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UNDERLYING FACTORS IN DETERMINING AN EXCHANGE RATIO IN CORPORATE MERGERS

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UNDERLYING FACTORS IN DETERMINING

AN EXCHANGE RATIO IN

CORPORATE MERGERS

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PREFACE

Various evaluation techniques which management could consider in determining the value of a desirable corporation for merger have been treated to a large extent in the literature on the subject of business combinations. But there seemed to be little said about the techniques which would probably be mostly considered by management as a practical approach to solving the problem of price determination.

It was felt that a better understanding of the merger process could be obtained by a study of accomplished mergers, emphasizing the evaluation tools used by management in determining the ratio of exchange.

Indebtedness is acknowledged to Dr. James Jackson for his expert and knowledgeable guidance.

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CHAPTER I

INTRODUCTION

Since the middle of the 1880's, corporate mergers and acquisitions in this country have occurred in three pronounced "merger movements." Peaks have been recorded in the periods 1898 through 1902, 1926 through 1930 and 1950 up to the present time.[1] These three major industrial merger movements have had broad distinguishing characteristics. The first one can be described as an effort by corporations to gain control of a market through combination with competitive corporations, often accompanied by integration of the various stages of production from raw materials to finished goods.

The second merger movement was associated with the process of reaching industrial maturity, wherein economies in manufacturing, marketing, and distribution were achieved through the creation of business structures of a size found more suitable for the national market.

In the current movement, although some "empire-building" occurred, a large proportion of the mergers and acquisitions have had the objective of broadening product lines to diversify markets and sources of income, to offset product obsolescence and market deterioration, and for a substantial number of companies, to hedge against loss of income

[1] George D. McCarthy, Acquisitions and Mergers (New York, 1963), pp. 3, 10.

from termination of Government contracts.[2]

Need for Knowledge about Mergers

These "waves" of mergers are not characterized only by successful combinations. Inadequate analysis may in many instances have led to unsound combinations, and on the other hand, may have prevented what would otherwise have been favorable corporate marriages. The program for mergers and acquisitions consists of planning, approach and negotiations, procedural activities, and financing. Throughout this process it is important to be aware of evaluation procedures and all legal, tax and accounting implications. With careful consideration, management's ability to eliminate the undesirable acquisitions and select the ones which will contribute to a successful combination will be enhanced.

Merger - Acquisition Defined

There are several terms generally used in referring to business combinations. The most common of these is "merger" which in its broad sense indicates the combination of two or more business entities into a single economic enterprise.

In a merger, the corporation which absorbs the property and assets, and assumes the debts and liabilities, retains its identity while the absorbed corporation goes out of existence legally. In a consolidation, a new corporation is formed to acquire the property and assets, and assume the debts and liabilities of the constituent corporations, whose

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[2]Ibid., p. 12.

existence then is terminated. The term "merger" is generally used in a broad sense to include consolidations.

An acquisition takes place in transactions where the acquiring company purchases the capital stock from the owners of the company to be acquired and makes payment by issuance of common or preferred stock or notes, or makes payment in cash. After purchase, the acquired company is operated as a subsidiary. An acquisition will also take place where the acquiring company purchases the tangible assets, business, goodwill, patents, and the intangible assets. Frequently, the debts and liabilities of the selling company are assumed by the purchaser as a condition of sale. Sometimes all or selected liabilities are excluded from the transaction and liquidated out of the proceeds of the sale. The selling company may be liquidated, and the proceeds of sale distributed to its shareholders. Numerous variations occur in the terms of acquisition, depending upon requirements, risks, etc.

Problem Areas

A major step in the planning for any corporate acquisition is the pre-acquisition evaluation process. Although this may begin prior to management's first discussion with the seller, much of the information necessary to complete this investigation will have to be obtained from the seller during the course of negotiations. Reduced to its bare essentials, management's pre-acquisition evaluation will consist of finding the best possible answers to these three questions:

1. What is being offered for sale?
2. Why should it be acquired?
3. What is it worth?

A basic area of analysis in clarifying these general questions, and all the other aspects which should be looked into, is the evaluation of the selling company's resources, i.e. strengths and weaknesses. It is important to notice that the nonmonetary aspects play just as important a role in the valuation process as the monetary aspects. Business organizations consist of human beings, and anything the business accomplished is the result of the action of these people. Figures can assist people in conducting business, but the figures themselves are only marks on pieces of paper. The fact that a dynamic president will leave the company in the near future may be more important in evaluating the company than any financial statement.

Purpose and Scope

It was felt that a better understanding of the merger process could be obtained by a study of accomplished mergers, emphasizing the evaluation tools used by management in determining the ratio of exchange.

Before beginning to collect facts, it is helpful in business research to be aware of the relative pertinence of available information. Therefore by examining the theory developed around the basic financial evaluation techniques a theoretical justification for the concepts used will be obtained. The purpose and use of the data will then be considered before collection. Based on this existing theory two hypotheses are developed in order to direct order among the facts as follows:

1. When stocks of comparable companies are quoted in the securities markets, management of the two companies involved in an acquisition will consider the price-earnings ratio as the determinant factor in establishing

the price, as this ratio presumably reflects what investors currently will pay for such earning power.

2. The acquirer has entered into the acquisition under the assumption that two and two will equal four point five or five, therefore a premium will probably be paid the stockholders of the selling corporation, as the merging company is a part of this improvement and should share in the gain.

The hypotheses thus constitute a statement of the supposed relationship to be tested and proven, and are examined by studying financial statements and information available in Proxy Statements filed with the Securities and Exchange Commission.

The study is not concerned with the economic or social consequences of acquisitions as a method of company growth. It is limited to financial statements and does not include interviews or personal letters. However, within the limitations of the research and with requirements found necessary in order to preserve the homogeneity among the corporations, it is believed that something can be learned from such an examination of the evaluation tools which may have been of main consideration by management in reaching the final ratio of exchange.

CHAPTER II

REASONS FOR MERGERS AND ACQUISITIONS

Motives of the Acquiring Corporation

Mergers and acquisitions are among the many available courses of action which may be implemented to achieve corporate objectives, and should be a part of long-range planning. Mergers and acquisitions are considered for a variety of reasons, but it seems that the basic underlying objective is the possibility of gaining time in reaching the corporate objective of growth through diversification. In its generally accepted meaning, the word "diversification" connotes a broadening of the earnings base of a company by a broadening of the number and types of product lines and of business in which it engages. But often the decision to diversify provides the solution to problems of a more specific nature in addition to broadening the earnings and products base. Some of the more important of these would be to gain time in reaching growth objectives, reduce undesired effects from a cyclical business, and acquire desired personnel.

Diversification

In situations where a merger or acquisition is preferred, even if management has the ability to reach its goals through internal development, the acquisition may be viewed as a means of buying time. The authors of _Management Problems of Corporate Acquisitions_, Mr. Mace

and G. Montgomery, Jr., explain this phenomena of time very well by an example from their research.[1] When Litton Industries was organized in 1953 its growth program included a plan for entering the office machine business. It was established that it would have been possible to build a national marketing organization with their own processed machines in eight to ten years. The acquisition of a corporation already established was then considered. In 1957 Litton Industries completed an acquisition of Monroe, and thus Litton established a market position in the office equipment business four years earlier than internal development would have allowed.[2]

Diversification - Cyclical Business

In cyclical industries the process of acquisition may provide solutions to problems of the industry's inherent unstable nature. Hectic periods of order filling may be followed by periods of substantially diminished operations. Thus periods of great need for financing may be followed by periods of greatly reduced earnings. Corporations in industries with these characteristics have tended to diversify into business of a more stable nature in order to reduce financing problems in peak periods, and problems of reduced earnings capacity in slow periods.

Personnel

The acquiring firm may be seeking specific management or technical

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[1]Myles L. Mace and George G. Montgomery, Jr., Management Problems of Corporate Acquisitions (Boston, 1962).

[2]Ibid., p. 15.

skills. The last decade, with its increased pressure on research, has caused some corporations to acquire companies just as much for their technical personnel as for their products. Similarly, personnel in the areas of management, marketing or finance are obtained through the means of acquisition.

Excess Plant Capacity

Corporations with a modern, up-to-date plant as well as engineering know-how and skilled workers, may find that the market for their products is shrinking. Acquiring a product line which can be incorporated into the existing facilities is surely a better solution than slowly shutting the plant down.

Market Expansion

Companies engaging in research may from time to time come up with products which do not fit their existing marketing organization. Instead of building a completely new channel of distribution, which is a costly and time-consuming process, the manufacturer may acquire a corporation already engaged in distributing that type of product or related equipment. In this way the company obtains the necessary sales organization, distribution system and dealerships required to get the new product to the buyers. The time saved in reaching the customer by acquiring an existing sales organization through this means might limit the possibility of a competitor copying the idea, and possibly enable reaching the market even before a competing line is developed.

Tax Benefit

Frequently, in the early stages of the current merger movement, one

corporation, through merger, would acquire another with a substantial operating tax loss. By doing this the tax loss could be carried forward in order to reduce the Federal income tax payments of the acquiring corporation. However, government antipathy to this practice developed. The 1954 Internal Revenue Code introduced specific conditions for using net operating loss carry-overs from the acquired corporations, and these have restricted the number of such acquisitions.

Motives of the Acquired Corporation

In general there is reason to believe that one single factor alone would not account for the sale of an enterprise. But for the purpose of discussion the most important reasons have been divided into the following categories.

Management Succession

Small or medium-sized corporations are often run basically by their sole owners. When the time comes that they want to retire they may feel a concern about the capacity of the younger men in the organization to carry out the profitable operations in the future. This is a situation which does occur frequently because smaller corporations so often fail to provide for managerial succession.

Financial Considerations

Successful small businesses often find the requirement for cash to be a main obstacle for further growth. Paradoxically, the more successful the company is, the greater may be the need for additional financing, as rapid expansion usually is followed by the need for funds. Lacking sufficient stature to raise capital advantageously in the

investment market, they may find that their principal alternative is merger with a strong corporation.

Research Facilities

The technological advances of the last decade have put severe strains on many companies. Relatively small companies may find it extremely difficult to match their larger competitors in research and development. Also the uncertainty regarding future prospects in an area of intense competition and rapid technological changes in product design and manufacturing process may carry a risk which is higher than desirable. This factor is especially present where the product line is unbalanced.

Investment Diversification

Among the most frequent reasons for selling the business to a larger corporation is the desire for a more secure and stable financial position. The owners of successful smaller companies will probably have put all their funds into the business in building it up over the years. By selling the firm to a larger diversified corporation the owners obtain a means for avoiding the risk by having "all one's eggs in one basket."

Some of the principal factors for selling one company to another have been discussed in this chapter. The reasons are usually interrelated, but Myles L. Mace and George G. Montgomery, Jr. found in their field study on corporate acquisitions that the risk and uncertainty connected with the competitive future of the businesses were the factors

found in almost all the situations studied.[3] This fear was usually disguised with self-serving statements rather than expressed explicitly.

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[3]Ibid., p. 56.

CHAPTER III

LEGAL, TAX, AND ACCOUNTING ASPECTS

Legal

Acquisitions and mergers involve compliance with, and often interpretation of, Federal and State laws. The following aspects are particularly significant.

Antitrust Laws

Corporations considering an acquisition - particularly those of substantial size - are confronted with the possibility of violating one or more sections of the Sherman Act or the Clayton Act. Management should be fully aware of the implications of Section 7 of the Clayton Act:[1] it provides that mergers and acquisitions are unlawful,

> That no corporation engaged in commerce shall acquire, directly or indirectly, the whole or any part of the stock or other share capital of another corporation engaged also in commerce where the effect of such acquisition may be to substantially lessen competition between the corporation whose stock is so acquired and the corporation making the acquisition or to restrain such commerce in any section or community or tend to create a monopoly of any line of commerce . . .

It should be noted that to "substantially lessen competition" has in recent actions been interpreted to include potential competition as well as competition already existing. Thus, management should examine

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[1]The Clayton Act, October 15, 1914, quoted in Dascomb R. Forbush, Problems of Corporate Power (Chicago, 1960), p. 76.

the rate of growth in various areas such as size, share of market, the relative ease of entry of new competitors, and the effect upon consumer and supplier relations.

Right of Appraisal

Dissenting stockholders are in most states granted the statutory right to have their shares appraised and to receive cash payment from the surviving corporation in an acquisition or merger. If a substantial part of the shareholders should use this right, a serious drain on the working capital in the corporation would take place. Therefore, in order to avoid this, the agreement to merge will frequently provide that it may be terminated in the event holders of a substantial percentage give notice of dissent.

Stockholders' Approval

(1) Statutory merger. Formal approval by the holders of each class of stock entitled to vote is required of each of the corporations in the merger. Approval is usually defined as two-thirds of the outstanding shares.

(2) Acquisition through exchange of stock. When an acquisition takes place through a corporation's offer of its stock in exchange for the stock of another corporation, the stock offered must have voting rights, and acceptance of at least 80% of all classes of stock if the transaction is to be nontaxable. Stockholders who do not accept the exchange offer have no right to an appraisal, but retain their stock as minority stockholders in the acquired corporation, which is continued as a subsidiary of the acquiring corporation.

Tax Aspects

In the past some mergers came about solely because of a tax loss situation. But in recent years, utilization of tax-loss, carry-backs and carry-forwards has been greatly limited by the Treasury Department.[2] Tax considerations, however, will be encountered by both parties, and may dictate the method of effecting the transaction and even have an important bearing on the terms.

Taxable vs. Nontaxable Transactions

A taxable merger, or acquisition, is one where the seller has recognized a gain or loss for tax purpose in the year the transaction is completed. A nontaxable transaction, usually referred to as a "tax free" merger or acquisition, means that the stockholders of the selling company will not be required to recognize any gain or loss on the securities received from the surviving company.

When a transaction is taxable to the selling stockholders, the gain or loss is measured by the difference between the tax cost and the property and the fair market value given for it. Then a new tax base is created for the acquiring corporation. In a nontaxable transaction there is a postponement of tax until the seller disposes of the securities received in the transaction, at which time the gain or loss is computed as the difference between the proceeds from the sale of the securities and the cost basis of the property transferred in the acquisition.

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[2] W. C. McKenna, "Merger an Art and a Science," The Controller, XXIX (July, 1961), p. 323.

Types of Nontaxable Mergers and Acquisitions

Without getting into the technicalities of these rules, the International Revenue Code provides that a merger or acquisition may be "tax-free" if it is conducted as:[3]

(1) A statutory merger or consolidation.

(2) The exchange of voting capital stock of one corporation for that of another.

(3) The exchange of voting capital stock of one corporation for substantially all of the properties of another corporation.

Accounting Treatment

Of principal accounting interest is the differentiation between a "purchase" and a "pooling of interest."

Purchase

Accounting Research Bulletin No. 48 makes the distinction between these two types of combinations and describes a purchase as[4] "a business combination of two or more corporations in which an important part of the ownership interests in the acquired corporation or corporations is eliminated or in which other factors requisite to a pooling of interests are not present." In the case of purchase, the acquired assets are recorded on the books of the acquiring company at cost.

Pooling of Interests

A pooling of interests is defined as "a business combination of

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[3] G. D. McCarthy, "Premeditated Mergers," *Harvard Business Review*, XXXIX (January-February, 1961), p. 79.

[4] "Business Combinations," *Accounting Research Bulletin* No. 48 (New York, 1950), pp. 23, 26.

two or more corporations in which the holders of substantially all the ownership interests in the constituent corporations become the owners of a single corporation which owns the assets and business of the constituent corporations, either directly or through one or more subsidiaries."[5] In a pooling, the on-the-books carrying amounts of the assets, as well as the earned surplus or deficit of the constituent companies, are simply carried forward to the continuing company.

Circumstances to be considered in determining whether a purchase of pooling of interest is involved are considered below:

(1) Size. Bulletin No. 48[6] states that the relative size of the companies may not necessarily be determinative. But the company pooled should not receive less than five to ten percent of the voting interest in the combined enterprise. The combined corporation should also continue substantially all of the ownership interests in the form of shares. (Retirement of a substantial part of the capital stock issued to the owners shortly after the combination would indicate that the combination is a purchase.)

(2) Assets contributed. Substantially all of the assets of the pooled companies should be carried forward at book values.

(3) Management. Continuance of management in power is a major issue in a pooling, whereas in a purchased company there is no requirement to bring forward any of the management.

(4) Basis of accountability. In a pooling no new accountability, except to conform to generally accepted accounting principles, takes

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[5]Ibid., pp. 21-23.

[6]Ibid., p. 25.

place.

In determining the line of demarcation between a purchase and a pooling it seems apparent that size is becoming almost inconsequential and that continuity of equity interests and of management take the major roles when a pooling is made.

CHAPTER IV

FINANCIAL EVALUATION PROCEDURES

In mergers and acquisitions transactions on approximation of value must be agreed upon before serious discussions can commence. This chapter will deal with the various techniques generally used by industrial corporations in arriving at a mutually acceptable price. Based on the going concern concept, the two basic elements to an approach of determining the purchase price are suggested to be: (1) What will the projected earnings be for the corporation to be acquired? (2) By what capitalization rate should the earnings be divided in order to determine the price? When these basic elements have been determined, then other aspects as the debt-equity ratio and additional capital needed, are taken into consideration in modifying the exchange price.

Seller's Past Earnings

A sound basis for projecting earnings should be an analysis of past earnings. This will indicate how the business has been able to perform under various known economic conditions. A five-year period has generally been used in investment circles when an average of earnings has been used for evaluation of a corporation. An average of past earnings is not conclusive evidence of what the earnings capacity may be, but it can be regarded as an objective record supplementing the over-all judgment of performance. In this process of evaluating past

earnings must come the understanding of these figures in the light of the surrounding economic conditions. It is therefore of importance that the earnings not be studied in isolation. The seller's past earnings should be compared with similar companies in the industry and in this way a determination of how well the seller has done in the past in relationship to competitors may be gained.

The earnings trend of the selling company should be analyzed. This may give clues to the direction as a whole. The underlying operating figures could be broken down as the variation in these individual trends from the earnings trend, and provide subject areas for discussion with management. For example, how can management explain a reduction in maintenance or in advertising costs? What is the underlying reason for a significant reduction in the sales-to-receivables ratios? When the industry as a whole shows highly fluctuating earnings without an indicated trend, but the seller's company shows a definite growth trend by a stable increase in earnings over the years, what has been the cause? The buyer may feel justified in this case in anticipating higher future earnings for the seller's business than for the industry as a whole, but the underlying factors for the seller's superiority should be determined in an attempt to find out if the same reasons will continue in the future.

Future Earnings

The present economic position of the seller's company can only be indicated, or gauged, by its earnings' history, whereas only knowledge gained from a projection of future results will afford an opportunity to determine its potential value.

The selling firm may be asked to prepare sales and profit forecasts, but as in any sales situation, this presentation may be influenced by the seller's desire to make it look favorable and should be carefully studied and adjusted where this is found justifiable. It would, therefore, be recommended that the buyer develop his own forecasts. The elements which should be taken into consideration may be as follows:

1. The market for present and future product lines.
2. The competition for the present and future product lines.
3. Past and future product prices and costs.
4. Capital and personnel requirements.
5. A summary of past and future earnings, break-even data, and return on assets.

A future earnings estimate should include such factors as the buyer's ability to increase earnings from additional resources, his ability to operate the business more profitably and the estimated savings resulting from the two businesses operating as a single unit. These estimated benefits will usually not enter into the process of determining the price itself. But the result will create a bargaining "ceiling" for the buyer, as he probably will not pay more for the selling firm that what he considers the total contribution will be to the objectives of the surviving company. The additional benefits by combining the efforts of the two merging corporations should be the real justification for the merger and consequently, the top price should be the difference between the value of the combined companies, including all merger benefits, and the buyer's current worth.

Capitalization Rates for Earnings

The problem of assigning a capitalization rate is ordinarily not an easy task. There are three lines of thought which may be employed as a basis for valuation. They are: (1) court findings, where they are of practical significance to determine the valuation of earning power, (2) prices at which similar businesses are actually bought and sold, and (3) the price-earnings ratio, the ratio between their published earnings and the prices quoted on their shares.

Little uniformity is revealed from the numerous court decisions pertinent to the rate of capitalization of earnings in order to determine the value of the business of corporations. Therefore these will not be regarded as a helpful guide for management in their valuation procedures. The second line of thought represents the final judgment of practical businessmen, and is thus perhaps the most conclusive. But each sale involves individual circumstances, occurring at a particular time, and is frequently affected by bargaining conditions of a special nature. The third method by which the ratio between earnings and value may be approached is through the market price of industrial shares. Thus, if the stocks of several other companies are selling at an average price of 15 times their anticipated earnings of the current year, the acquirer may reasonably deem a price of 15 times the projected earnings of the corporation to be acquired.

Each case, however, involves individual circumstances and is affected by various bargaining conditions. It therefore seems very unlikely that any relationship would exist between the price paid for one company or another to be acquired.

Price-Earnings Ratio

The capitalization rate may be considered from the viewpoint of return on investment. This is a computation of price in terms of number of times annual earnings. It may be applied when prices of stocks of comparable companies are quoted on security exchanges and, presumably, reflects what investors currently will pay for such earning power. No fixed rules can be followed in establishing the price-earnings ratio as it is a matter of the buyer's individual judgment. The basic consideration should be the amount of risk involved in realizing the future earnings of the corporation to be acquired. The higher the risk in conducting the seller's businesses, the lower the price-earnings ratio should be.

Historical Price-Earnings Ratios

In his book *Financial Policy of Corporations*, Arthur S. Dewing has made a study of price-earnings ratios and concludes that the price-earnings ratio indicated should apply as follows:[1]

1. For an industrial business which has been in existence for a long time with established goodwill among customers, and thus has a minimum risk factor, the value would be determined by capitalizing the normal earning capacity on a 10% basis - the business is worth ten times its normal earnings.

2. Businesses established for some time with proven ability to survive, or manufacturing companies with large capital investments, have their earnings capitalized on a 12% to 15% basis - a value of 8-7 times

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[1]Arthur S. Dewing, *Financial Policy of Corporations* (New York, 1953), p. 381.

the normal earnings.

3. If the business has been established less than ten or twelve years, or grown up around a single personality with a product which makes the firm vulnerable to depressions, the capitalization rate would not be over 17% - a value approximately six times the net earnings.

4. Industrial corporations requiring average management skill with little help from trademarks, and a comparatively small capital investment, will receive a value approximately five times earnings - earnings capitalized on a 20% basis.

5. Small special-character companies which may be entered by anyone even with little capital, are worth about four times earning capacity - a 25% earnings basis.

6. Businesses which are highly specialized, dependent on the skill or personality of a single individual or a small group of persons, or dependent on favorable weather conditions for their success, or highly competitive with high mortality, are at most worth twice their earnings.

7. Businesses of personal service are characterized by very limited capital requirements. They usually occupy rented space with limited equipment. The service depends on the single person and his knowledge in a specific area, thus also the earnings.

Price-Earnings Ratio - Stock Market Value

Many experts regard the price-earnings ratio (the relationship of the market price of a firm's capital stock to its annual earnings per share) as the most important evidence of value of a going industrial concern. In a research report prepared by the Financial Executive Research Foundation it is argued that the best initial source for capitalization rate of earnings is usually the price-earnings ratio.

This ratio reflects both the risk inherent in the situation and the future profit possibilities which the industry affords.[2]

This argumentation seems to rest on three basic assumptions. (1) The earning power of the company - its ability to pay dividends - is the determinant factor for establishing the price of the stock. (2) The investors are in a position to determine the inherent risk and future profit possibilities.[3] (3) The price-earnings ratio is a reliable criterion of the value of the stock.

Under most circumstances any investment made for economic gain will be based on the axiom that the capital will produce an income, and thus the magnitude of this current or potential return determines the value of the capital which produces it.

In his book The Evaluation of Common Stocks Arnold Bernhard[4] points out that the price-earnings ratio of a cyclical stock normally goes down when the earnings rise. If the price-earnings ratio does not go down when the earnings are very high in relation to asset value, the stock may be dangerously overpriced. There is generally a limit to what can be earned in relation to the invested capital. If it should happen that a company, especially of a cyclical nature, should earn more than the general limit, competition will be invited to bring the profit margin down. (If there is not enough competition to accomplish this, governmental regulation will.) A reasonable valuation takes into account the

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[2] C. I. Drayton, Jr., C. Emerson, and J. D. Griswold, Mergers and Acquisitions: Planning and Action (New York, 1963), p. 82.

[3] This "assumption" will be discussed under Market Value as a factor in determining price, p. 23.

[4] Arnold Bernhard, The Evaluation of Common Stocks (New York, 1959).

fact that the very high earnings in relation to the invested capital would probably be temporary. "Each stock has its own individual price-earnings ratio, and the price-earnings ratio of the individual stock normally varies at different levels of earnings."[5]

One cannot assume that the price-earnings ratio is a reasonable capitalization rate for establishing a price on the business to be acquired. However, an awareness of the elements which establish the price-earnings ratio, both the history of such ratios in the industry and current ratios, will help both the buyer and seller in attaching a price.

Market Value

The market price of a stock may be considered to be identical, in an economic sense, to the price paid for any income-producing asset. The investor, when buying the stock, is actually purchasing a part of the future dividends and earnings of the company. Thus, the level of present earnings may often play a relatively unimportant role in establishing the price for a share of stock. An investor may be inclined to pay $60 for $2 of current income in one company, and at the same time he may be willing to pay only $20 for the current income of $2 in another company.

There are three primary aspects the investor should analyze in order to estimate the dividend declarations of a company. He must: (1) Estimate the sales. (2) Estimate the profit margins. (3) Estimate the percentages of the earnings that management will find desirable to

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[5]Ibid., p. 31.

distribute as dividends. The investor's predictions regarding these factors would not only be influenced by the economic condition, but also by the action of governments, the state of international affairs and the current climate.

Where the capital stocks of both companies are listed on one of the various stock exchanges and traded actively, and when their current prices are not unduly influenced by extraneous factors, the market values may be significant in determining relative values.

Dividends as a Factor

Dividends are the foundation of which common stock values are constructed. It is generally demonstrated that companies paying higher dividends than their competitors show a higher market value. The company's ability to pay dividends will be reflected in the acquisition.

Companies which have been on a favorable dividend basis for a certain period of time will often request a substantial premium in common stocks, or a preferred or convertible preferred stock as a part of the deal when the common stocks of the acquirer are not on the same favorable terms.

Net Asset Values

The net assets behind a share of common stock are measured by deducting from the total assets all the liabilities and stock issues senior to the common, then dividing by the number of shares. The assets may or may not include intangibles depending on the analyst's viewpoint. The resulting net worth per share is the stock's book value. But in most industrial corporations, book value tends to be understated in

periods of inflation and overstated during depressions. Also, inventory valuation methods, accelerated depreciation, and methods of treating reserves may inflate or deflate book value. Furthermore, whether book value is high or low does not determine the earning power which should be the major consideration in fixing a purchase price.

CHAPTER V

UNDERLYING FACTORS IN DETERMINING AN EXCHANGE RATIO

Various evaluation techniques which management could consider in determining the value of a desirable corporation for merger were discussed earlier in this paper. Where the valuation procedures were treated in the literature on this subject of business combinations, there seemed to be little said about the technique which would probably be mostly considered by management as a practical approach to solving the problem of price determination. In other words, the literature indicates the most desirable techniques from a theoretical point of view. Management, on the other hand, may have a different view on the relative importance of these evaluation techniques. Therefore, the purpose of this study is to examine methods of evaluation from the viewpoint of management.

The Formulation of Relevant Hypotheses

The considerations which could be taken into account by management in determining the price may extend from a fast and superficial evaluation of financial data and facilities, to the time-consuming task of evaluating every conceivable facet of the company's operations. It was therefore felt that the two following hypotheses had to be explored in order to direct the search for order among the facts in the area where an explanation or solution is sought:

1. When stocks of comparable companies are quoted in the securities markets, management of the two companies involved in an acquisition will consider the price-earnings ratio as the determinant factor in establishing the price, as this ratio presumably reflects what investors currently will pay for such earning power.
2. The acquiring company has entered into the acquisition under the assumption that two and two will equal four point five or five, therefore a premium will probably be paid the stockholders of the selling corporation. The merging company is a part of this improvement and should share in the gain.

It should be pointed out that the suggestions formulated in the hypotheses may not be the right solutions to the problem of determining the evaluation techniques of major concern to management. The determination of their value is the task of the inquiry.

Companies Selected for the Merger Analysis

It was believed that the characteristics looked for in the selling company would vary considerably between corporations in different areas of the economy. Management in financial institutions, in industrial corporations and in the retail trade would probably consider different aspects of the firm to be acquired in determining the ratio of exchange. For example, in a grocery store merchandise turnover may be the most important factor in determining potential value to a buyer, compared to a drilling company where available funds may be the desirable criteria to look for.

In order to preserve the likeness between the companies selected for this study, industrial corporations which had filed proxy statements[1] with the Securities and Exchange Commission were selected for study. A large number of acquisitions were examined, but the final study was only concerned with 20 mergers of industrial corporations which were selected according to the following characteristics:

Time Interval

Since merger activity may decline sharply in periods of depression,[2] it was desirable to avoid business combinations during the major portion of the recognized downswing in 1957, 1958 and the first part of 1959. The economic reasoning behind these mergers may vary from those conducted under more normal economic conditions. For that reason the first acquisition selected transpired in December 1959, the last in October 1963.

Ratio Computation

Only profitable corporations were selected, as the going concern value of companies running with a deficit would not be meaningful for the objectives of this study. The value of these firms had to be based on some other criteria loke book value, total assets per share, or on the utilization of the tax-loss situation as tax credits.

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[1]It should here be mentioned that the proxy statements were the source of information for all mergers, for the purpose of facilitating the collection of figures, tabulation, presentation and for uniformity and comparability in the presentation of statistical data collected for the various companies.

[2]Federal Trade Commission, "Report on Corporate Mergers and Acquisitions" (Washington, 1955), p. 18.

Type of Transaction

Further, in order to facilitate the comparisons of figures and increase the validity of these, only transactions in which common stocks were exchanged for common stocks were considered. This requirement was based on the belief that when none of the parties have to recognize any capital gain or loss at the time of exchange, and when the purchaser assumed the seller's tax basis for the net assets, uniformity will be increased.

Based on these requirements, the industrial corporations listed in Table I were selected for that research. In all subsequent references to the mergers the numbers assigned in the table will be used.

Statistical Procedure

Discussed earlier were the following "recommended" basic objective evaluation techniques:

1. Book value per share
2. Total assets per share
3. Dividends
4. Average earnings per share
5. Earnings per share, last year
6. Average market price
7. Market price, recent close
8. Price-earnings ratio

At this point it is further assumed that management would use, among all the aspects considered, one or several of these techniques as major tools in reaching the final price. Based on the discussion of these tools, however, it is believed that earnings would be management's

TABLE I

COMPANIES SELECTED FOR THE MERGER ANALYSIS

Merger Number	Surviving Company	Company Merged
1.	The Dow Chemical Company	Allied Laboratories, Inc.
2.	National Dairy Products Corp.	Dominion Dairies Limited
3.	Ampex Corporation	Telemeter Magnetics, Inc.
4.	The Coca-Cola Company	Minute Maid Corporation
5.	The Siegler Corporation	Jack & Heintz, Inc.
6.	Marquette Cement Manufacturing Co.	North American Cement Corp.
7.	The Champion Paper & Fiber Co.	Carpenter Paper Company
8.	The Goodyear Tire & Rubber Co.	Motor Wheel Corporation
9.	Abbott Laboratories	M & M Dietetics Laboratories, Inc.
10.	Ford Motor Company	Philco Corporation
11.	The Pittston Company	Brinks, Inc.
12.	Hunt Foods & Industries, Inc.	W. P. Fuller & Company
13.	Chemway Corporation	Weco Products Company
14.	Air Products & Chemicals, Inc.	Houndry Process Corporation
15.	Kimberly-Clark Corporation	Coosa River Newsprint Company
16.	Lear, Incorporated	The Siegler Corporation
17.	Sharon Steel Corporation	Macomber Corporation
18.	Dan River Mills, Inc.	Woodside Mills
19.	General Cigar Company, Inc.	Gradiaz, Annis & Company, Inc.
20.	The Singer Company	Friden, Inc.

prime consideration in determining the exchange ratio.

The object of the statistical analysis is to facilitate the discovery and expression of the relationship between the various evaluation techniques considered by management. In order to test the stated hypotheses, the following methods were used:

First, the various ratios computed between the merged companies, for the different evaluation techniques, were divided by the ratio of exchange. Both for the evaluation techniques contained in the study and for the exchange ratio, the surviving company was used as the base for the computations. The closer the ratio between the evaluation methods and the final ratio of exchange is to one, the greater is apparently the degree of consideration given to that particular evaluation method. A perfect relationship between the different evaluation techniques and the exchange ratio would be indicated by one. On the other hand it is assumed that the further the ratio R/E[3] is from one, the lesser has that particular evaluation technique in question influenced the final price.

Second, it was further assumed that management would utilize more than one of the evaluation methods. Each of these methods will therefore be assigned a number of rank based on its relationship to the exchange ratio. The ratio of consideration closest to one will get four points, the second three points, the third two points and the fourth one point.

Before an example on this statistical analysis is given, the dangers and fallacies in the use of the statistics related to this study will be pointed out. The relationship assumed to exist between the various

[3]R = The relationship between the two companys' values for the various evaluation techniques. E = Final exchange ratio.

evaluation techniques for the two merging corporations and the final exchange ratio (column two in Table II), may be examined for the degree of correlation even if it was known that the two ratios were independent of each other. The correlation may be accidental or perhaps consistent with more than one hypothesis. In column three and four in Table II it is assumed that a relationship does exist between the various evaluation techniques and the final exchange ratio. But one should be careful in drawing such a conclusion, as it may be an error to believe there is a significant connection between two types of events on the basis of the observation that they are frequently associated. Correlation can only be computed for finite number of items, and especially when the sample is as small as in this study, one should be very careful in indicating this degree of relationship to hold in a more inclusive group of companies. One should also have in mind the requirements stated for the selection of the sample used for this study, as these will make the sample unrepresentative for a general conclusion.

An example of the statistical procedure is presented in Table II. The figures are taken from merger No. 6 where the exchange ratio is .800, and the ratio numbers refer to the evaluation techniques previously stated: (1) book value, 1.221; (2) total assets per share, 1.191; (3) dividends, 0.764; (4) average earnings per share, 0.937; (5) earnings per share, last year, 0.880; (6) average market price, 0.684; (7) market price, recent close, 0.694; (8) price-earnings ratio, 0.786.

The various ratios under column one were obtained by dividing Marquette's values into the obtained values for North American. In the case of evaluation technique No. 1, book value per share, Marquette's book value per share of $20.95 was divided into North American's book

value per share of $25.59, resulting in a book value ratio of 1.221. As the distribution of Marquette's shares to North American shareholders was on the basis of eight-tenths of a Marquette common share for each share of North American common stock, the ratio of exchange of 0.800 under column two was obtained. The ratio of correlation under column three was the result of dividing the various ratios in column one by the values in column two. A correlation ratio of one would indicate a perfect relationship between the evaluation technique and the exchange ratio.

TABLE II

AN EXAMPLE OF COMPUTING THE RANK BETWEEN EVALUATION TECHNIQUES, USING MERGER NO. 6

Technique Number	Ratio 1	Ratio of Exchange 2	Ratio of Correlation 3	Rank 4	Premium or Discount in Percent 5
1	1.221	0.800	1.526		$\frac{0.800}{0.786} = 1.017 \times 100$
2	1.191	0.800	1.488		P = 1.7%
3	0.764	0.800	0.955	2	
4	0.937	0.800	0.171		
5	0.880	0.800	1.100	3	
6	0.684	0.800	0.855		
7	0.694	0.800	0.867	4	
8	0.786	0.800	0.982	1	

Column four indicates which of the methods of evaluation is closest to perfect correlation, which is second, third and fourth. In column five, an attempt is made to determine the percentage of premium paid to the selling corporation or the amount of discount granted to the acquiring

corporation. This was obtained by taking the evaluation technique ranking No. 1 under column four and dividing this into the exchange ratio. Then, by multiplying this by one hundred, the percentage of premium or discount is obtained. In this example it may be concluded that the acquiring corporation had to pay a premium of 1.7% on the computed value of the business in order to reach an agreement with the selling corporation.

Tabulation of the Major Evaluation Techniques Considered in the Acquisitions Studied

Table III is based on computations shown in Table II and refers to the mergers and the evaluation techniques by number.

TABLE III

TABULATION OF THE MAJOR EVALUATION TECHNIQUES CONSIDERED IN THE ACQUISITIONS STUDIED

Merger Number	Principal Factors	Merger Number	Principal Factors
1	4,1,4,2,	11	7,1,4,5
2	4,7,3,5	12	3,1,8,4
3	7,6,1,2	13	2,1,7,6
4	6,4,7,8	14	7,6,2,4
5	5,7,6,2	15	4,7,6,5
6	8,3,5,7	16	7,6,1,2
7	5,7,1,3	17	2,5,7,6
8	7,5,6,4	18	1,4,7,5
9	3,7,6,5	19	7,3,4,6
10	7,5,4,6	20	6,4,7,5

In order to facilitate the interpretation of Table III, a system of ranking by points developed. This is summarized in Table IV where it can be seen that book value per share ranked first one time, second four times, third three times and fourth at no time. Multiplying the number

of times book value was ranked first by four, the number of times it was ranked second by three, third ranking by two and fourth ranking by one, a total number of 22 points is obtained. By following the same procedure for the eight evaluation techniques considered, total points are obtained on these techniques varying from a high of 53 to a low of 7 points.

TABLE IV

SUMMARY OF FINDINGS RELATED TO THE PRINCIPAL FACTORS DETERMINING THE RATIO OF EXCHANGE IN THE SELECTED GROUP OF CORPORATIONS

Evaluation Techniques	Rank: Points:	First 4	Second 3	Third 2	Fourth 1	Total Points
1.	Book value per share	1	4	3	0	22
2.	Total assets per share	2	0	1	4	14
3.	Dividends	2	2	1	1	17
4.	Average earnings per share	3	3	3	2	29
5.	Earnings per share last year	2	3	2	6	27
6.	Average market price	2	4	3	4	30
7.	Market price, recent close	7	4	6	1	53
8.	Price-earnings ratio	1	0	1	1	7

Conclusions Related to the Various Evaluation Techniques Considered

For the purpose of discussing Table IV several of the methods of evaluation considered could be combined under one heading. Factors one and two, book value per share and total assets per share, could very

well be combined under the common title of "balance sheet considerations," indicating that when one or both of these were the prime factors of consideration, management has been most concerned with the assets of the selling corporation in setting the price. When factors four or five, average earnings per share and earnings per share last year, are found to be the major important ratios of consideration, it is suggested that a concentrated weight on earnings is reflected in the rate of exchange.

Factors six and seven, average market price and market price recent close, are different approaches to evaluating the emphasis placed on the common stock price, and it may be concluded that a company that placed any of these factors first assumes that the market price is a good indication of the real value placed on each common share outstanding.

By combining the evaluation techniques in the following groups: balance sheet, dividends, earnings, common stock prices and price-earnings ratio, and by summarizing the total points under these major groupings Table V was developed. The grouping "Common Stock Price" received about 48% more points than "Earnings," the second ranked grouping of evaluation techniques, and 130% more points than the "Balance Sheet" grouping, ranking number three.

From Table III it can be seen that average or recent common stock prices, based on the gathered statistics, were one of the top four evaluation techniques strongly considered in eighteen of the twenty mergers analyzed. The Common Stock Price was further considered to be of major influence on the exchange ratio in nine of the mergers, eight times considered second, and nine out of the twenty acquisitions

considered the market price as the third factor.

TABLE V

FINDINGS SUMMARIZED IN MAJOR AREAS OF CONSIDERATION

Area	Total Points	Rank
Balance Sheet	36	3
Dividends	17	4
Earnings	56	2
Common Stock Price	83	1
Price-Earnings Ratio	7	5

Earnings was the second group of evaluation techniques considered by management in determining the ratio of exchange. Out of the twenty mergers, earnings were regarded five times the principal factor in reaching the exchange ratio and six times the second factor of influence. Over-all, earnings were among the top four factors of consideration in seventeen of the mergers under study. Book value per share and total assets per share included under Balance Sheet items in Table V were the evaluation techniques of prime consideration in determining the exchange ratio in three of the twenty mergers studied, but were among the four first techniques considered in eleven mergers. Balance sheet items, in the sample, were on the average, considered as factor number three in influencing the final price. Dividends occurred only twice in this group of companies as the major evaluation method, and appeared only five times among the factors considered in the price determination. The Price-Earnings Ratio ranked number five and last among the various methods of evaluation. In only four of the twenty mergers was the

Price-Earnings Ratio considered by management as an important factor in influencing the transaction between the two companies.

Tabulations Related to Premiums or Discounts Granted

In Table II the premium or discount granted was computed by dividing the ratio for the evaluation technique, ranked number one (in column one), into the ratio of exchange (column two) and then multiplying this ratio by one hundred. These computations are summarized in Table VI. The principal evaluation technique used by the companies in the merger is also indicated by its number.

TABLE VI

TABULATIONS RELATED TO THE DETERMINATION OF PREMIUMS

Merger Number	Principal Factor	Premium (P) or Discounts (D) in Percent	Merger Number	Principal Factor	Premium (P) or Discount (D) in Percent
1	4	D 7.2	11	7	P 5.2
2	4	D 3.9	12	3	P 8.1
3	7	P 3.7	13	2	P 9.0
4	6	P 8.3	14	7	Even
5	5	P 3.3	15	4	P 2.6
6	8	P 1.7	16	7	P 2.2
7	5	P 1.2	17	2	P25.6
8	7	P 4.3	18	1	P 4.7
9	3	D 4.5	19	7	P 3.9
10	7	P 9.0	20	6	P 3.6

Conclusions Related to Premiums or Discounts Granted

It can be seen from Table VI that sixteen of the twenty mergers analyzed granted a premium relative to the exchange ratio to the stockholders of the corporation being acquired. The percent of premiums paid ranged from 1.2% to 26.6% and had an arithmetic mean of 6.02%. As noticed from Table VI, all the premiums were less 10% except for one extreme of 25.6%.

Only three of the mergers in the group studied appeared to have been negotiated at a discount for the stockholders of the selling corporation. However, the financial data for these three indicated a justifiable reason for the discount.

In merger number one between The Dow Chemical Company and Allied Laboratories, Inc., which was consummated at a 7.2% discount, it could be seen from Allied's Summary of Earnings that net profit had a continuous downward trend.

In merger number two between National Dairy Products Corporation and Dominion Dairies Limited it was stated in the listing application to the New York Stock Exchange that:

> The chief factors considered in arriving at such terms were the earning power and the present financial status of each corporation, and the past and present market prices and dividend records of their capital stock.

It can be seen from Table III on page 36 that this coincides fully with what was determined, according to the correlation analysis used, to be the principal evaluation techniques used by management. One of the evaluation techniques not considered by these computations was financial status, and in the financial statements found in the proxy statements it was noticed that Dominion Dairies Limited had a current

ratio of only one. This shortage of working capital in Dominion may probably have been the reason for the discount of 3.9%.

In merger number nine between Abbott Laboratories and M & R Dietetic Laboratories, Inc. the second evaluation factor was stock prices. The reason for the discount may be explained by the fact that M & R's stock had fallen from 45½ in the 1st quarter of 1962 to 29½ at the end of the 4th quarter of 1963.

Merger number fourteen between Air Products and Chemicals, Inc. and Houndry Process Corporation showed perfect correlation between the exchange ratio and the ratio for average common stock market value, which thus may have been the evaluation technique of principal importance when the price was determined.

Summary of Findings

Based on the information developed in chapter III, where the various objective financial evaluation tools were discussed, it was possible to develop hypotheses as suggested solutions to what determines the ratio of exchange in corporate mergers. It was specified that none of the suggestions formulated in the hypotheses would necessarily lead to the determining factors of price determination.

Hypothesis number one, based on available evidence, suggested that the price-earnings ratio would be the foremost factor of consideration in determining the exchange ratio; however, when order among the relevant facts was obtained, the hypothesis had to be rejected as it was found in this group of companies that Common Stock Prices were the evaluation technique of major importance. Even in cases where the relationship existing between the corporations' common stock prices is not the

principal factor, it appears to have some influence. The other factors of importance in determining the exchange ratio were found to be, in their order of importance: earnings, balance sheet items, dividends and the price-earnings ratio.

Corporations enter the merger situation under the assumption that special benefits will develop as a result of the combined efforts. Hypothesis number two suggested that in order for an agreement to take place, the acquired company should receive some premium, being a contributing part to the assumed future benefits.

In 80% of the mergers analyzed, based on the most important evaluation technique, the surviving corporation paid a premium to the stockholders of the acquired corporation. The average premium paid to the selling stockholders was about 6%. In the very few instances when the acquisition was completed at a discount, there was an obvious reason for not paying more. The percent of premium seems then to depend on the optimism of the merging firms.

It should be remembered that this analysis has only been concerned with quantitative data obtained from financial statements, and that the qualitative considerations may in many cases probably be as important as the quantitative factors. But it is believed that studies in this direction may reveal useful information for a fuller understanding of the factors which go into the complexities of a merger situation.

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Findings of Study: It was found in this group of companies under study that "Common Stock Prices" was the evaluation technique of major importance. Even in cases where the relationship existing between the corporations' common stock prices is not the principal factor, it appears to have some influence. The other factors of importance in determining the exchange ratio were found to be, in their order of importance: earnings, balance sheet items, dividends and the price-earnings ratio.

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