	31.00	112.9
40	4-14-69	Salada Foods Ltd.	17.50	14.38	121.7
41	5-9-69	Canadian Breweries Ltd.	12.95	11.75	110.2
71	6-17-68	General Finance Corp.	32.00	27.25	117.4
72	5-29-68	Glens Falls Insurance	52.50	50.25	104.5
73	6-3-68	Glens Falls Insurance	60.00	56.00	107.1
74	6-13-68	Hanover Insurance Co.	53.00	44.50	119.1
75	5-6-68	United Insurance Co. Am.	35.00	28.00	125.0
76	8-12-68	Calif.-Western States Life	30.00	25.25	118.8
78	9-30-68	Providence Wash. Ins. Co.	39.00	38.00	102.6
80	1-6-69	Mass. Indemnity and Life	66.00	45.00	146.7
81	11-15-68	Monumental Life Ins. Co.	47.00	39.75	118.2
82	2-10-69	Fidelity & Deposit, Md.	65.00	45.00	144.4
83	3-20-69	Great-West Life Assur.	130.00	110.00	118.2
84	6-3-69	Waddell & Reed Inc.	80.00	75.00	106.7

*Group A consists of all above numbers. Group B consists of numbers 1-41. Numbers 42-70, 77, and 79 are not used.

APPENDIX B

LIST OF TRANSACTIONS: PRIVATE PURCHASES OF LARGE BLOCKS OF STOCK

Observation No.	Date of Transaction	Name of Company in which Stock Purchased	Market Price	Price Ratio
1	11-22-65	U.S. Consumer Products	$ 9.88	114.9%
2	12-9-65	Elgin National Watch Co.	10.25	119.0
3	1-31-66	Sheller Mfg. Corp.	31.50	107.4
4	2-11-66	Flexible Tubing Corp.	9.50	110.5
5	3-7-66	Burnell & Co. Inc.	3.50	31.4
6	4-12-66	DWG Cigar Corp.	14.50	120.7
7	4-15-66	Paramount Pictures Corp.	71.38	116.3
8	5-15-66	Rimrock Tidelands Inc.	8.00	137.5
9	12-1-66	Diners Club	19.25	101.9
10	12-8-66	Dayco Corp.	23.75	106.9
11	5-1-67	Shattuck (Frank G.)	14.00	114.3
12	5-11-67	Gorton Corporation	23.50	106.4
13	5-22-67	Glidden Company	29.75	104.2
14	6-1-67	McIntyre Porcupine Mines	39.00	105.0
15	7-5-67	Pathe Industries Inc.	2.38	84.2
16	7-20-67	Cudahy Corporation	9.25	99.0
17	8-2-67	Columbia Pictures Corp.	46.88	98.1
18	9-1-67	Metro-Goldwyn Mayer Inc.	55.00	107.3
19	9-7-67	Fargo Oils Ltd.	4.13	116.4
20	10-10-67	Universal American Corp.	21.50	127.9
21	11-2-67	Cott Corporation	11.00	102.3
22	3-17-69	Aurora Products Corp.	16.75	74.6
23	12-22-69	Computer Technology Inc.	17.25	91.3
24	8-1-70	All-Tech Industries Inc.	1.63	111.7
25	8-10-70	Williams Brothers Co.	24.63	90.4
26	11-6-70	Fotomat Corp.	1.75	100.0
27	11-20-70	RCL Electronics Inc.	2.25	75.1
28	12-11-70	Ralston Purina Co.	24.38	100.0
29	3-18-71	Central Foundry Co.	11.25	133.3
30	6-1-71	Hexagon Laboratories Inc.	2.00	100.1
31	6-22-71	Nachman Corporation	8.50	117.7
32	6-25-71	Bally Mfg. Corp.	25.00	62.0

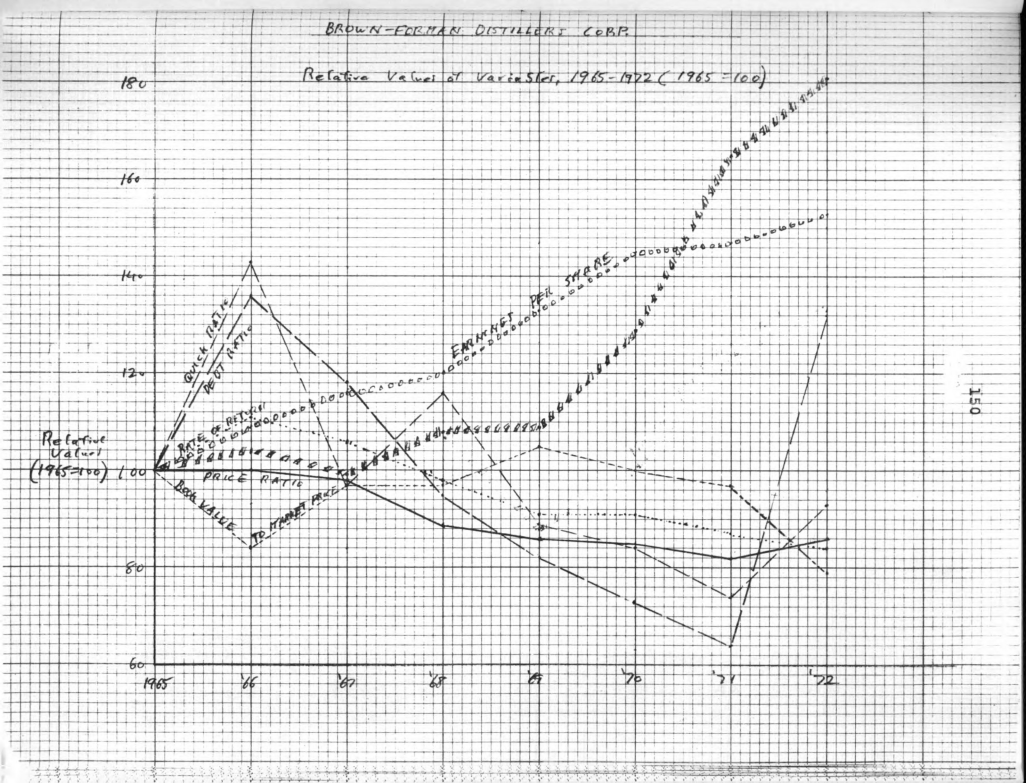
APPENDIX C

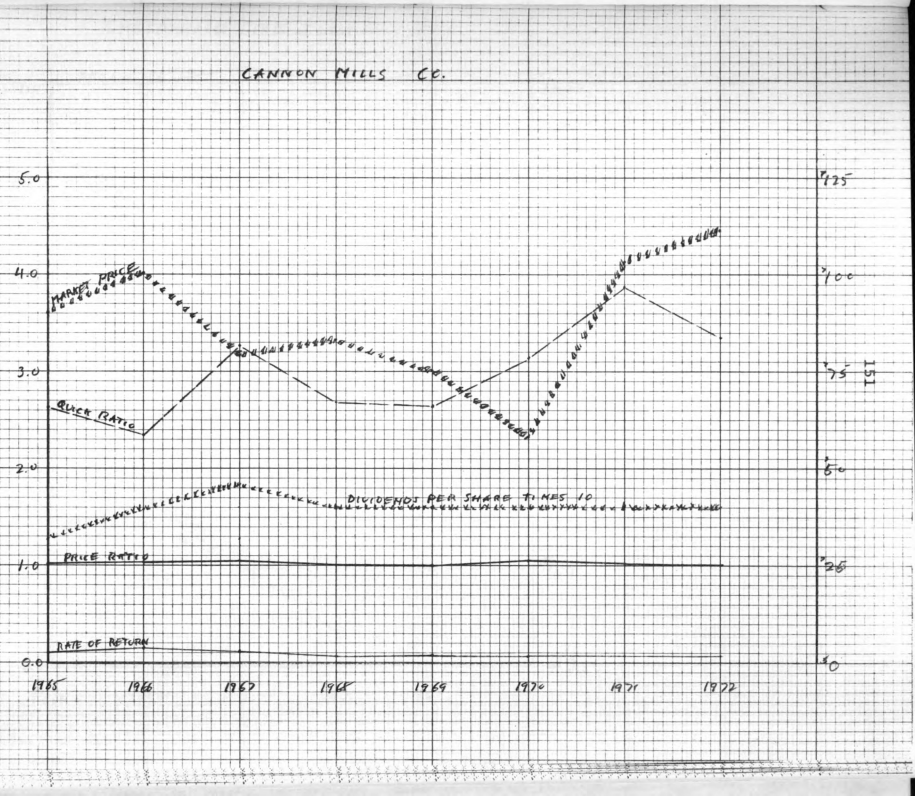
LIST OF COMPANIES: CLASSIFIED COMMON STOCK

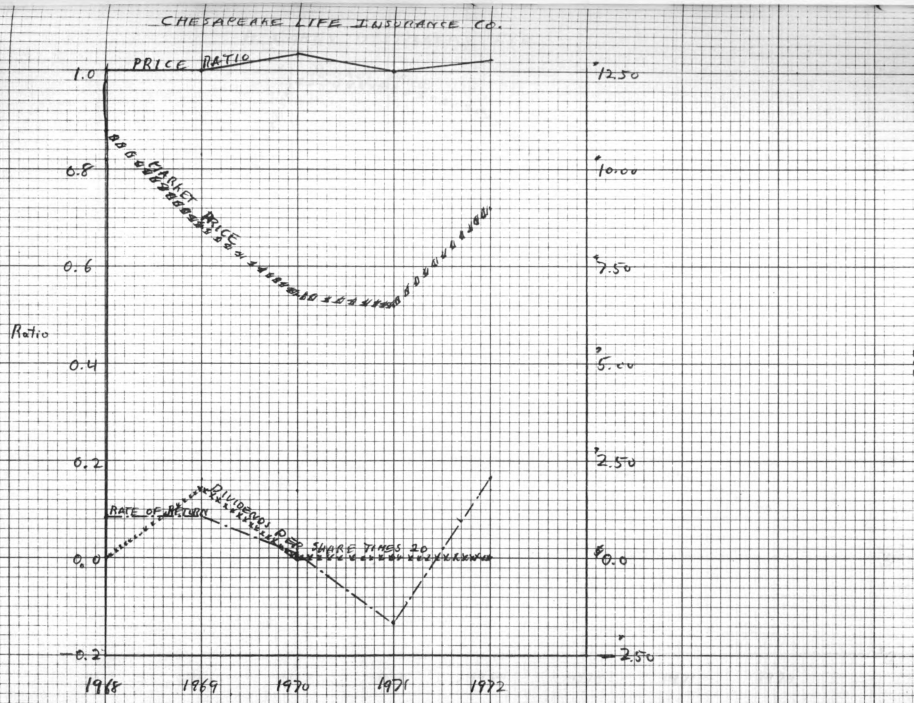
American Maize Products Co.*
Beneficial Standard Co.*
Bowser Inc.*
Brown-Forman Distillers Corp.
Cannon Mills Co.
Chatham Manufacturing Co.*
Chesapeake Life Insurance Co.
H. Corby Distillery Ltd.
Cutter Laboratories
Duncan Electric Co. Inc.
Harding Carpets Ltd.
Harvey Hubbell Inc.
Investors Diversified Services Inc.
Loblaw Companies Ltd.
Maclaren Power and Paper
Molson Industries Ltd.
Niagara Wire Weaving
A. C. Nielsen Co.
Northwest Engineering
Pembina Pipe Line Ltd.*
Peoples Credit Jewelers
Plymouth Rubber Co. Inc.
Presidential Realty Corp.
Resorts International
Rolland Paper Company, Limited
Supertest Petroleum Corp.
Traders Group Ltd.
Universal Telephone
Versatile Manufacturing Ltd.

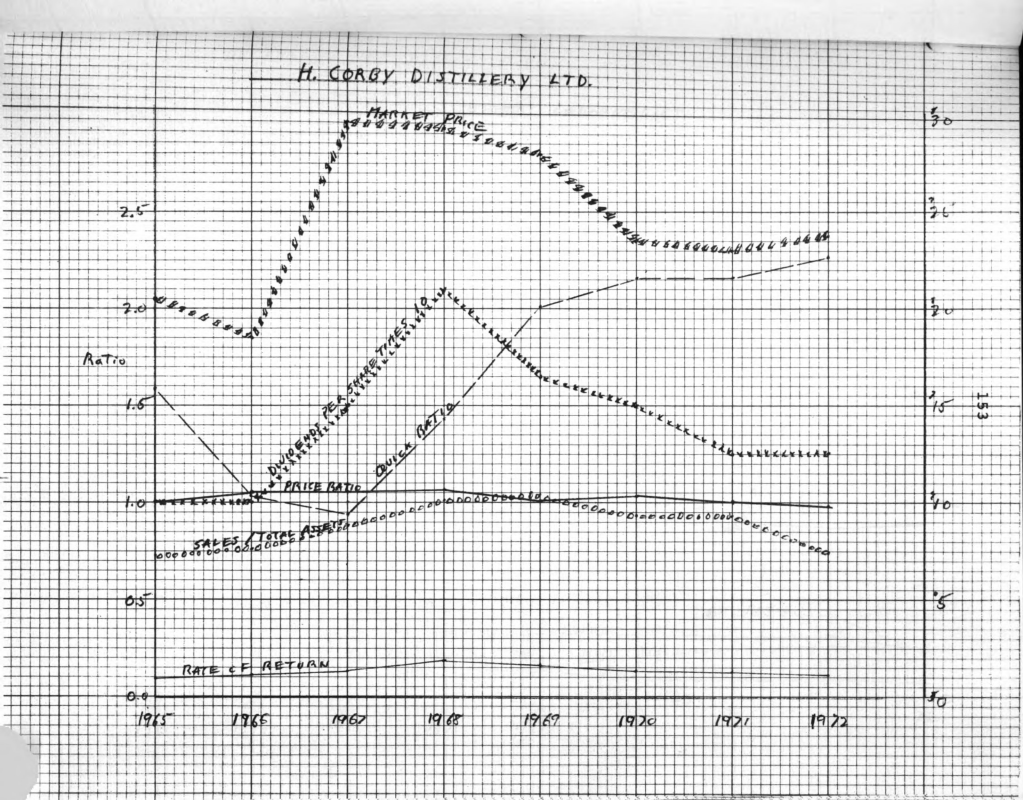
*Company not charted.

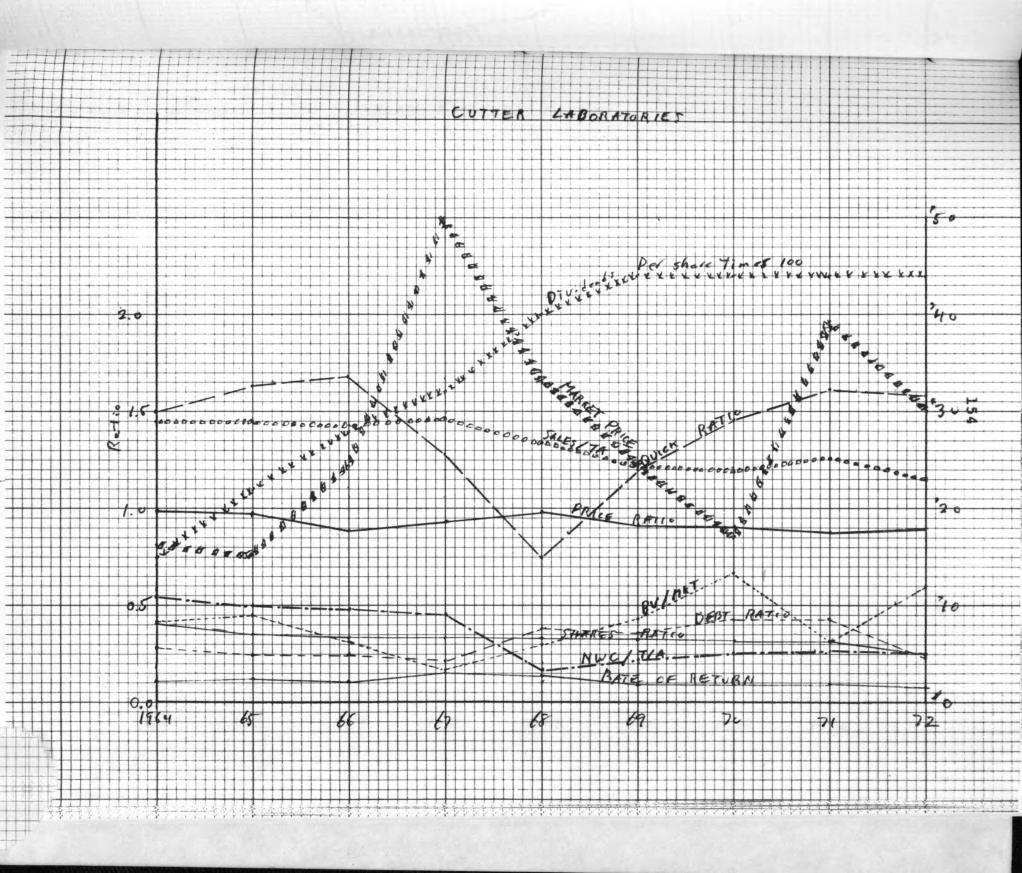
APPENDIX D


BROWN-FORMAN DISTILLERY CORP.
Relative Values at Various Stds, 1965-1972 (1965 = 100)
180
160
140
120
100
80
60
Relative Value (1965=100)
1965
'66
'67
'68
'69
'70
'71
'72
QUICK RATIO
CURRENT RATIO
EARNINGS PER SHARE
PRICE RATIO
BOOK VALUE
TO TANGIBLE ASSETS
150

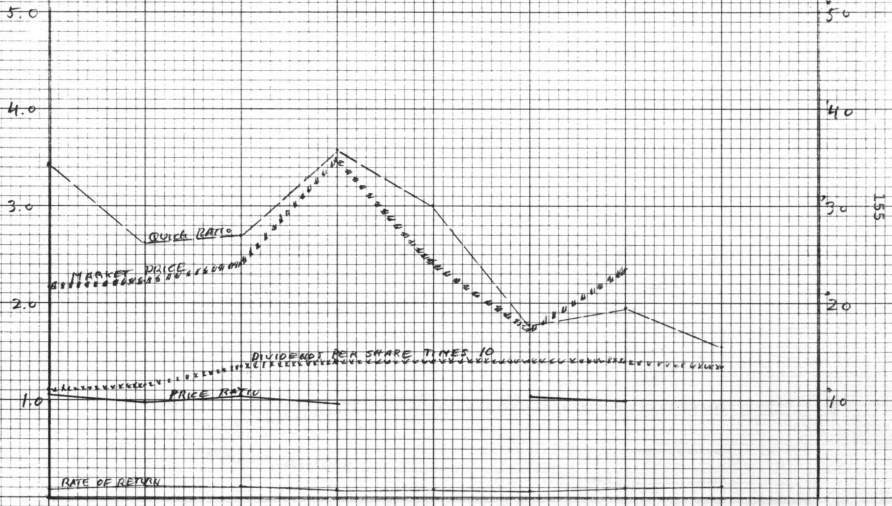

CANNON MILLS CO.
5.0
4.0
3.0
2.0
1.0
0.0
MARKET PRICE
QUICK RATIO
DIVIDEND PER SHARE TIMES 10
PRICE RATIO
RATE OF RETURN
1965
1966
1967
1968
1969
1970
1971
1972
$125
$100
$75
$50
$25
$0
151


CHESAPEAKE LIFE INSURANCE CO.
PRICE RATIO
MARKET PRICE
RATE OF RETURN
DIVIDEND PER SHARE TIMES 20
Ratio
1.0
0.8
0.6
0.4
0.2
0.0
-0.2
12.50
10.00
7.50
5.00
2.50
0.0
2.50
1968
1969
1970
1971
1972


H. CORBY DISTILLERY LTD.
MARKET PRICE
DIVIDEND PER SHARE (¢)
PRICE RATIO
QUICK RATIO
SALES / TOTAL ASSETS
RATE OF RETURN
Ratio
2.5
2.0
1.5
1.0
0.5
0.0
1965
1966
1967
1968
1969
1970
1971
1972
153


CUTTER LABORATORIES
Div. adj.
Per share Times 100
MARKET PRICE
SALES (TTM)
PRICE RATIO
BV/SHARE
DEBT RATIO
SHARES RATIO
NWC/TCA
RATE OF RETURN
Ratio
2.0
1.5
1.0
0.5
0.0
50
40
30
20
10
154
1964
65
66
67
68
69
70
71
72

DUNCAN ELECTRIC CO. INC.



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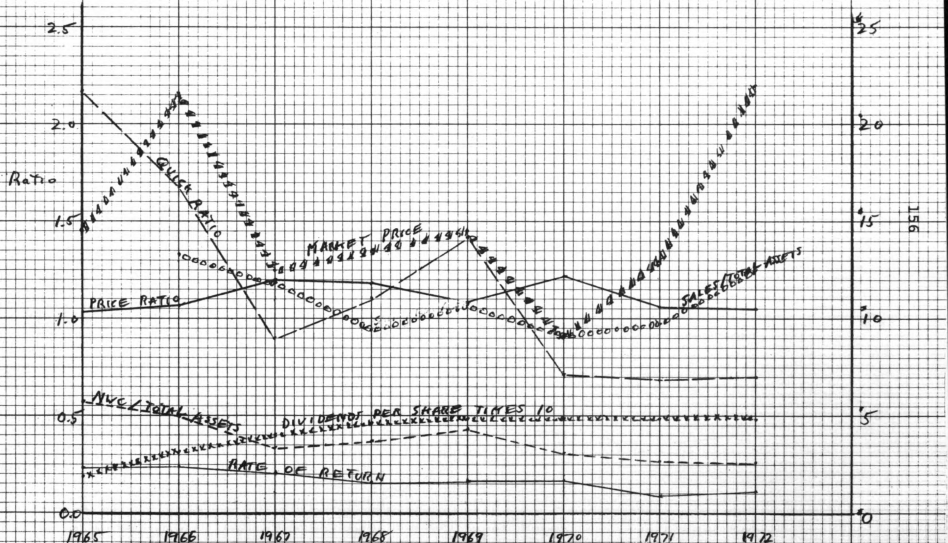
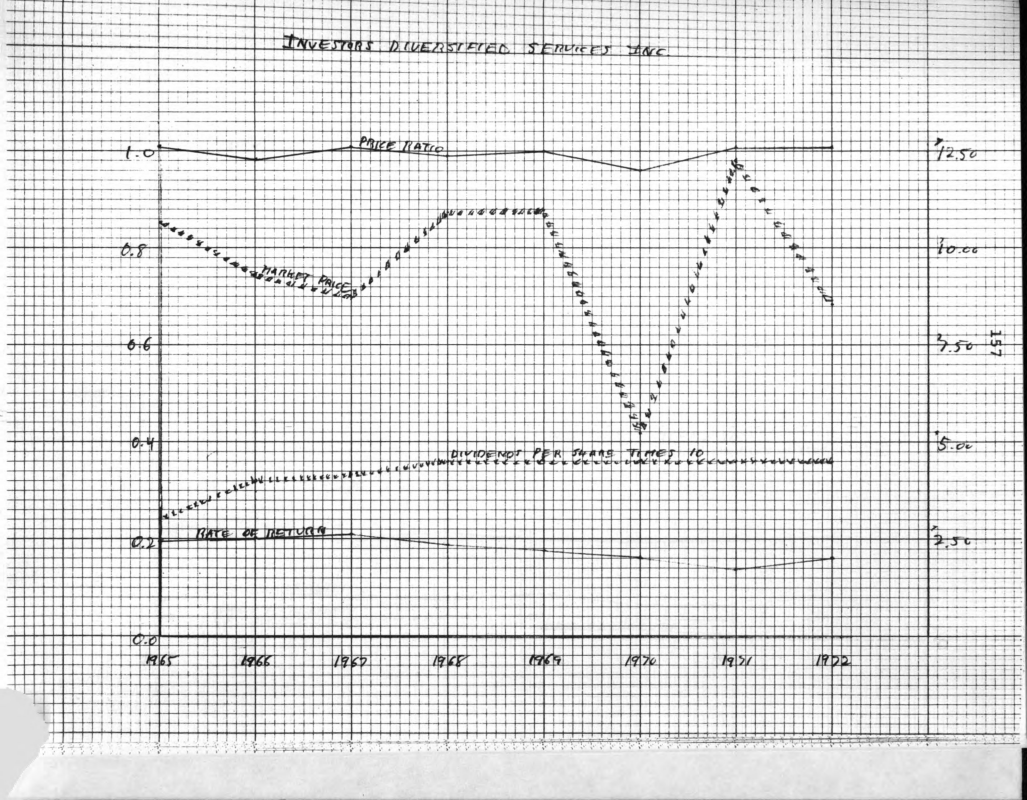
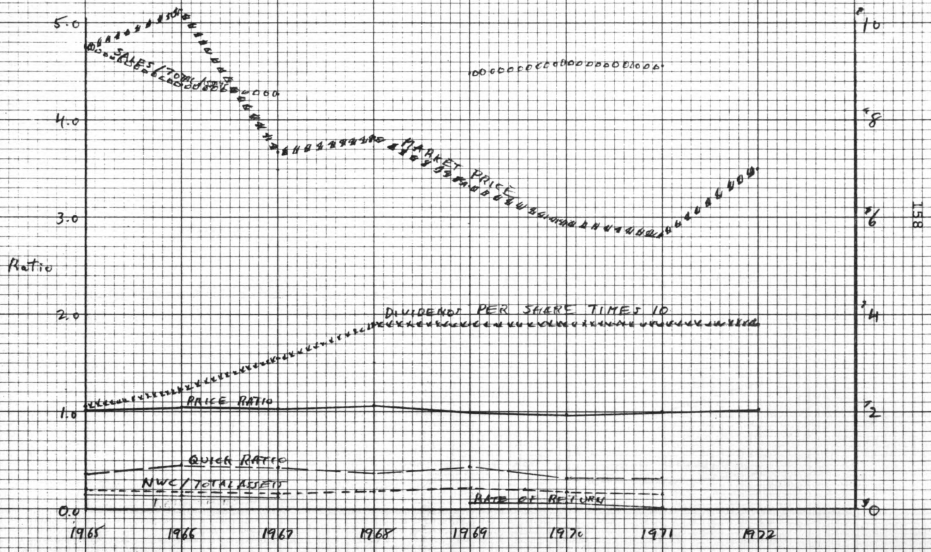



INVESTORS DIVERSIFIED SERVICES INC
PRICE RATIO
MARKET PRICE
DIVIDENDS PER SHARE TIMES 10
RATE OF RETURN
1.0
0.8
0.6
0.4
0.2
0.0
12.50
10.00
7.50
5.00
2.50
157
1965
1966
1967
1968
1969
1970
1971
1972

LOBLAW COMPANIES LTD.



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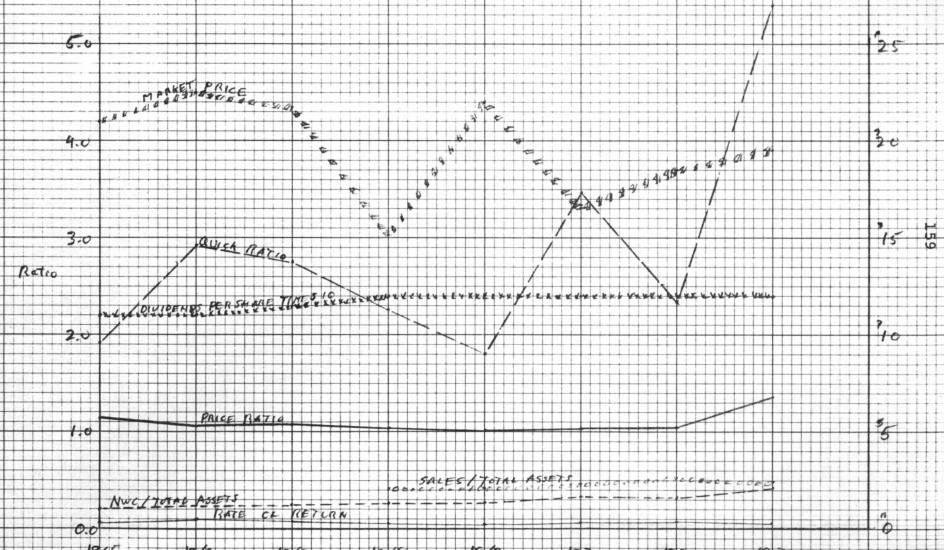
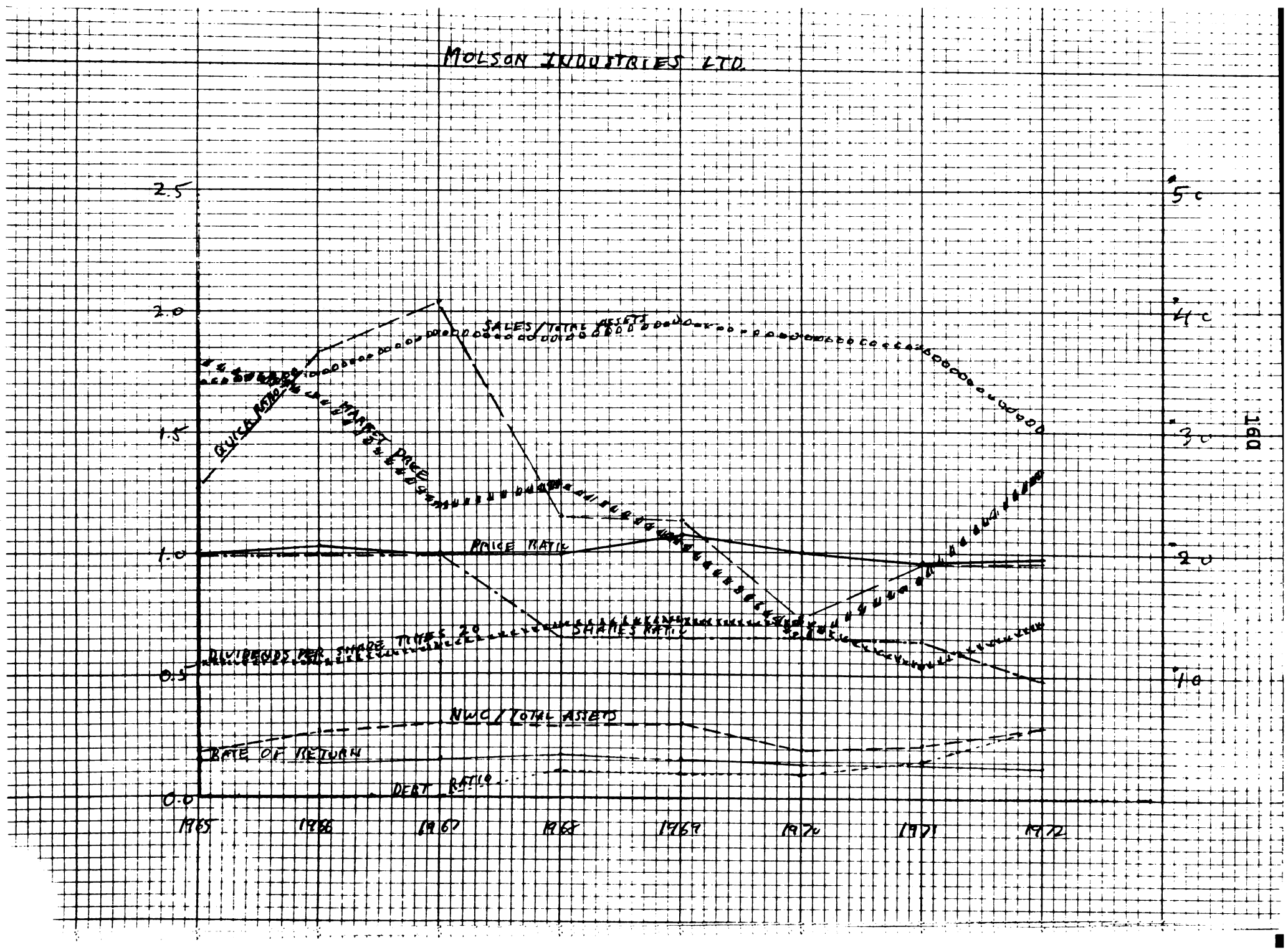
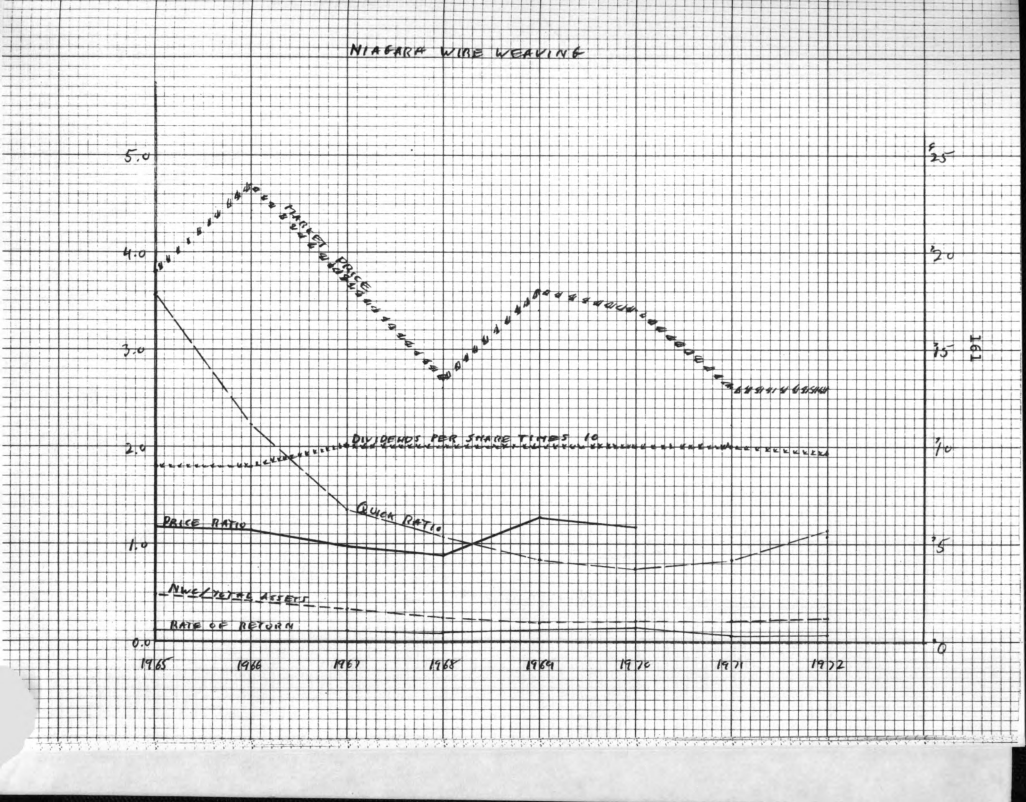
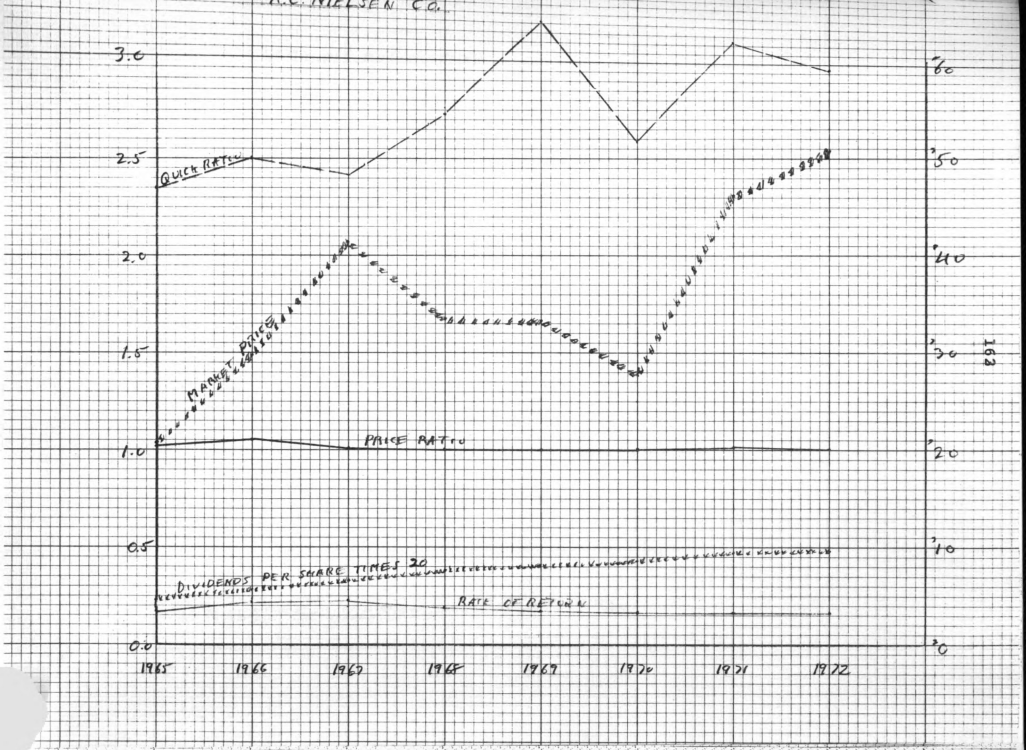
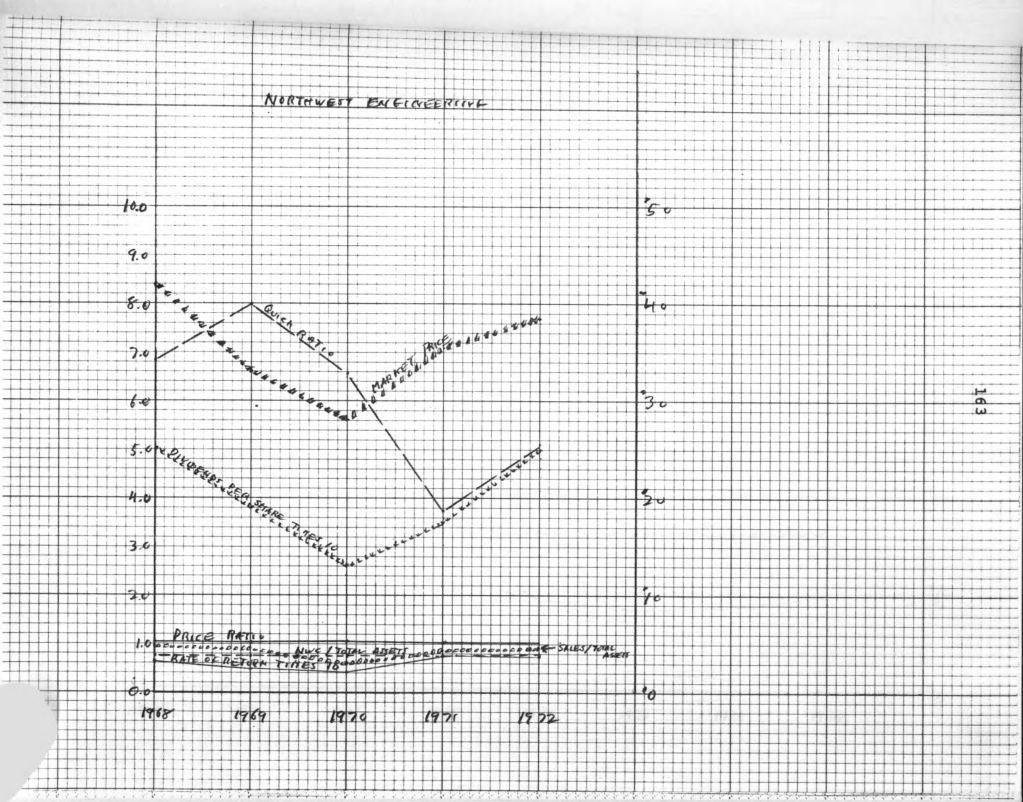
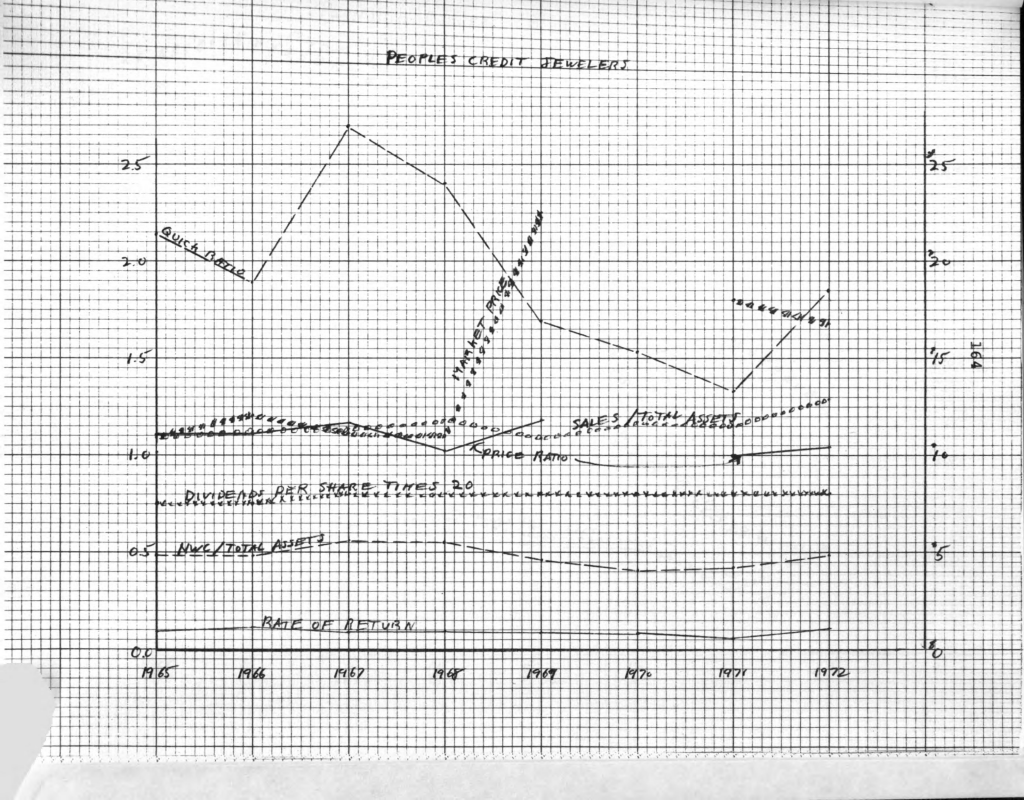


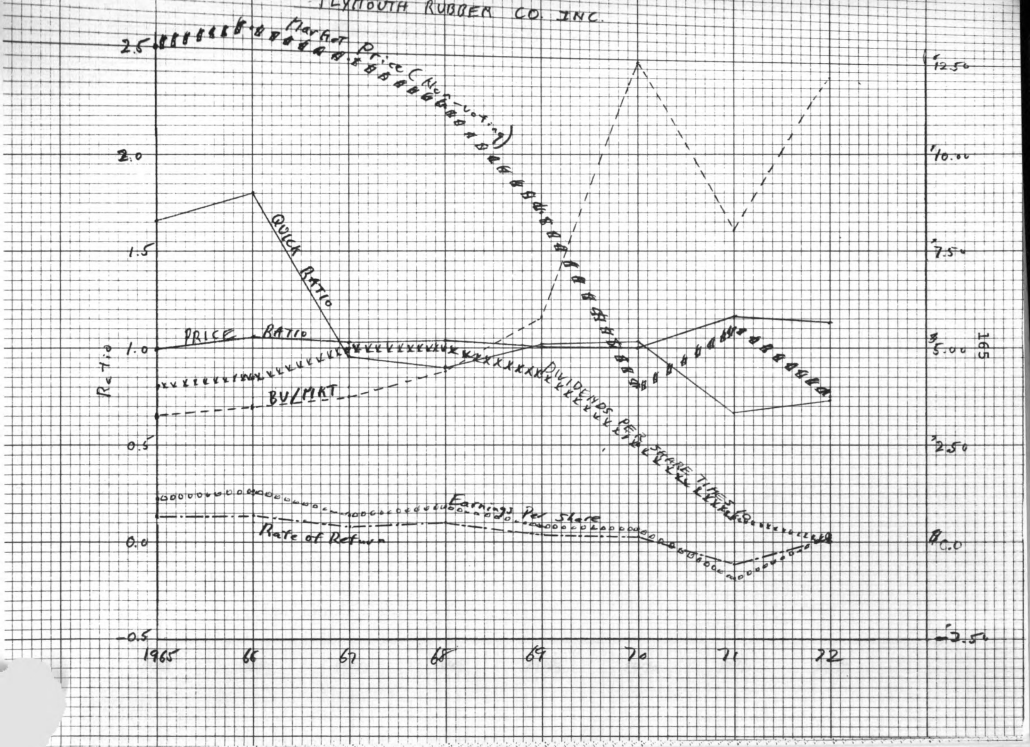

MOLSON INDUSTRIES LTD.
2.5
2.0
1.5
1.0
0.5
0.0
5¢
4¢
3¢
2¢
1¢
SALES / TOTAL ASSETS
QUICK RATIO
MARKET PRICE
PRICE RATIO
SHARES RATIO
DIVIDENDS PER SHARE TIMES 20
NWC / TOTAL ASSETS
RATE OF RETURN
DEBT RATIO
1965
1966
1967
1968
1969
1970
1971
1972

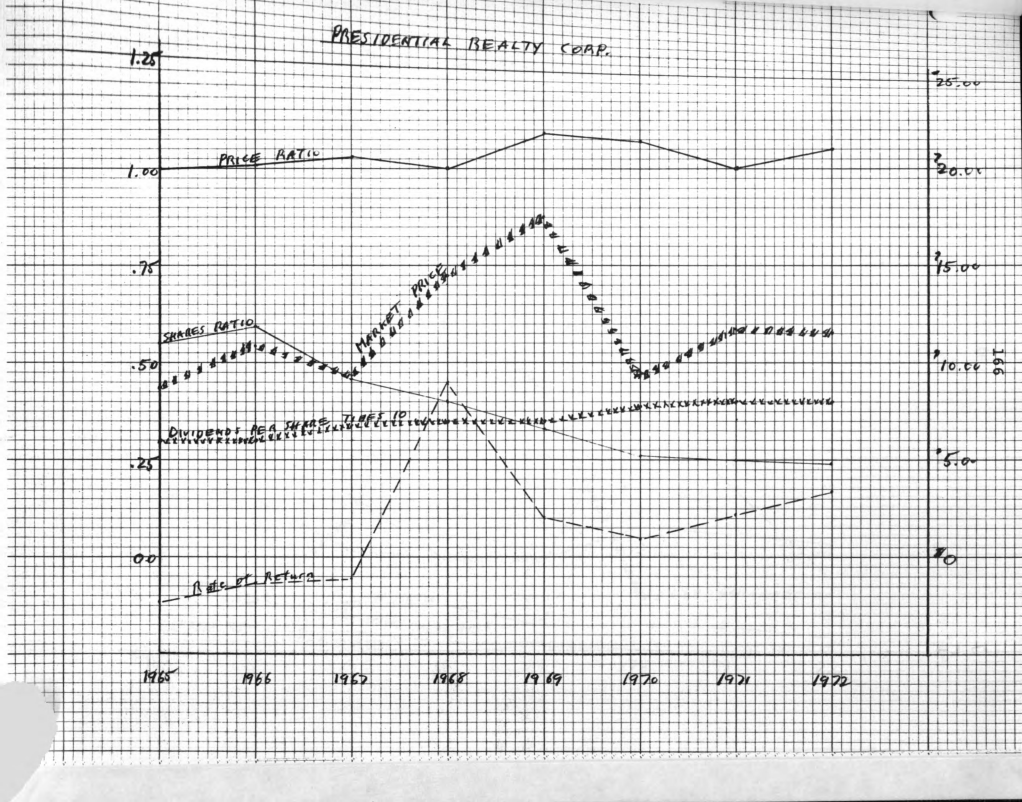

NIAGARA WIRE WEAVING
5.0
4.0
3.0
2.0
1.0
0.0
$25
20
15
10
5
0
1965
1966
1967
1968
1969
1970
1971
1972
MARKET PRICE
DIVIDENDS PER SHARE TIMES 10
QUICK RATIO
PRICE RATIO
NWC/NET FIXED ASSETS
RATE OF RETURN


A.C. NIELSEN CO.
3.0
2.5
2.0
1.5
1.0
0.5
0.0
QUICK RATIO
MARKET PRICE
PRICE RATIO
DIVIDENDS PER SHARE TIMES 20
RATE OF RETURN
'60
'50
'40
'30
'20
'10
'0
1965
1966
1967
1968
1969
1970
1971
1972

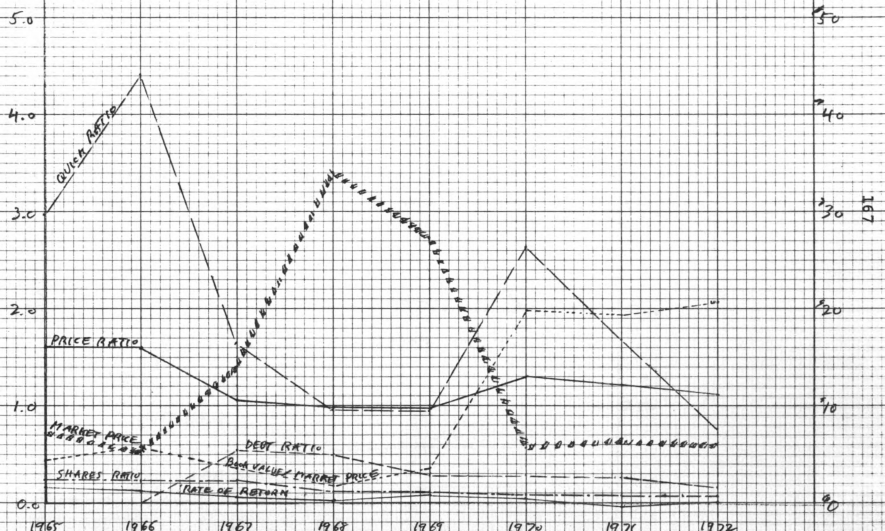

NORTHWEST EXCELSIOR
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
50
40
30
20
10
QUICK RATIO
MARKET PRICE
DIVIDENDS PER SHARE
PRICE RATIO
RATE OF RETURN
NWE TOTAL ASSET TURNOVER
SALES/TOTAL ASSETS
TIMES
1968
1969
1970
1971
1972


PEOPLES CREDIT JEWELERS
2.5
2.0
1.5
1.0
0.5
0.0
QUICK RATIO
MARKET PRICE
SALES / TOTAL ASSETS
PRICE RATIO
DIVIDENDS PER SHARE TIMES 20
NWC / TOTAL ASSETS
RATE OF RETURN
1965
1966
1967
1968
1969
1970
1971
1972
164

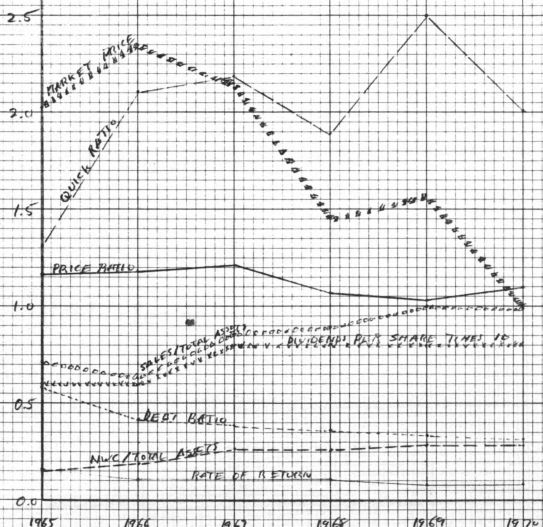

PLYMOUTH RUBBER CO. INC
Market Price (Nov. Year-end)
Quick Ratio
PRICE RATIO
BV/MKT
Dividends Per Share Times Ten
Earnings Per Share
Rate of Return
Ratio
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
12.50
10.00
7.50
5.00
2.50
0.0
-2.5
165
1965
66
67
68
69
70
71
72

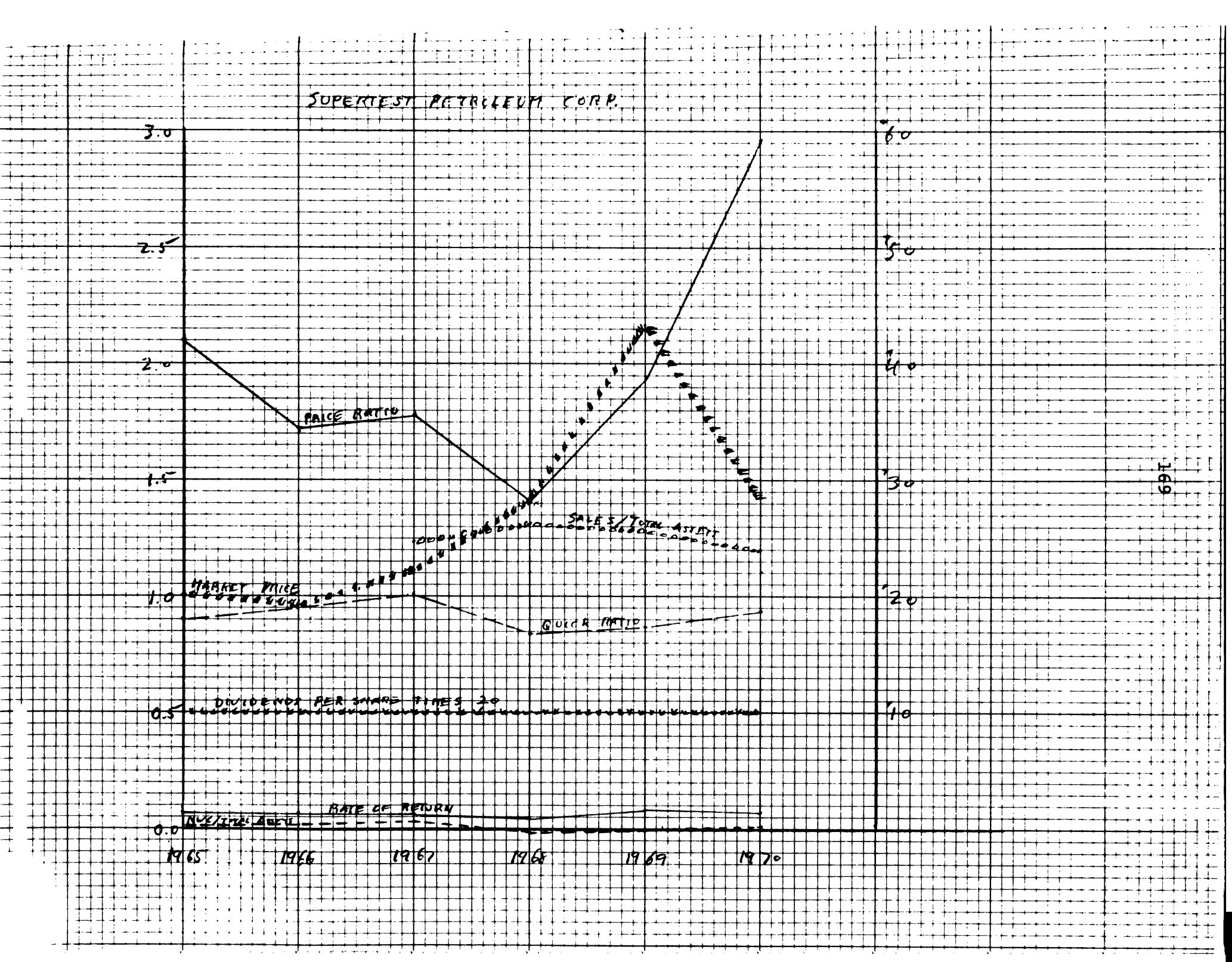

PRESIDENTIAL REALTY CORP.
1.25
1.00
.75
.50
.25
00
25.00
20.00
15.00
10.00
5.00
0
PRICE RATIO
SHARES RATIO
MARKET PRICE
DIVIDEND PER SHARE TIMES 10
RATE OF RETURN
1965
1966
1967
1968
1969
1970
1971
1972

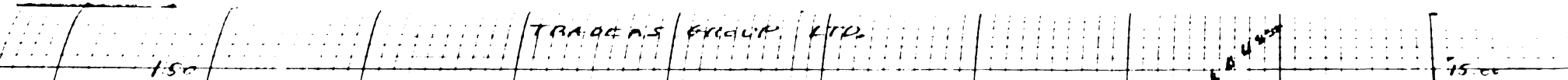
RESORTS INTERNATIONAL

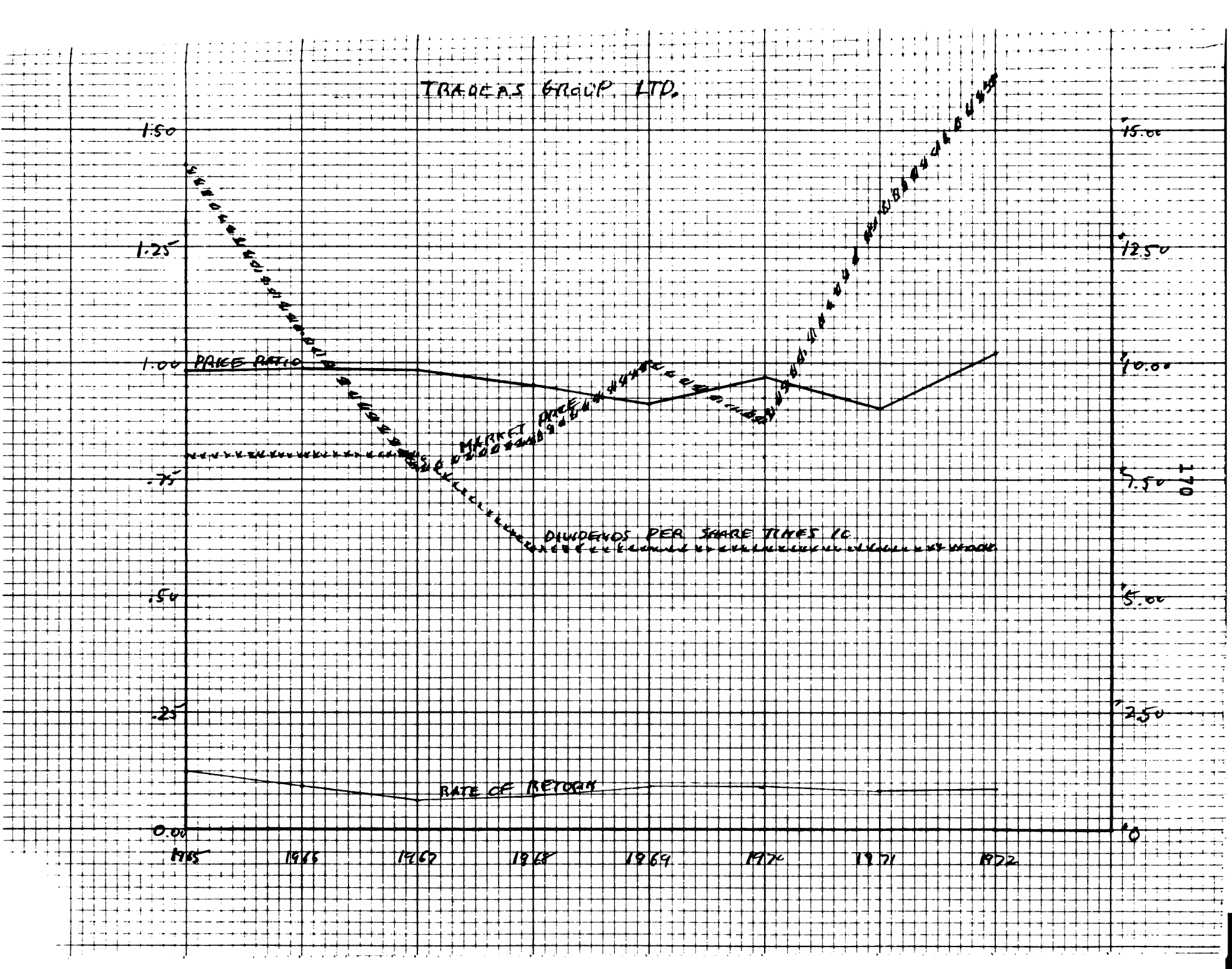


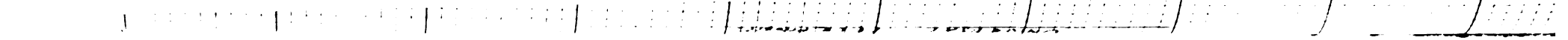
ROLLAND PAPER COMPANY, LIMITED



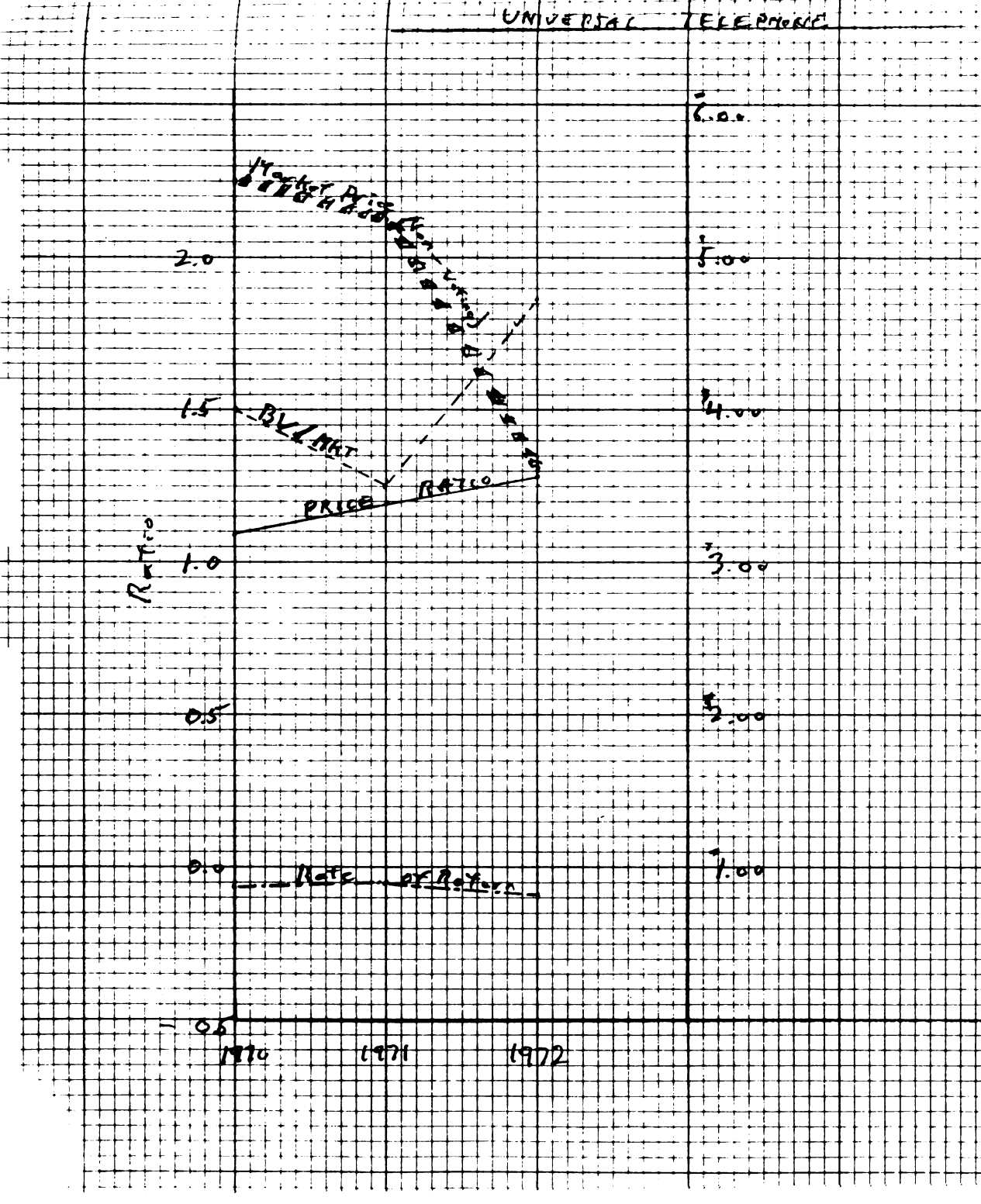

SUPERTEST PETROLEUM CORP.
3.0
2.5
2.0
1.5
1.0
0.5
0.0
60
50
40
30
20
10
PRICE RATIO
SALES / TOTAL ASSETS
MARKET PRICE
QUICK RATIO
DIVIDENDS PER SHARE TIMES 20
RATE OF RETURN
NET INCOME
1965
1966
1967
1968
1969
1970
1969


150
TRACTS
FRACT
KTD.
15


TRADCAS GROUP LTD.
1.50
1.25
1.00
.75
.50
.25
0.00
PRICE RATIO
MARKET PRICE
DIVIDENDS PER SHARE TIMES 10
RATE OF RETURN
15.00
12.50
10.00
7.50
5.00
2.50
0
1965
1966
1967
1968
1969
1970
1971
1972



UNIVERSAL TELEPHONE



HARVEY HUBBELL INC.