MARKET POWER, PROFITABILITY AND FINANCIAL LEVERAGE

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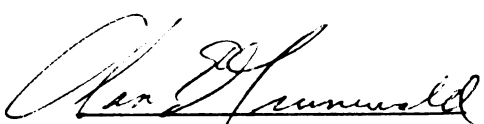

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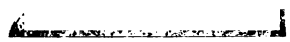

ABSTRACT

MARKET POWER, PROFITABILITY AND
FINANCIAL LEVERAGE

By

Timothy Gerard Sullivan

A number of studies demonstrated a positive relationship between market power, as measured by market concentration and entry barriers, and firm profitability, as measured by the ratio of net income to the book value of stockholders' equity. Economic theory demonstrates that these higher profits imply higher prices and restricted output and consequently inefficient resource allocation.

Financial leverage, however, could be a possible alternative explanation for these profits. Market power may increase the ability of firms to support low cost debt capital and therefore the higher observed profitability may be as much the result of greater financial leverage as monopoly pricing, restricted output and its related misallocation of resources. This study then attempted to find empirical evidence to support the hypothesis that powerful firms use greater financial leverage than other less powerful firms.

This study examined 90 firms during the period 1956

to 1963 and concluded that powerful firms, as measured by both market concentration and entry barriers, utilized less not more financial leverage, as measured by the ratio of long term debt to total invested capital, than other less powerful firms. Therefore this study supported the traditional condemnation of the higher profits associated with market power as indicating monopoly pricing, restricted output and resource misallocation.

The finding of an inverse relationship between market power and financial leverage questioned the ability of powerful firms to support greater debt. Did powerful firms maintain unduly conservative capital structures and inflated capital costs, and pass those inflated capital costs on to customers in the form of monopoly prices?

The above question centered upon three of the most controversial areas of finance: debt capacity, cost of capital and security valuation. This study examined three measures of debt capacity and found conflicting evidence that powerful firms should have supported greater debt. The study could not refute the charge that powerful firms inefficiently allocate their debt and equity capital inputs and do not minimize capital costs. Further research into the relationship of market power to financial leverage is needed.

MARKET POWER, PROFITABILITY AND FINANCIAL LEVERAGE

By

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CHAPTER 1

INTRODUCTION

The basic economic problem confronting any society is the allocation of scarce resources among competing and unlimited human desires. Within the United States market forces, market power, and public policy governs this economic allocation. Public policy pursues objectives which society as a whole deems desirable: the attainment of efficient production and thereby cost minimization, the attainment of reasonable prices and profits.

Efficient production has two aspects: allocative efficiency and productive efficiency.[1] At any moment in time, society possesses only a limited stock of productive input factors, each with an associated cost and productivity. Allocative efficiency means the utilization of these limited inputs in precisely that combination to insure production of the optimum valued social output at minimum input costs.

Allocative efficiency then implies productive

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[1]See: Harvey Leibenstein, "Allocative Efficiency VS. 'X-Efficiency'", American Economic Review, 56 (June, 1966), pp. 392-416.

efficiency, which has two components. Productive efficiency means that an individual firm will select the lowest cost combination of inputs necessary to produce any given level of output. Productive efficiency also means that an individual firm will employ within the productive process sufficient measures of managerial control, motivation and productive technique to insure that the productive process does in fact yield the highest value of output possible from a given set of inputs. In short, productive efficiency means the least cost transformation of inputs into completed output goods.

By definition, efficiency is cost minimization. Allocative efficiency demands production of the highest valued output that society's limited input resources are capable of producing. Productive efficiency by definition requires firms to use the least cost combination of inputs capable of producing a given output, and productive efficiency also requires the least cost transformation of those inputs into finished output. Any conclusions concerning the relative efficiency of a given firm or group of firms implies conclusions concerning their minimization of costs.

Public policy holds that the many in society and not individual producers should receive the benefits of efficient production. That is, output prices should allow

the producer to cover all costs, including a profit sufficient to compensate for risk. But, in the long run, the producer should receive only this reasonable profit.

Economic theory demonstrates that competitive markets better achieve these socially desirable public policy objectives than monopolistic markets.[2] Both the competitive and monopolistic economic models assume productive efficiency. That is, both models assume that each market participant selects the least cost combination of inputs capable of producing a desired level of output and transforms that input into output at minimum cost. But when contrasted the competitive and monopolistic models demonstrate the allocative inefficiency associated with monopoly. Because of restricted entry and ability to determine output price, the monopolist produces less and charges more than competitively determined output quantity and price. As such, monopoly generates higher prices and profits, restricted output and inefficient resource allocation. The monopolist's restriction of output causes inputs to flow into other less optimal uses, forming the basis for the classical condemnation of monopoly.

Real world markets do not precisely conform to

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[2]C. E. Ferguson, Microeconomic Theory (Homewood, Illinois: Richard D. Irwin, Inc., 1966), pp. 192-219.

either competitive or monopolistic assumptions, but rather fall on some continuum between the two extremes. Diversity marks the United States economy as a delineation of firms or markets upon almost any economic variable would reveal. Certainly relatively few firms generate enormous economic activity,[3] yet they coexist with a wide range of smaller firms. Many markets have few participants,[4] while other markets have many participants. Some markets require little capital or technical expertise to enter and compete effectively, while others require large quantities of both.

In actuality, individual real world markets contain varying elements of competition and monopoly, and measuring these proportions in a given case is far from an exact science. Yet careful observation leads to the belief that some firms are better able to control the major variables of their existence, as could a monopolist, than other more competitive firms. These firms which control their environment are said to possess market power defined as "the

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[3]In 1964, 325 non-financial corporations each held $250 million or more in assets, representing a full 42 per cent of all assets held by non-financial corporations. See: F. M. Scherer, Industrial Market Structure and Economic Performance (Chicago, Illinois: Rand McNally & Company, 1970), p. 39.

[4]Manufacturing industries in which the largest four firms accounted for 50 per cent or more of industry sales generated 33.1 per cent of all value added attributed to manufacturing. Ibid., p. 62.

ability of a market participant or group of participants . . . to influence price, quantity, and the nature of the product in the marketplace."[5] Market power is then a nebulous yet pervasive concept, and important to an understanding of the performance of modern economic markets and the conduct of the firms that participate in them.

A number of studies have examined the relationship between market power, or more precisely certain more easily measured proxies for market power such as number of sellers and ease of entry, and firm profitability. This literature, reviewed in Chapter II, concludes that greater market power generates higher rates of profitability, and the existence of this higher profitability over time is condemned because it implies higher prices, restricted output and consequently allocative inefficiency.

Because of entry barriers, the managements of powerful firms presumably set output prices in excess of those which a competitive market would permit, and by so doing only satisfy a restricted demand. Hence the total value of society's output is lower than its stock of inputs could have produced, since inputs now produce other less optimal

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[5]William G. Shepherd, Market Power and Economic Welfare (New York, New York: Random House, Inc., 1970), p. 11.

outputs. And entry barriers prevent these higher profits from being bid away by new market entrants.

The role of number of market participants is intuitively apparent. If sellers are few, each can inflict identifiable harm upon the others and expect retaliation in kind. Accordingly, each seller may choose to play safe, keeping its output restricted and its prices high. If sellers are few, any firm that cuts prices will be discovered quickly, with the result that no firm has an incentive to do so. In fact, each may trust the others to maintain prices at super-competitive levels. This recognition of mutual dependence reaches its greatest effect under conditions of few sellers, identical costs, and the acceptance by each firm of a fixed market share (irrespective of market price). Under these conditions, individual firm profit maximization will produce a level of prices and a distribution of outputs that maximize joint industry profits, i.e. the monopoly solution. Relaxation of any of these conditions or alternative behavioral assumptions will produce results ranging between this outcome and the purely competitive one.

Besides the above condemnations of market power for fostering allocative inefficiency, powerful firms stand accused of productive inefficiency as well. Practical

measurement of such a charge is difficult, but the reasoning behind it is straight forward. One attribute of the large modern corporation is the separation of ownership, as represented by a diverse group of stockholders, and control, as represented by a unified group of professional managers.[6] The managements of powerful firms freed from the pressures of a competitive market and the scrutiny of ownership interests simply do not have to be productively efficient.[7] Powerful firms can still earn superior profits in spite of inflated expenses. If correct, the higher observed profits associated with market power reveal only a portion of the inefficiency caused by market power.

O. E. Williamson[8] has moved this analysis a step further; powerful firms incur excess expenses not out of unplanned inefficiency but because of the preferences of management for certain types of expenses. These higher

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[6]R. J. Larner found 169 of the 200 largest U. S. corporations in 1963 were management controlled with no individual or discernible family or business group owning 10% or more of its voting stock. See: R. J. Larner, "Ownership and Control in the 200 Largest Nonfinancial Corporations, 1929-1963," American Economic Review, 56 (September, 1966), pp. 777-787.

[7]For examples of such productive inefficiency see: Leibenstien, op. cit.

[8]O. E. Williamson, "Managerial Discretion and Business Behavior," American Economic Review (December, 1963), pp. 1032-1057.

expenses take two basic forms: those that personally benefit management,[9] and those that make the job of managing the firm easier by increasing its market power.[10] Williamson calls this notion expense preference:

> The essential notion that we propose in order to connect motives with behavior is that of expense preference. That is, the management does not have a neutral attitude toward costs. Directly or indirectly, certain classes of expenditure have positive values associated with them.[11]

If Williamson's notion of expense preference is a reasonably accurate description of the conduct of powerful firms, then market power leads to serious inefficiencies, both allocative and productive. Powerful firms can charge sufficiently high prices as to report superior profits in spite of inflated expenses. These inflated expenses are not unintentional, and may reinforce the very market power which permits the higher prices to exist over time. In addition, the management of powerful firms receive inflated compensation for managing less risky enterprises. Certainly

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[9]Williamson found a positive relationship between entry barriers, concentration and executive compensation, adjusted for job responsibility. See: Ibid., p. 1045.

[10]Dorfman and Steiner found relative advertising activity positively associated with firm size. See R. Dorfman and P. O. Steiner, "Optimal Advertising and Optimal Quality," American Economic Review, 44 (December, 1954), pp. 826-836.

[11]Williamson, op. cit., p. 1032.

such conduct would violate both objectives of public policy: efficient production and the attainment of reasonable prices and profits.

Productive processes have two basic types of input: fixed and variable usually represented by capital and labor. Modern firms have the option of financing their stock of capital assets by some combination of debt funding and equity funding. This is the problem of financial leverage or optimum capital structure and that literature is reviewed in Chapter III.

General agreement exists that the use of financial leverage can effect a firm's capital costs and its overall level of risk. Financial leverage is a means by which corporate management can trade higher risk for higher profits. As such, financial leverage would appear to be an excellent device for the managements of powerful firms to employ expense preference. These managements could employ inefficiently low financial leverage with its associated low financial risk and high capital costs. High output prices could absorb these high capital costs and still permit the earning of superior profits, and management would have the personal advantages of directing a lower risk operation.

Consider the potential advantages to the management of a powerful firm for utilizing less than the optimum

amount of debt. The firm's fixed interest charges would be reduced, thereby reducing its overall level of risk. Management could presumably raise money quickly and at favorable rates to meet new opportunities. This strong financial position would reinforce entry barriers by providing funds for advertising campaigns, research and development activities, or whatever else would be needed to discourage potential competitors from entering the industry or matching the outlays of those which might enter the industry. In addition, monopoly output prices would permit above average returns on stockholders' equity thereby satisfying stockholders' desires and attaining for management the prestige associated with operating a consistently profitable firm. This is a possible explanation of the influence of market power on financial leverage.

There is also an alternative explanation of that relationship. Because of their ability to control the major variables of their existence, powerful firms may have the ability to support large amounts of low-cost debt, debt which would lower their overall capital costs. If true, the higher observed profits associated with market power could be the result of lower capital costs and not monoply prices and restricted output, thereby breaking the direct link between those profits and allocative inefficiency. In

fact, market power may have the socially desirable property of permitting firms to reduce capital costs. F. M. Scherer clearly stated this possibility in a recently published text.

> It is possible that the high observed returns on stockholders' equity in concentrated industries have been due as much to financial leverage as to greater success in realizing monopoly gains on the total amount of capital employed. That is, firms in concentrated industries may have elected a capital structure with an unusually high ratio of low-cost but inflexible debt obligations, so that returns above interest charges were magnified in relation to the relatively small quantity of equity capital. Stigler found that concentrated industries had significantly more stable returns over time than unconcentrated industries, and this may put them in a better position to accept high leverage without incurring excessive risks. The possibility of interactions among concentration, leverage, and profitability has not yet been subjected to thorough empirical analysis. Further research is clearly needed.[12]

The objective of this study then is to examine the relationship between market power and financial leverage. Toward this end, a sample of firms and a time period will be selected in Chapter IV to empirically test the hypothesis that powerful firms do indeed utilize greater financial leverage than other less powerful firms. And if they do not utilize greater financial leverage, whether to

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[12]F. M. Scherer, Industrial Market Structure and Economic Performance (Chicago, Ill.: Rand McNally & Company, 1970), p. 185, George J. Stigler, Capital and Rates of Return in Manufacturing Industries (Princeton, N. J.: Princeton University Press, 1963).

attribute that to managerial decisions not to minimize capital costs.

Chapter V presents the limitations and implications of this study. If powerful firms do utilize greater amounts of debt, then serious rethinking of the opposition to market power in the legal and economics professions would be in order. For if market power grants the socially desirable ability to reduce capital costs, then opposition to it must result from a balancing of its advantages and disadvantages. If powerful firms do not utilize greater amounts of debt, then such findings would support and strengthen the traditional opposition to concentrations of market power for causing allocative inefficiency. It would further raise questions concerning the minimization of capital costs by the managements of powerful firms.

CHAPTER 2

REVIEW OF THE LITERATURE

A. Firm Size and Profitability

Recognition of the importance of imperfect competition and the related concept of market power fostered many theoretical and empirical studies considering the various aspects of market power, market conduct and market performance.[1] One thrust of this research effort attempted to relate firm size, number of sellers and ease of entry, variables thought to be related to market power, and firm profitability. These studies are reviewed in this chapter.

One method of market power classification involves the division of firms into market power groups according to relative size as measured by either sales or assets. For example, 60 firms might be divided into three market power groupings according to total assets below $250,000,000, total assets between $250,000,000 and $500,000,000 and total assets over $500,000,000, then examine the

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[1]This literature is indeed enormous. For an excellent review see: F. M. Scherer, Industrial Market Structure and Economic Performance (Chicago, Illinois: Rand McNally Company, 1970).

profitability of each group. These studies have reached conflicting conclusions.

Alexander[2] examined all manufacturing corporations submitting balance sheets with their 1937 federal income tax returns and found a positive relationship between firm size and the ratio of net income to the book value of stockholder's equity (NI/SE). Hall and Weiss[3] worked with 341 firms for the period 1946 to 1962 and found a positive relationship between firm size and both NI/SE and the ratio of net income to the book value of total assets (NI/TA). H. O. Stekler examined all firms filing income tax returns for the period 1947 to 1949 and found medium sized firms were more profitable, profitability as measured by both NI/SE and NI/TA. That is, the returns of firms with total assets between $500,000 and $10,000,000 were higher than larger or smaller firms.[4] Osborn examined income tax returns for

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[2]Sidney S. Alexander, "The Effect of Size of Manufacturing Corporation On the Distribution of the Rate of Return," Review of Economics and Statistics, 31 (August, 1949), pp. 229-235.

[3]Marshall Hall and Leonard Weiss, "Firm Size and Profitability," Review of Economics and Statistics, 49 (August, 1967), pp. 319-331.

[4]H. O. Stekler, Profitability and Size of Firm (Berkeley, Calif.: Institute of Business and Economic Research of The University of California at Berkeley, 1963), p. 74.

manufacturing corporations during the period 1931 to 1946 and also found medium sized firms more profitable, profitability as measured by NI/SE.[5] Samuels and Smyth[6] examined 186 United Kingdom companies during the ten years from 1954 to 1963 and found size of firm and NI/TA were inversely related. Sherman examined corporate income tax returns for the period 1931 to 1961 and found medium sized firms with higher NI/SE than other firms. But differing patterns emerged within four subperiods studied.[7] Conclusions concerning the relationship between firm size and profitability seem to depend heavily upon the sample of firms selected, the time period studied and the determination of size groups.

B. Market Concentration and Profitability

A second market power classification method consists of the so-called concentration ratios. These ratios calculated by the Bureau of the Census of the Department of

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[5]Richard C. Osborn, Effects of Corporate Size on Efficiency and Profitability (Urbana, Ill.: University of Illinois, Bulletin No. 72, 1950), p. 58.

[6]J. M. Samuels and D. J. Smyth, "Profits, Variability of Profits, and Firm Size," Economica, 35 (May, 1968), p. 127.

[7]Howard J. Sherman, Profits In The United States (Ithaca, N. Y.: Cornell University Press, 1968), p. 41. Also see Chapter One of Sherman's work for an excellent literature review of corporate size and profitability.

Commerce,[8] indicate as an example the percentage of output within various industries shipped by the largest four or eight firms. There have been a number of studies[9] which have examined the relationship between concentration and NI/SE. With one exception,[10] which in turn has been criticized,[11] the results have demonstrated a consistent, positive relationship between these factors.

C. Entry Barriers and Profitability

A third method of market power classification consists of the analysis of entry conditions into various

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[8]U. S. Bureau of the Census, Annual Survey of Manufacturers: 1966, "Value-Of-Shipment Concentration Ratios by Industry," M66 (AS)-8 (Washington, 1968).

[9]Joe S. Bain, "Relation of Profit Rates to Industry Concentration," Quarterly Journal of Economics, 65 (August, 1951), pp. 293-324; Victor Fuchs, "Integration, Concentration, and Profits in Manufacturing Industries," Quarterly Journal of Economics, 75 (May, 1961), pp. 278-296; Stigler, op. cit.; Hall and Weiss, op. cit.; Joe S. Bain, Barriers to New Competition (Cambridge, Mass.: Harvard University Press, 1956); H. Michael Mann, "Seller Concentration, Barriers to Entry, Review of Economics and Statistics, 48 (August, 1966), pp. 296-307; Sherman, op. cit., p. 100; Leonard W. Weiss, "Average Concentration Ratios and Industrial Performance," Journal of Industrial Economics (July, 1963), pp. 237-253.

[10]Stigler, op. cit.

[11]Robert W. Kilpatrick, "Stigler on the Relationship Between Industry Profit Rates and Market Concentration," The Journal of Political Economy, 76 (May/June, 1968), pp. 479-488.

industries. Economic theory demonstrates that the condition of entry into a given industry has strong influence upon the maintenance of competitive conditions within that industry, and some real world markets appear easier to enter than others. The expectation is that blockaded markets would have higher prices than competitive markets, and that these higher prices could lead to some combination of higher profits and higher expenses. Two researchers have examined the proposition that high market entry barriers imply high profitability for market participants.

Bain examined the relationship between entry conditions and NI/SE for the leading firms in 20 oligopolistic[12] industries during the periods 1936 to 1940 and 1947 to 1951. From various published sources and interviews with industry executives, Bain estimated the extent to which four factors impeded entry into each of the 20 industries. The four factors were: (1) the existence of economies of scale,[13] (2) product differentiation advantages of established firms,[14] (3) control of scarce productive resources by

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[12]The lowest four seller concentration ratio in Bain's sample of firms was 27 per cent. See: Bain, Barriers to New Competition, p. 45.

[13]Ibid., Chapter 3, pp. 53-113.

[14]Ibid., Chapter 4, pp. 114-143.

established firms,[15] (4) ability of potential entrants to raise capital to enter the industry.[16] With the extent of each factor upon each industry determined, Bain placed each industry and the leading firms within that industry into one of three categories of overall entry condition: high entry barrier, substantial entry barrier, and moderate-to-low entry barrier.[17]

Bain presented two major conclusions. Industries in the high entry barrier group earned higher average NI/SE than industries in the other two groups, but these latter two groups showed no difference in average NI/SE.[18] Industries in which the largest eight firms accounted for over 70 per cent of industry sales had higher average NI/SE than industries in which the largest eight firms accounted for less than 70 per cent of industry sales.[19]

Mann replicated Bain's study for the period 1950-1960, increasing the number of industries included in the study from 20 to 30.[20] He divided the 30 industries and

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[15] Ibid., Chapter 5, pp. 144-166.

[16] Ibid., Chapter 5, pp. 144-166.

[17] Ibid., Chapter 6, pp. 167-181.

[18] Ibid., p. 196.

[19] Ibid., p. 196.

[20] All of Bain's industries retained their classification with the exception of cement which Mann moved to the substantial entry barrier group; Mann, op. cit., p. 297.

their leading firms into the same three market power classifications groups as Bain, using the same determinants of entry condition.[21]

Mann, like Bain, found a significant difference between the NI/SE of the high entry barrier group and the two others, but no such difference between the substantial and moderate-to-low entry barrier groups.[22] Mann, again like Bain, found that industries in which the largest eight firms accounted for over 70 per cent of sales had higher NI/SE than industries in which the largest eight firms accounted for less than 70 per cent of sales.[23] If there is a consensus regarding entry barriers, it is that they must be "very high" to influence market conduct and performance. Interestingly, all of the Bain and Mann industries that could be so characterized were also highly concentrated.

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[21] Ibid., p. 297.

[22] Ibid., p. 299.

[23] Ibid., p. 300.

CHAPTER 3

FINANCIAL LEVERAGE

A. The Concept of Financial Leverage

The concept of financial leverage is fairly simple. A corporation raises a portion of its total required capital by means of fixed payment securities, usually debt, in the expectation that the return earned on those funds will exceed their cost. As a result, this differential between return and cost will magnify the return of the residual security holder. Thus "non-equity financing adds to the earnings stream as long as the explicit costs of financing are less than the returns from the capital invested."[1]

An example may prove helpful. Assume a tax free world in which a firm issues only two types of securities, common stock and bonds. If a given firm earns 10 per cent on its total invested capital (TIC) which was raised entirely through stock, then its return on stockholders' equity (SE) would be 10 per cent. If this same firm raised

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[1]Ronald F. Wippern, "Financial Structure and the Value of the Firm," Journal of Finance, 21 (December, 1966), p. 615.

half its total capital through 8 per cent interest debt (D), then its return on the smaller equity base would have risen to 12 per cent.

Financial leverage, then, possesses a powerful advantage. A given firm can increase its return on equity provided that it can obtain debt financing at a cost lower than its return. But financial leverage also has disadvantages. Just as debt can magnify gains in return on equity, so it can magnify losses. If the above cited firm with 50% debt in its capital structure had earned 6% on its total invested capital instead of 10%, then its return on equity would have declined to 4%.

Debt financing involves the risk of default since interest on debt is a contractual obligation. The directors of a corporation may pass common dividends without legal difficulty but failure to meet interest payments gives creditors the option of forcing the firm's bankruptcy. Financial leverage thus provides a direct mechanism for the trade-off of higher returns on stockholders' equity for higher risk. And this trade-off mechanism is under managerial control.

The degree of usage of financial leverage by individual firms will influence the results of studies such as those reviewed in Chapter II. Since the usual measure of

profitability in such studies was the ratio of net income to stockholders' equity, two firms could have similar assets, sales, prices and expenses, yet have differing profitability measures dependent upon the amounts of financial leverage utilized. The objective of this study is to examine the relationship among market power, profitability and financial leverage. Specifically, the purpose is to determine if powerful firms utilized large amount of debt in their capital structures, debt which may explain their superior returns on stockholders' equity. And if they did not use large amounts of debt in their capital structure, whether that failure could be attributed to managerial decisions not to minimize capital costs.

The topic of financial leverage is closely related to the very difficult topic of cost of capital, which in turn is related to the valuation of securities by capital markets. Financial leverage decisions of individual firms are of interest to this study to the extent they influence capital costs. This chapter will discuss the cost of capital, its relationship to financial leverage and present testable hypothesis concerning market power and financial leverage.

B. Cost of Capital

Like any productive factor, capital has a cost (k_o) associated with its use. Theoretically considerable agreement exists as to the precise nature of k_o, but in practice its measurement is surrounded with difficulty.

> The cost of capital is perhaps the most difficult and controversial topic in finance. In theory, most would agree that it is the opportunity cost of the funds employed in an investment project--the rate of return on the project--that will leave unchanged the market price of the firm's stock. In practice, there are widespread differences as to how this cost should be measured.[2]

As noted in the previous section, firms raise capital from two general sources, debt and equity. Since the future costs associated with issuing debt are contractually stated, determining their cost (k_i) to the firm is reasonably simple. The future costs of equity (k_e) are on the other hand variable, that is, contingent upon future events. In order to determine its k_e, a particular firm must know the price at which it can sell its common shares and the future benefits that investors who purchase the shares expect. Since the firm presumably knows the former but not the latter, the solution is indeterminant. Two unknowns present themselves, k_e and the expectations of

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[2]James C. Van Horne, Financial Management Policy (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1968), p. 110.

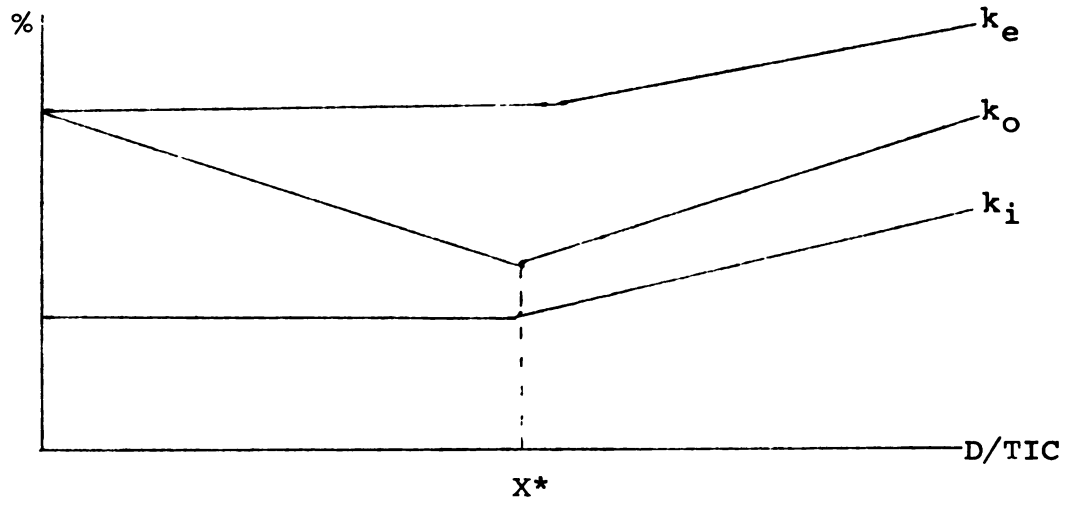
investors, and consequently no precise solution is possible. Cost of capital then depends not only upon the actions of the firm, but also upon the evaluation of those actions by capital markets. As such, its practical determination is most difficult.[3]

C. Financial Leverage and The Cost of Capital

Traditional financial theory holds the relationship between the cost of capital and financial leverage approximates the situation depicted in Figure 1. Over some initial

Figure 1

TRADITIONAL VIEW



[3]For a discussion of the difficulties involved in the computation of cost of capital see: Michael Keenan, "Models of Equity Valuation: The Great Serm Bubble," The Journal of Finance, 25 (May, 1970), pp. 243-273.

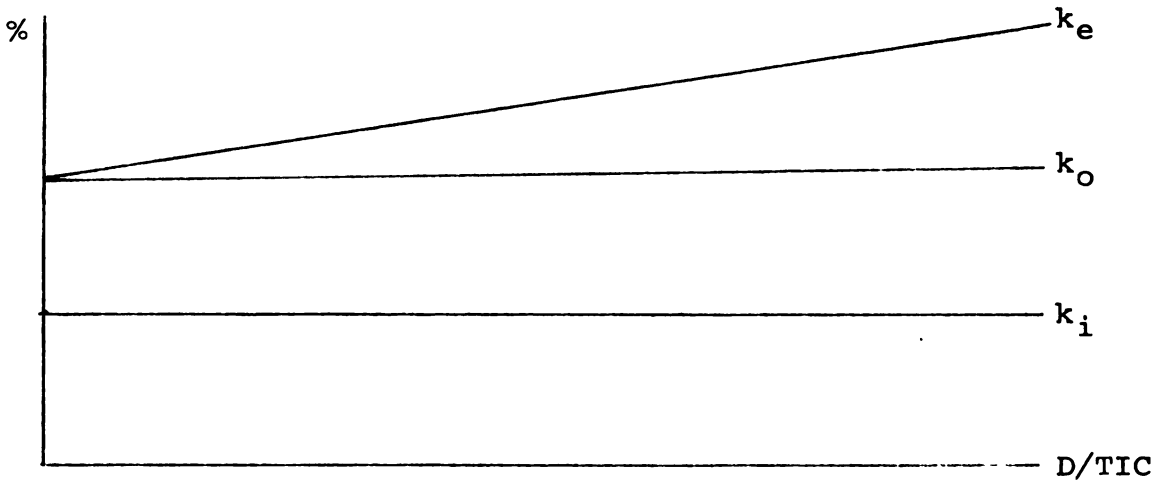
range of leverage, k_i is constant. That is, creditors demand a constant interest payment provided the level of debt stays within some limit. Presumably, creditors view risk over this range as constant. As D/TIC rises, k_e also rises but at a slower rate since common stock investors view moderate leverage as only slightly increasing the risk of their investments. Consequently as the firm increases leverage k_o, the weighted average of k_i and k_e, declines. This decline in the overall cost of capital demonstrates the judicious use of leverage.

As D/TIC increases, the firm eventually reaches a point X* where both classes of investors become alarmed over its ability to meet its interest obligations. Beyong that point both k_i and k_e rise sharply, as consequently does k_o. Therefore over the entire range of D/TIC, k_o is U shaped, and an optimum capital structure exists. Traditional financial theory holds that a corporate financial manager should strive for that combination of debt and equity indicated by X*. This would achieve the minimization of capital costs. Determining this optimum amount of debt in the financial structure of a given firm is the problem of corporate debt capacity.

In 1958, F. Modigliani and M. Miller[4] (MM) questioned the validity of the traditional view of leverage with its optimum financial structure. By assuming perfect capital markets and rational investors, MM demonstrated that k_o was independent of financial leverage. That is, changes in financial leverage could not effect a firm's cost of capital. The MM position is presented in Figure 2. Every effort of corporate management to obtain advantage through leverage was exactly offset by the reactions of investors

FIGURE 2

MM VIEW



[4]Franco Modigliani and Merton Miller, "The Cost of Capital, Corporation Finance and the Theory of Investment," American Economic Review, 48 (June, 1958); reprinted in: Stephen H. Archer and Charles A. D'Ambrosio, editors, The Theory of Business Finance: A Book of Readings (New York, N.Y.: The Macmillan Company, 1968), pp. 125-159.

who substitute their own personal leverage. The amazing conclusion was not what MM showed to happen under their highly idealized set of assumptions, but rather their contention that their assumptions were reasonable approximations of the real world. According to MM the actual k_o of real world firms was in fact independent of their capital structures. They presented some preliminary evidence to support that conclusion.[5]

On this latter conclusion, MM received severe criticism. Durand questioned the MM assumed identity of corporate and financial leverage, noting the restrictions on margin borrowing.[6] In addition, Durand[7] noted the existence of other market imperfections, most notably brokerage commissions and tax considerations.

Since interest payments are deductible tax expenses for corporations and dividends are not, governmental taxing policy favors the use of corporate debt. MM came to agree

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[5] Ibid., p. 283; for empirical data in support of the traditional approach see: J. Fred Weston, "A Test of Cost of Capital Propositions," The Southern Economic Journal, October, 1962, pp. 105-12. Reprinted in: Archer and D'Ambrosio, op. cit., pp. 202-212.

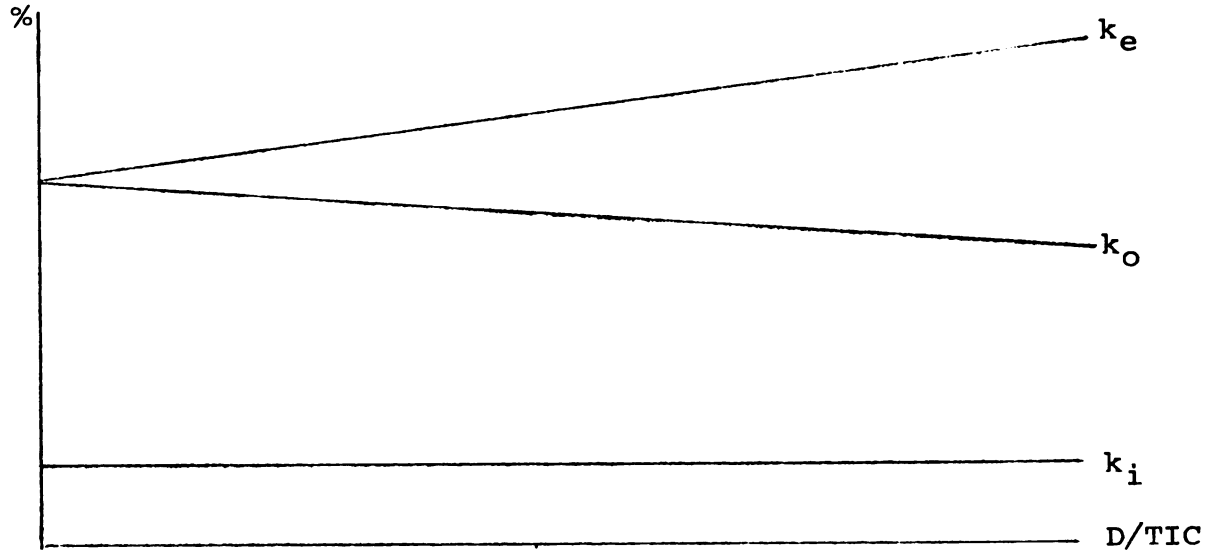
[6] David Durand, "The Cost of Capital, Corporation Finance, and the Theory of Investment: Comment," American Economic Review, 53 (June, 1963), pp. 433-43; reprinted in: Archer and D'Ambrosio, op. cit., pp. 160-176.

[7] Ibid., p. 166.

that corporate income taxes reduce the cost of debt, but except for this tax effect their position was unchanged.[8] The revised MM position is presented in Figure 3.

FIGURE 3

REVISED MM VIEW



The deductibility of interest payments for corporate income tax purposes has reduced k_i, now defined as the after tax cost of debt. By combining k_e with the cheaper k_i, k_o declines with every increase in debt.

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[8]Franco Modigliani and Merton H. Miller, "Corporate Income Taxes and The Cost of Capital: A Correction," American Economic Review, 53 (June, 1963), pp. 433-43; reprinted in Archer and D'Ambrosio, op. cit., pp. 192-202.

D. Corporate Debt Capacity

In spite of the practical difficulties associated with the determination of cost of capital and optimum capital structure, businessmen cannot escape the problem. A number[9] of researchers have studied the attitudes, practices and justifications of corporations and their managements toward the use of debt financing.

In general these studies demonstrate that corporate managements are well aware of the advantages[10] and risks associated with financial leverage. In addition, they demonstrate wide variations in the amount of debt utilized by any given firm and wide variations in the methodology of determining and the justification for the amount of debt utilized. In addition, managements have considerable latitude in determining debt policy.

Businessmen appear to shun the direct computation of cost of capital and tend to rely upon a wide range of decision rules to determine the proper level of debt financing. The debt to equity ratio itself is an important

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[9]Edwin P. Harkins and Francis J. Walsh, Jr., Corporate Debt Management (New York, N.Y.: The National Industrial Conference Board, 1968). Gordon Donaldson, Corporate Debt Capacity (Boston, Mass.: Harvard University, 1967).

[10]Donaldson, op. cit., p. 68.

decision rule.[11] Firms evidently through tradition or by comparison to other firms determine an appropriate level of debt for their operations. Using the debt to equity ratio of one firm to determine the debt to equity ratio of another firm could lead to non-optimal financial decisions. Another popular decision rule is the earnings coverage standard.[12] By this rule the net income or the income before interest and taxes, the amount available for interest payments, of the firm must be at least a certain number of times the interest payments. Such a standard has the advantage of focusing attention upon the payment of interest, but shares the disadvantage of any arbitrary standard in possibly fostering non-optimum decisions.

As Donaldson[13] points out, the risk associated with the use of financial leverage is the risk of being unable to meet fixed interest payments when due. Therefore profitability, or more precisely cash flows, and their predictability play a large part in determining corporate debt capacity. All things equal, firms with higher earnings

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[11]Harkins and Walsh, op. cit., pp. 18-24, and Donaldson, op. cit., pp. 100-102.

[12]Harkins and Walsh, op. cit., pp. 25-26. Donaldson, op. cit., pp. 103-105.

[13]Donaldson, op. cit., pp. 6-9.

and cash flows and more stable earnings and cash flows can and should support greater amounts of debt.

E. Statement of Hypotheses

General agreement exists that at least over some initial range increases in D/TIC cause k_o to decline. The traditionalists argue that k_o declines until X*, while MM argue that k_o declines with every increase in corporate debt.

This study assumes that significant imperfections exist not only in capital markets but in output markets as well. Although Modigliani and Miller contributed significantly to an understanding of the theoretical effects of perfect capital markets upon capital costs, the assumptions of perfect markets are simply too rigorous to approximate observed financial and output markets. This study, then, assumes that capital markets are sufficiently imperfect to enable firms to affect their capital costs by changing their capital structures; changes which cause the traditional U shaped cost of capital curve with its optimum capital structure represented by X*

Ideally this study should deal directly with the cost of capital. Not only should it measure a given firm's present cost of capital, but also its marginal cost of capital for every possible change in financial leverage.

It would then be possible to determine which firms were and were not minimizing capital costs. Clearly this would be an enormous task; one that the literature of cost of capital indicates may not be possible. Consequently this study will not examine cost of capital directly but rather will examine the D/TIC of firms with different market structure characteristics. D/TIC will serve as an imperfect substitute for cost of capital.

Chapter Four will consider evidence to support or refute the following null hypothesis and its alternative.

H_o, Null Hypothesis: Firms with great market power have relatively more debt in their capital structures than firms with less market power.

H_1, Alternative Hypothesis: Firms with great market power do not have relatively more debt in their capital structures than firms with less market power.

If the data analyzed in Chapter Four of this study support the null hypothesis, the study will conclude that these higher levels of debt supported by powerful firms are strong evidence, although indirect, of lower capital costs. This result would thus at least challenge the

traditional condemnation of market power for necessarily causing allocative inefficiency. At most it would call into question the identification in the literature of high rates of return on stockholders' equity with the exercise of monopoly profits by oligopolists.

If on the other hand the alternative hypothesis were supported and powerful firms did not support greater levels of debt, this study will seek to determine whether powerful firms did not support greater debt because they did not have the capacity, or because they did have the capacity but chose not to use it. The second of these results would of course imply production inefficiency.

CHAPTER 4

DATA ANALYSIS

A. Sample Selection and Description

H. M. Mann demonstrated a positive relationship between market power, as measured by both market concentration and entry barriers, and firm NI/SE.[1] He examined 92 firms in 30 industries for the period 1950 to 1960.

Mann assigned each of these 30 industries into one of three groups which indicated difficulty of entry: very high barriers to entry, substantial barriers to entry, and moderate-to-low barriers to entry. He then assigned the leading firms of each industry into the entry barrier group for that industry. He cross-classified the 30 industries and 90 firms into two groups dependent upon whether the industry's largest eight firms had above or below 70 per cent of industry sales.

This study will use the same firms as Mann for several reasons. Mann's study provided valuable information

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[1] H. Michael Mann, "Seller Concentration, Barriers to Entry, and Rates of Return in Thirty Industries, 1950-1960," Review of Economics and Statistics, August, 1966, pp. 296-307.

on entry conditions; data which would have required substantial effort to duplicate. The industries in Mann's sample were oligopolistic,[2] and this avoided the serious problems of measuring the profitability of smaller firms. In smaller firms, where ownership and control are united, owners serving as managers may take profits in the form of higher wages thereby avoiding corporate income taxation.

From a statistical point of view, Mann selected his sample in a non-random manner. As such, no statistical inference from relationships within the sample to relationships within the entire economy was possible. However, the 92 firms selected by Mann held combined assets in 1962 in excess of $89 billion comprising over 30% of all assets held by manufacturing corporations in the United States.[3] As such, a study of these firms as a unit was significant.

B. Time Period Selection

Mann examined the profitability of the firms in his sample in the eleven year period from 1950 to 1960. Examining profitability over a number of years was wise. First,

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[2]The lowest 10 firm concentration ratio was 29.1 per cent for bituminous coal in 1955; Ibid., p. 298.

[3]U. S. Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly, Hearings, Economic Concentration, Part 1 (Washington: 1964), p. 115.

economic theory demonstrates that even perfectly competitive markets may endure short run adjustment periods during which profits and prices above the competitive are possible. Second, corporate managements have discretion under modern accounting procedures in timing the recognition of revenues and expenses. Although management does not have the ability to create income through selection among various accounting techniques, management does have the ability within limits to shift reported income from period to period. Averaging profitability measures over a number of years minimizes any potential short run fluctuations attributable to the above factors.

This study covers the period 1956 to 1963. The assumption is that it is a sufficiently long period to achieve the benefits outlined above. In addition it overlaps Mann's study by five years and as such maintains the strength of his market power classifications. The period also avoids the early 1950's with its Korean War related dislocations, and is sufficiently long to include periods of general economic prosperity and decline.

C. Data Collection

Data for 79 of the 90 firms came from the Compustat

Data Tapes of Standard and Poor Corporation.[4] Data for the remaining 11 firms came from the appropriate Moody's Industrial Manual. The following data was compiled for each firm for each year from 1956 through 1963.

NI Net Income--income after all operating and non-operating income and expense and minority interest, but before preferred and common dividends. It is stated after extraordinary items which are listed in the company's public reports as being net of taxes.

IE Interest Expense--all interest paid plus the amortization of debt discount or premium and the amortization of debt flotation expenses.

T Taxes--actual and deferred federal and state corporate income taxes.

EBIT Earnings Before Interest and Taxes--the sum of NI, IE and T.

TA Total Assets--all recorded assets of the firm including current assets, net plant and equipment, deferred items and intangibles.

D Long Term Debt--debt obligations due after one year.

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[4]Mann used 92 firms in his study, but two, American Chicle and American Viscose, merged out of existence during 1960-1963. Hence only 90 firms populate this study.

P Preferred Stock--the number of preferred shares outstanding times the involuntary liquidation value per share.

SE Stockholders' Equity--the sum of the capital stock, capital surplus and retained earnings accounts.

TIC Total Invested Capital--the sum of D, P and SE.

In addition to the above raw data, the following ratios were calculated for each firm for each year from 1956 through 1963.

NI/SE Net Income to Stockholders' Equity

EBIT/TA Earnings Before Interest and Taxes to Total Assets.

D/TIC Debt to Total Invested Capital.

EBIT/IE Times Interest Earned.

D. Data Presentation

Table 1[5] presents a summary of average NI/SE and D/TIC for the 30 industry sample divided into the three entry barrier groups: very high, substantial, and moderate-to-low.

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[5]Appendix A contains a more complete data presentation.

TABLE 1

AVERAGE PROFIT RATES (NI/SE) AND AVERAGE LEVERAGE RATIOS (D/TIC) FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY BARRIERS TO ENTRY

Entry Barriers	Average Profit Rates 1956-1963	Average Leverage Ratio 1956-1963
Very High N=8	13.67	8.82
Substantial N=9	9.89	16.06
Moderate-to-Low N=13	9.03	19.99

Table 2 presents a summary of average NI/SE and D/TIC for the 30 industry sample divided into two market concentration groups: industry concentration rates[6] above 70 per cent, industry concentration, industry concentration ratio below 70 per cent.

TABLE 2

AVERAGE PROFIT RATES (NI/SE) AND AVERAGE LEVERAGE RATIOS (D/TIC) FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY INDUSTRY CONCENTRATION

Concentration	Average Profit Rates 1956-1963	Average Leverage Ratio 1956-1963
Above 70% N=21	11.54	14.38
Below 70% N=9	8.15	19.22

[6]Percentage of industry shipments by the largest eight firms.

E. Data Analysis

The information on profitability presented in Table 1 and Table 2 corresponds closely, as expected to Mann's profitability results. The average profitability of the very high entry barrier group (13.67) was significantly higher than the average profitability of the substantial (9.89) and moderate-to-low (9.03) entry barrier groups, but no such significance existed between these latter two groups. Similarly the average profitability of the over 70 per cent market concentration group (11.54) was significantly higher than the average profitability of the below 70 per cent market concentration group (8.15). The statistical technique of analysis of variance tested for, and confirmed, the significant differences at the .05 confidence level.

Once again consider the null hypothesis and its alternative.

H_o, Null Hypothesis: Firms with great market power have relatively more debt in their capital structures than firms with less market power.

H_1, Alternative Hypothesis: Firms with great market power do not have relatively more debt in their capital structures than firms with less market power.

An analysis of the financial leverage data presented in Table 1 and Table 2 refutes the null hypothesis and supports its alternative. In fact, in contrast to the positive relationship between market power and financial leverage conjectured in the null hypothesis, the relationship was inverse.

The average financial leverage of the very high entry barrier group (8.82) was significantly less than the average financial leverage of the substantial entry barrier group (16.06) which in turn was significantly less than the average financial leverage of the moderate-to-low entry barrier group (19.99). Also the average financial leverage of the over 70 per cent market concentration group (14.38) was significantly less than the average financial leverage of the under 70 per cent market concentration group (19.22). Once again the statistical technique of analysis of variance tested for, and confirmed the significant differences at the .05 confidence level.

F. Debt Capacity

Since the above data clearly supported the alternative hypothesis, this study attempted to measure the relative debt capacity of the differing market power groups. Three measures of debt capacity were examined: the ratio

of earnings before interest and taxes to total assets (EBIT/TA), the variance of EBIT/TA over time, and the ratio of earnings before interest and taxes to interest expense (EBIT/IE).

The ratio of earnings before interest and taxes to total assets measures the rate of return on a firm's total asset base independent of the effects of taxation and financial leverage. As such this measure of profitability provides a good indication of debt capacity since the higher the EBIT/TA the greater the ability of a firm's operations to support debt.

In addition to the absolute value of EBIT/TA, its variance over time is also a measure of debt capacity. Operationally, this was calculated for each firm over time and then an industry average taken. Since not only earnings and cash flows but their predictability influence debt capacity, the more stable EBIT/TA over time presumably the greater debt capacity. The variability of EBIT/TA over time measures operating or business risk, the risk resulting from the firm's operations. As such the greater operating risk a firm sustains, the less financial risk expected.

Table 3[7] presents a summary of average EBIT/TA and

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[7]Appendix B contains a more complete data presentation.

average variance of EBIT/TA for the 30 industry sample divided into three entry barrier groups: very high, substantial and moderate-to-low.

TABLE 3

AVERAGE EBIT/TA AND AVERAGE VARIANCE EBIT/TA FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY BARRIERS TO ENTRY

Entry Barriers	Average EBIT/TA 1956-1963	Average Variance EBIT/TA 1956-1963
Very High N=8	18.19	19.42
Substantial N=9	12.49	10.82
Moderate-to-Low N=13	11.57	8.07

Table 4 presents a summary of average EBIT/TA and the average variance of EBIT/TA for the 30 industry sample divided into two market concentration groups: industry concentration rates[8] above 70 per cent, industry concentration ratio below 70 per cent.

[8]Percentage of industry shipments by the largest eight firms.

TABLE 4

AVERAGE EBIT/TA AND AVERAGE VARIANCE EBIT/TA FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY INDUSTRY CONCENTRATION

Concentration	Average EBIT/TA 1956-1963	Average Variance EBIT/TA 1956-1963
Above 70% N=21	15.08	13.39
Below 70% N=9	10.18	8.50

The data contained in Tables 3 and 4 present conflicting measures of the debt capacity of different market power groups. On the basis of average EBIT/TA powerful firms, as measured by both entry barriers and market concentration, could have supported more debt than less powerful firms. But on the basis of the average variance of EBIT/TA over time, powerful firms should have supported less debt than less powerful firms. Variance, however, is affected by both the variability of observations about their mean and by the magnitude of the quantities involved. In an attempt to correct for the effect of absolute magnitudes upon average variance, the average variance of EBIT/TA for each market power group was divided by the average EBIT/TA of that market power group. The results of this adjustment

were: moderate-to-low entry barrier group (.6974), substantial entry barrier group (.8662), high entry barrier group (1.024). The high entry barrier group had greater adjusted variability and therefore lower debt capacity than the substantial entry barrier group which in turn had lower adjusted variability than the moderate-to-low entry barrier group. But the over 70 per cent concentration group (.8879) had approximately the same adjusted variability and therefore debt capacity as the below 70 per cent concentration group (.8349).

The third measure of debt capacity was the number of times earnings before interest and taxes covered interest expense (EBIT/IE). This debt capacity measure was difficult to compute since a number of firms had no or very little debt and EBIT covered interest expense an infinite number of times. Therefore no tabular summary of EBIT/IE for each market power group is presented in the body of this study, but rather Appendix C contains a complete listing of EBIT/IE for all firms in the study. Examination of Appendix C reveals that powerful firms as measured by both entry barriers and market concentration covered their interest expense more times than other less powerful firms. On this basis powerful firms could have supported greater amounts of debt than they actually did with little danger of debt payment default.

CHAPTER 5

LIMITATIONS AND IMPLICATIONS

A. Study Limitations

Ideally this study should have measured the actual and marginal, for any given change in the proportions of debt and equity financing, costs of capital for a number of randomly selected competitive firms. Then each firm would acquire increased measures of market power and the effects of that increased market power upon their actual and marginal costs of capital noted. Clearly such a design would produce concrete answers to many important controversies in finance and economics, and just as clearly social science research does not lend itself to such controlled experimental designs. Each necessary deviation from this idealized design placed limitations upon the findings of this study. These interrelated limitations dealt with problems of inference, measurement and comparison.

Mann's sample selection process was non-random and as such statistical inference of characteristics of the sample to characteristics of all firms within the economy

is not possible. Hence the significance of this study rests upon the importance of the firms selected[1] and any conclusions of this study refer specifically to them.

Mann clearly selected firms for his study which he could place into single industry classifications. As such, the sample was free of firms which operated within several industries. It is entirely possible that powerful firms of a greater conglomerate or inter-industry nature utilized greater financial leverage than other firms. For the less correlated the cash flows of two firms over time, the lower the total variability of those flows over time if combined.[2] In short, powerful firms of a more diversified nature may utilize more debt than other less powerful firms, although this was not true for the powerful firms examined in this study.

Data for this study came from published financial statements[3] prepared in accordance with generally accepted accounting principles. As such the data possessed several

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[1] Supra, Chapter Four, Section. A.

[2] For a discussion of the reductions in the variability of cash flows and earnings over time by combining varied economic activities into one unit see: William W. Alberts and Joel E. Segall, Editors, The Corporate Merger (Chicago, Ill.: The University of Chicago Press, 1966), pp. 262-272.

[3] Supra, Chapter Four, Section C.

limitations for the measurement requirements of this study. Although corporate managers do not have the ability to create income over the life of the enterprise by selecting from among varying accounting procedures, they do have a degree of control over the timing of the recognition of revenues and expenses and consequently a degree of control over income reporting and asset valuation. Inter-company comparisons of income or asset values could, in the short run, draw bias from the income recognition and asset valuation procedures employed by particular firms. By assumption, eight year averages minimized the effects of this limitation.

Corporations carry assets at historical costs which may or may not represent current values. Clearly some firms, particularly older firms and firms with large holdings of non-depreciable land, have understated asset values. These differences in asset valuations limit the conclusions of this study with its inter-company comparisons, but no less biased asset valuation system was readily apparent.[4]

Generally accepted accounting principles can

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[4]See: Ralph Coughenour Jones, Price Level Changes and Financial Statements (Evanston, Ill.: American Accounting Association, 1955). The Staff of the Accounting Research Division of the American Institute of Certified Public Accountants, Reporting The Financial Effects of Price-Level Changes (New York, N.Y.: American Institute of Certified Public Accountants, 1963).

understate some long term corporate liabilities, most notably future payments due under executory lease contracts.[5] This fact may cause the understatement of the long term liabilities of firms which heavily utilized leased capital, and therefore could be a limitation upon this study which concerns itself with measurements of long term debt. Unfortunately, no system for adjusting financial statements to reflect lease liabilities was discovered which would have resulted in less biased data.

This study used the ratio of the book values of long term debt to total invested capital as the measure of financial leverage. It did not use market values as the market value of common equity could reflect the capitalized value of future monopoly profits, the precise value to isolate. Independently determined input values of equity and debt financing were desirable to measure inputs of equity and debt capital, but as such precluded a direct measure of cost of capital. Therefore this study can make only general conclusions concerning market power, cost of capital and security valuation. The valuation of a firm's security

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[5]See: John H. Myers, Reporting of Leases in Financial Statements (New York, N.Y.: American Institute of Certified Public Accountants, 1962). Accounting Principles Board of the American Institute of Certified Public Accountants, Opinion No. 5, "Reporting of Leases in the Financial Statements of Leases," September, 1964.

and therefore its cost of capital is a function of the actions of the firm and the evaluation of these actions by security markets. Financial leverage can increase both the profitability of a firm and the level of risk it sustains, and consequently sharp increases in leverage may not decrease capital costs. Two firms could have similar operations and differing levels of debt and both be operating efficiently since imperfect capital markets evaluate them differently. Once one admits the existence of imperfect markets, one must admit the possibility that differences between firms are not the result of inefficiency but of individual firms adjusting to imperfect market forces. As such, this dissertation deals directly with market power and financial leverage and precinds from direct measurements of the effects of market power through financial leverage upon security valuation and cost of capital.

Because of the difficulties associated with measuring net income, asset values and long term liabilities for any given firm and the lack of agreement upon the proper measures of cost of capital and optimum debt capacity, inter-firm comparisons are difficult. It is entirely possible that differences observed between firms could be the result of these difficulties of measurement. This is clearly a limitation of this study.

B. Study Implications

The powerful firms examined in this study, as measured by both market concentration and entry barriers, earned a greater return on their stockholders' equity (NI/SE) than other less powerful firms. These powerful firms used relatively less debt in their capital structures which refutes the suggestion that their higher observed profitability could be the result of great amounts of financial leverage.

The results of this study therefore support the traditional condemnation of higher oligopoly profits as indicative of allocative inefficiency. The higher profitability of these firms presumably came from restricted output and non-competitive pricing--practices made possible by the entry barriers and the small number of market participants. Powerful firms then violate the dual objectives of public policy: efficient production and reasonable prices and profits. By powerful firms restricting output, society did not receive the highest valued output its limited input stock was capable of producing and the prices and profits of powerful firms were greater than those competitive markets would permit. Powerful firms could earn these excessive returns since entry barriers prohibited them from being bid away. As such this study supports the theoretical

economic predictions that market prices, profits and output are a function of the structure of the market--particularly the number of sellers and ease of entry into the market.

The finding of an inverse relationship between market power and financial leverage and the academic literature accusing powerful firms of productive inefficiency raise an even more serious question. Did powerful firms not support greater financial leverage because they did not have the capacity to do so, or did powerful firms have the capacity to support greater financial leverage and choose not to do so? The question becomes whether powerful firms are guilty of unproductive debt and equity allocation (productive inefficiency) as well as contributing to allocative inefficiency by their pricing and output decisions.

The determination of a definite answer to the above question is difficult because of the lack of agreement upon a precise measure of debt capacity; the measurements examined also gave conflicting results. The evidence examined in this study cannot refute the charge that powerful firms should have supported greater debt within their capital structures, greater debt which presumably would have lowered their capital costs. In general, if the powerful firms examined in this study could have predicted their earnings before interest and taxes, then they could have supported

more debt without default of debt interest payments. Had they done so their NI/SE and their earnings per share would have been higher and more variable.

If the conservative capital structures of powerful firms are less than optimal, then they present important public policy implications. The output prices of powerful firms would be sufficiently high to produce superior profits in spite of inflated expenses. As such these superior profits would represent only a portion of the inefficiency associated with market power. The managements of powerful firms could maintain the benefits and flexibility associated with a conservative capital structure and pass the cost of that conservatism to their customers in the form of excessive prices. Clearly these conservative capital structures require additional research.

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APPENDIX A

AVERAGE OF AND VARIANCE OF LEVERAGE RATIO (D/TIC) AND AVERAGE OF AND VARIANCE OF PROFIT RATES (NI/SE) FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY BARRIERS TO ENTRY

	High Entry Barriers					
	D/TIC 1956-1963			NI/SE 1956-1963		
	Average	Variance		Average	Variance	
Automobiles**						
General Motors Corp.	5.677	1.090		19.004	10.793	
Ford Motor Co.	7.654	4.924		13.408	12.830	
Chrysler Corp.	25.002	2.725		5.885	58.714	
Industry Averages	12.778		2.913	12.766		27.446
Chewing Gum**						
Wrigley (WM.) Jr.	0.000	0.000		13.668	.925	
Industry Averages	0.000		0.000	13.668		.925
Cigarettes**						
Reynolds Inc.	14.996	18.426		19.350	.839	
American Tobacco	20.806	43.465		13.264	.235	
Liggett & Meyers, Inc.	22.024	13.084		10.328	1.340	
Philip Morris, Inc.	22.568	27.376		12.255	.206	
Industry Averages	20.098		25.588	13.799		.655
Ethical Drugs**						
Merck & Company	.335	.007		17.626	3.840	
Pfizer Inc.	7.947	31.793		16.795	1.357	
Schering Corp.	.085	.007		23.194	75.615	
Parke, Davis & Co.	0.000	0.000		18.060	17.876	
Abbott Laboratories	2.322	4.674		14.633	3.283	
Industry Averages	2.138		7.296	18.062		20.394
Flat Glass**						
Pittsburg	7.094	8.722		10.149	6.974	
Libby-Owens-Ford	0.000	0.000		19.623	20.093	
Industry Averages	3.547		4.361	14.886		13.533
Liquor**						
Seagram	18.032	4.728		6.915	.093	
National Distillers	31.627	8.669		8.395	1.034	
Schenley Industries	35.346	18.032		4.016	2.464	
Hiram Walker	1.781	2.376		11.347	.066	
Industry Averages	21.696		8.451	7.668		.914
Nickel**						
Intl Nickel	0.000	0.000		15.770	13.480	
Falconbridge	20.631	301.679		17.231	26.586	
Industry Averages	10.315		150.840	16.500		20.033
Sulphur**						
Texas Gulf Sulphur	0.000	0.000		12.960	27.782	
Freeport Sulphur Co.	0.000	0.000		11.138	16.014	
Industry Averages	0.000		0.000	12.049		21.898
Averages for Entry Barrier Group	8.822		24.931	13.675		13.225

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

APPENDIX A.—Continued

	Substantial Entry Barriers					
	D/TIC 1956-1963			NI/SE 1956-1963		
	Average	Variance		Average	Variance	
Aluminum Production**						
Alcoa	34.317	10.326		8.794	11.925	
Reynolds Metals Co.	47.977	11.699		11.722	25.124	
Kaiser	49.669	14.578		13.488	12.676	
Industry Averages		43.988	12.201		11.335	16.575
Biscuits**						
National Biscuit Co.	6.187	50.384		15.098	2.225	
Sunshine Biscuits	0.000	0.000		11.037	1.105	
United Biscuits	22.124	3.146		6.576	5.220	
Industry Averages		8.770	17.843		10.904	2.850
Petroleum Refining*						
Standard Oil (N.J.)	10.081	.183		11.560	5.015	
Texaco Inc.	11.661	6.112		14.955	.959	
Mobil Oil Corp.	7.416	3.600		8.048	2.780	
Standard Oil (Ind.)	14.831	4.224		6.917	.439	
Industry Averages		10.997	3.530		10.370	2.298
Steel**						
U. S. Steel Corp.	13.633	24.852		9.549	11.439	
Bethlehem Steel Corp.	9.188	9.340		8.613	6.229	
Republic Steel Corp.	15.603	38.177		8.645	6.680	
Jones & Laughlin	21.201	.994		7.067	4.065	
Industry Averages		14.906	18.341		8.468	7.103
Soap**						
Proctor & Gamble Co.	14.363	10.508		15.203	.483	
Colgate Palmolive Co.	17.346	5.414		10.825	.636	
Industry Averages		15.854	7.961		13.014	.559
Farm Machinery and Tractors**						
International Harvester	12.300	2.520		6.662	1.339	
Allis Chalmers	22.107	1.205		4.544	4.481	
Deere & Co.	24.480	19.744		10.132	8.340	
Industry Averages		19.629	7.823		7.113	4.840
Copper**						
Kennecott Copper Corp.	.739	.238		10.093	14.818	
Anaconda Co.	9.275	3.252		6.070	10.576	
Phelps Dodge Corp.	0.000	0.000		11.573	23.728	
Amax Smelt & Refin.	1.818	14.759		8.086	8.072	
Industry Averages		2.958	4.562		8.955	14.298
Cement**						
Ideal Cement Co.	21.635	76.469		14.066	5.651	
Lone Star Cement	18.284	19.080		12.055	7.920	
Lehigh Portland	23.570	25.602		6.958	7.046	
General Portland	13.398	51.228		14.867	18.947	
Industry Averages		19.222	43.095		11.986	9.891
Shoe Machinery**						
United States Shoe	.501	.009		8.046	2.197	
Compo Shoe Machinery	16.032	8.719		5.829	12.716	
Industry Averages		8.267	4.364		6.938	7.457
Averages for Entry Barrier Group		16.066	13.302		9.898	7.319

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

APPENDIX A.--Continued

	Moderate-to-Low Entry Barriers					
	D/TIC 1956-1963			NI/SE 1956-1963		
	Average	Variance		Average	Variance	
Glass Containers**						
Owens-Illinois Inc.	15.951	1.266		9.210	2.740	
Anchor Hocking Corp.	0.000	0.000		12.564	5.098	
Thatcher Glass	32.365	27.648		11.078	8.546	
Industry Averages	16.105		9.638	10.951		5.461
Tires and Tubes**						
Goodyear Tire	29.097	13.728		12.297	1.652	
Firestone Tire	14.626	10.466		11.147	2.369	
U. S. Rubber	32.595	9.539		10.811	5.900	
Goodrich (B. F.) Co.	13.874	15.319		8.001	3.843	
Industry Averages	22.548		12.263	10.564		3.441
Shoes*						
International Shoe	31.439	6.613		7.557	3.675	
Brown Shoe Co., Inc.	28.939	10.708		10.301	6.117	
Endicott Johnson Corp.	18.212	46.469		-2.486	115.678	
Industry Averages	24.172		21.293	7.209		31.850
Rayon**						
Celanese Corp.	29.545	1.967		13.824	1.270	
Beaunit Corp.	21.857	6.747		8.126	13.313	
Industry Averages	25.701		4.357	10.975		7.291
Gypsum Products						
U. S. Gypsum Co.	0.000	0.000		14.470	5.959	
National Gypsum Co.	12.530	11.590		10.332	1.946	
Industry Averages	6.265		5.795	12.401		3.953
Canned Fruits and Vegetables*						
California Packing	26.015	22.368		9.624	1.440	
Libby, McNeill	31.114	2.047		5.135	7.881	
Stokely-Van Camp	18.339	23.936		8.046	4.143	
Industry Averages	25.156		16.117	7.602		4.488
Meat Packing*						
Swift & Company	18.247	18.634		3.885	.486	
Armour & Co.	44.512	2.797		6.241	5.927	
Wilson	9.671	1.981		3.990	1.450	
Industry Averages	24.143		7.804	4.705		2.621
Flour*						
General Mills, Inc.	20.741	4.715		10.260	2.926	
Pillsbury Co.	22.271	8.089		8.571	1.096	
Industry Averages	21.506		6.402	9.416		2.011
Metal Containers*						
American Can Co.	28.628	29.630		9.499	.978	
Continental Can Co.	25.880	3.154		9.486	3.919	
Industry Averages	27.254		16.392	9.493		2.448
Brewers*						
Anheuser Busch, Inc.	14.597	10.925		9.342	1.029	
Pabst Brewing Co.	16.460	24.663		2.690	22.635	
Falstaff Brewing Corp.	20.700	11.782		14.805	2.774	
Industry Averages	17.252		15.790	8.946		8.813
Baking*						
Continental Baking Co.	20.735	33.998		13.449	9.715	
American Bakeries Co.	2.515	5.304		10.639	20.441	
General Baking	26.432	5.778		5.376	17.514	
Industry Averages	16.561		15.027	9.821		15.880
Bituminous Coal*						
Consolidation Coal Co.	5.517	.686		6.958	1.065	
Peabody Coal Co.	31.305	32.724		12.962	1.944	
Island Creek Coal Co.	1.183	9.801		7.981	13.000	
Industry Averages	12.668		14.404	9.30		5.336
Textile Mill Products*						
Burlington Industries	32.691	12.075		8.613	3.964	
Stevens (J. P.) & Co.	21.970	6.624		5.642	1.965	
Cone Mills Corp.	12.265	13.526		3.449	.884	
Dan River Mills Inc.	15.272	3.553		6.475	.790	
Industry Averages	20.549		8.944	6.045		1.901
Averages for Entry Barrier Group	19.991		11.864	0.033		7.346

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

APPENDIX B

AVERAGE OF AND VARIANCE OF PROFIT RATES (EBIT/TA) FOR THIRTY INDUSTRIES, 1956-1963, CLASSIFIED BY BARRIERS TO ENTRY

	EBIT/TA 1956-63	
	Average	Variance
High Entry Barriers		
Automobiles**		
General Motors Corp.	23.840	21.321
Ford Motor	17.080	17.075
Chrysler Corp.	6.077	50.805
Industry Averages	15.666	29.734
Chewing Gum**		
Wrigley (Wm.) Jr.	23.670	2.339
Industry Averages	23.670	2.339
Cigarettes**		
Reynolds Inc.	23.957	4.178
American Tobacco	16.903	.987
Liggett & Myers, Inc.	15.125	2.190
Philip Morris, Inc.	13.212	1.622
Industry Averages	17.299	2.244
Ethical Drugs**		
Merck & Company	24.245	3.734
Pfizer Inc.	18.474	8.007
Schering Corp.	28.990	122.234
Parke, Davis & Co.	24.073	42.160
Abbott Laboratories	18.732	4.213
Industry Averages	22.903	36.070
Flat Glass**		
Pittsburg	14.731	13.507
Libby-Owens-Ford	32.957	41.730
Industry Averages	23.844	27.618
Liquor**		
Seagram	10.746	.494
National Distillers	9.601	1.931
Schenley Industries	5.604	1.917
Hiram Walker	19.269	.596
Industry Averages	11.305	1.234
Nickel**		
Intl Nickel	20.599	19.818
Falconbridge	14.946	10.632
Industry Averages	17.773	15.225
Sulphur**		
Texas Gulf Sulphur	15.449	57.214
Freeport Sulphur Co.	10.771	24.711
Industry Averages	13.110	40.962
Averages for Entry Barrier Group	18.196	19.428

APPENDIX B.--Continued

	Substantial Entry Barriers			
	EBIT/TA 1956-63			
	Average		Variance	
Aluminum Production**				
Alcoa	8.369		12.295	
Reynolds Metals Co.	8.589		11.836	
Kaiser	7.655		9.714	
Industry Averages		8.204		11.282
Biscuits**				
National Biscuit Co.	21.408		1.826	
Sunshine Biscuits	18.845		5.094	
United Biscuits	8.894		4.909	
Industry Averages		16.382		3.943
Petroleum Refining				
Standard Oil (N.J.)	12.693		3.067	
Texaco, Inc.	13.554		1.360	
Mobil Oil Corp.	9.597		2.228	
Standard Oil (Ind.)	6.599		.800	
Industry Averages		10.611		1.864
Steel**				
U.S. Steel Corp.	11.901		18.503	
Bethlehem Steel Corp.	12.457		8.052	
Republic Steel Corp.	11.997		21.315	
Jones & Laughlin	8.617		5.381	
Industry Averages		11.243		13.313
Soap**				
Proctor & Gamble Co.	20.503		1.042	
Colgate Palmolive Co.	13.259		.810	
Industry Averages		16.881		.926
Farm Machinery and Tractors				
Intl Harvester	8.764		2.121	
Allis Chalmers	6.406		8.391	
Deere & Co.	13.067		14.084	
Industry Averages		9.412		8.199
Copper**				
Kennecott Copper Corp.	18.678		37.935	
Anaconda Co.	10.059		23.049	
Phelps Dodge Corp.	16.334		42.453	
Amer. Smelt & Refin.	8.635		9.924	
Industry Averages		13.426		28.340
Cement**				
Ideal Cement Co.	18.016		18.362	
Lone Star Cement	15.983		5.422	
Lehigh Portland	9.735		13.544	
General Portland	21.480		41.628	
Industry Averages		16.303		19.739

APPENDIX B.--Continued

Substantial Entry Barriers	EBIT/TA 1956-63			
	Average		Variance	
Shoe Machinery**				
United States Shoe	11.758		3.659	
Compo Shoe Machinery	8.196		16.029	
Industry Averages		9.977		9.844
Averages for Entry Barrier Group		12.493		10.828

APPENDIX B.--Continued

	Moderate-to-Low Entry Barriers EBIT/TA 1956-63	
	Average	Variance
Glass Containers		
Owens-Illinois Inc.	10.947	3.176
Anchor Hocking Corp	18.425	10.123
Thatcher Glass	12.789	9.346
Industry Averages	14.054	7.548
Tires and Tubes**		
Goodyear Tire	14.598	.594
Firestone Tire	14.899	1.417
U. S. Rubber	9.975	2.770
Goodrich (B.F.) Co.	11.801	8.994
Industry Averages	12.818	3.444
Shoes*		
International Shoe	10.098	5.042
Brown Shoe Co., Inc.	18.394	1.069
Genesco	10.277	4.920
Endicott Johnson Corp.	1.163	46.016
Industry Averages	9.983	14.262
Rayon**		
Celanese Corp.	10.721	2.627
Beaunit Corp.	11.266	16.084
Industry Averages	10.993	9.355
Gypsum Products		
U. S. Gypsum Co.	23.708	12.059
National Gypsum Co.	15.564	3.042
Industry Averages	19.636	7.550
Canned Fruits and Vegetables*		
California Packing	11.224	2.443
Libby, McNeill	6.684	6.477
Stokely-Van Camp	8.955	3.823
Industry Averages	8.954	4.248
Meat Packing*		
Swift & Company	5.255	1.373
Armour & Co.	6.736	4.575
Wilson	10.203	8.886
Industry Averages	7.398	4.945
Flour*		
General Mills, Inc.	11.766	4.656
Pillsbury Co.	11.491	3.779
Industry Averages	11.628	4.218
Metal Containers**		
American Can Co.	11.852	1.883
Continental Can Co.	11.942	2.797
Industry Averages	11.897	2.340

APPENDIX B.--Continued

	Moderate-to-Low Entry Barriers EBIT/TA 1956-63			
	Average		Variance	
Brewers*				
Anheuser Busch Inc.	15.188		3.702	
Pabst Brewing Co.	4.544		43.505	
Falstaff Brewing Cor.	18.723		3.088	
Industry Averages		12.818		16.765
Baking*				
Continental Baking Co.	15.212		6.805	
American Bakeries Co.	16.205		36.501	
General Baking	6.081		13.660	
Industry Averages		12.499		18.989
Bituminous Coal*				
Consolidation Coal Co.	8.088		1.625	
Peabody Coal Co.	11.616		.454	
Island Creek Coal Co.	8.685		20.630	
Industry Averages		9.463		7.570
Textile Mill Products*				
Burlington Industries	10.537		8.143	
Stevens (J.P.) & Co.	7.766		3.090	
Cone Mills Corp.	5.997		1.855	
Dan River Mills Inc.	8.959		1.735	
Industry Averages		8.315		3.706
Averages for Entry Barrier Groups		11.574		8.072

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

APPENDIX C

ANNUAL INTEREST COVERAGE (EBIT/IE) FOR THIRTY INDUSTRIES, 1956-1963
CLASSIFIED BY BARRIERS TO ENTRY

	High Entry Barriers							
	Annual EBIT/Ih							
	1956	1957	1958	1959	1960	1961	1962	1963
Automobiles**								
General Motors Corp.	100.170	79.435	75.461	161.735	166.654	99.552	115.897	190.380
Ford Motor Co.	-	89.056	23.455	82.059	76.397	70.973	85.174	103.646
Chrysler Corp.	8.256	31.726	-6.817	-0.080	8.010	3.286	15.415	33.085
Chewing Gum**								
Wrigley (Wm.) Jr.	-	-	-	-	-	-	-	-
Cigarettes**								
Reynolds Inc.	28.475	21.118	32.500	30.695	27.025	36.713	30.229	39.935
American Tobacco	13.196	12.884	16.605	24.024	21.995	23.850	28.088	39.836
Liggett & Myers, Inc.	12.513	10.887	17.935	26.622	27.799	27.767	27.453	27.751
Philip Morris, Inc.	8.764	8.903	11.159	10.147	13.781	15.893	12.897	10.715
Ethical Drugs**								
Merck & Company	-	-	-	-	-	-	-	-
Pfizer Inc.	-	83.293	38.622	21.471	19.589	24.735	30.486	28.733
Schering Corp.	-	-	-	-	-	-	-	-
Parke, Davis & Co.	273.692	288.526	343.750	177.029	190.742	117.813	61.922	48.446
Abbott Laboratories	-	-	-	-	-	-	-	-
Flatt Glass*								
Pittsburg	60.276	57.100	38.535	52.371	56.416	66.520	104.253	55.503
Libby-Owens-Ford	-	-	-	-	-	-	-	-
Liquor**								
Seagram	23.407	17.860	18.707	14.032	12.790	12.160	12.311	13.370
National Distillers	13.212	10.588	7.807	9.581	8.559	8.810	6.059	6.182
Schenley Industries	5.338	5.452	6.103	6.443	1.813	3.813	2.965	3.630
Hiram Walker	85.229	83.037	71.883	73.954	96.151	168.219	319.722	244.600
Nickel**								
Intl Nickel	-	-	-	-	-	-	-	-
Falconbridge	5.692	7.696	6.596	9.836	17.798	25.883	47.553	66.111
Sulphur**								
Texas Gulf Sulphur	-	-	-	-	-	-	-	-
Freeport Sulphur Co.	-	-	-	-	-	-	-	-

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

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APPENDIX C.—Continued

	Substantial Entry Barriers Annual EBIT/IE							
	1956	1957	1958	1959	1960	1961	1962	1963
Aluminum Production**								
Alcoa	19.631	10.875	5.215	6.325	3.883	4.768	6.421	6.283
Reynolds Metals Co.	8.274	6.839	5.542	5.122	3.161	2.887	3.108	2.874
Kaiser	12.076	5.228	4.143	3.794	3.511	3.448	3.855	3.045
Biscuits**								
National Biscuit Co.	387.000	-	-	-	-	-	52.224	41.850
Sunshine Biscuits								
United Biscuits	16.529	18.490	10.745	12.289	12.556	12.488	14.306	9.800
Petroleum Refining*								
Standard Oil (N.J.)	39.729	33.822	24.361	24.604	24.615	26.106	19.303	23.301
Texaco Inc.	45.754	34.269	30.119	29.444	32.827	33.938	41.774	50.578
Mobil Oil Corp.	37.663	31.729	26.623	25.658	27.009	31.585	28.423	18.164
Standard Oil (Ind.)	20.967	20.677	11.398	9.837	10.958	10.278	11.308	14.429
Steel**								
U. S. Steel Corp.	91.344	121.083	53.099	29.083	35.449	12.946	9.005	11.525
Bethlehem Steel Corp.	32.126	50.757	44.565	62.995	79.542	66.930	46.709	61.046
Republic Steel Corp.	125.235	121.421	46.173	28.497	18.832	11.223	7.308	11.998
Jones & Laughlin	26.404	19.504	9.964	11.642	10.921	11.784	7.266	12.055
Soap**								
Proctor & Gamble Co.	63.335	34.775	32.501	36.606	46.894	49.971	45.782	46.007
Colgate Palmolive Co.	13.955	14.110	14.361	17.657	15.273	16.906	15.727	16.275
Farm Machinery and Tractors**								
Intl Harvester	25.713	23.438	22.020	20.335	12.045	10.505	13.877	11.542
Allis Chalmers	10.147	7.081	10.663	13.211	5.748	4.048	3.771	2.950
Deere & Co.	16.009	18.109	20.713	14.290	4.160	7.465	9.162	12.042
Copper**								
Kennecott Copper Corp.	229.862	-	-	345.571	398.537	401.788	255.118	178.941
Anaconda Co.	47.082	19.534	15.049	30.205	24.251	27.115	37.532	20.303
Phelps Dodge Corp.								
Amer Smelt & Refin	-	-	63.083	43.250	390.500	206.313	-	127.053
Cement**								
Ideal Cement Co.	-	49.739	22.032	17.365	14.847	13.849	13.306	12.936
Lone Star Cement	47.015	16.681	15.636	17.627	14.036	15.937	17.030	24.761
Lehigh Portland	118.471	12.881	8.154	11.610	8.887	4.328	5.642	4.330
General Portland	-	-	22.936	25.634	25.554	32.540	30.224	
Shoe Machinery**								
United States Shoe	-	-	-	-	-	-	121.333	103.500
Compo Shoe Machinery	3.800	8.167	13.500	20.000	13.333	18.000	1.293	1.500

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

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APPENDIX C.--Continued

	Moderate-to-Low Entry Barriers Annual EBIT/IE							
	1956	1957	1958	1959	1960	1961	1962	1963
Glass Containers**								
Owens-Illinois Inc.	27.522	23.797	14.836	23.169	18.718	17.795	16.222	18.492
Anchor Hocking Corp.	-	-	-	-	-	-	-	-
Thatcher Glass	14.480	17.107	20.520	14.175	6.621	6.239	7.779	7.705
Tires and Tubes**								
Goodyear Tire	15.088	15.762	15.676	17.824	16.630	18.037	15.313	16.117
Firestone Tire	28.538	26.229	24.717	33.263	36.570	36.079	30.995	26.214
U. S. Rubber	11.081	10.442	8.591	13.295	11.725	8.952	8.580	7.300
Goodrich (B. F.) Co.	48.720	43.408	43.299	38.846	25.682	14.743	12.394	11.512
Shoes*								
International Shoe	10.649	9.339	8.663	9.934	7.587	4.000	6.301	5.847
Brown Shoe Co., Inc.	21.174	20.031	23.679	25.667	26.183	27.214	33.679	38.265
Genesco	10.049	8.275	10.960	17.683	14.720	6.148	6.642	4.513
Endicott Johnson Corp.	11.704	7.874	6.373	6.267	-1.728	-8.551	1.058	-1.788
Rayon**								
Celanese Corp.	9.806	8.343	10.213	14.091	9.116	9.056	11.522	12.463
Beaumit Corp.	35.436	15.400	8.922	7.449	16.157	8.685	14.590	12.472
Gypsum Products								
U. S. Gypsum Co.	-	-	-	-	-	-	-	-
National Gypsum Co.	28.037	24.542	29.823	36.310	36.800	37.224	39.610	43.755
Canned Fruits and Vegetables*								
California Packing	9.260	4.298	7.999	8.530	11.340	10.727	6.916	7.169
Libby, McNeill	10.718	3.393	2.762	5.052	3.528	2.858	2.846	1.966
Stokely-VanCamp	4.425	3.329	6.204	4.246	7.233	3.748	3.843	4.976
Meat Packing*								
Swift & Company	8.228	5.271	5.713	8.555	8.387	5.353	7.087	7.587
Armour & Co.	3.652	1.243	2.227	5.318	6.140	5.265	5.126	5.470
Wilson	16.933	13.481	14.000	16.804	3.907	15.610	15.857	16.192
Flour*								
General Mills, Inc.	50.093	33.010	25.421	13.387	14.306	11.560	16.923	19.136
Pillsbury Co.	4.819	7.416	13.942	7.509	10.061	7.708	6.148	7.020
Metal Containers**								
American Can Co.	23.565	13.483	11.574	9.524	7.336	10.036	11.272	10.576
Continental Can Co.	17.047	12.728	14.061	11.969	8.295	9.674	11.113	11.745
Brewers*								
Anheuser Busch, Inc.	19.848	22.011	23.949	33.674	38.596	42.456	47.158	51.984
Pabst Brewing Co.	-2.472	-11.026	0.397	2.088	2.890	11.495	16.860	22.148
Falstaff Brewing Corp.	23.974	21.463	20.311	29.024	33.838	32.676	18.656	22.590
Baking*								
Continental Baking Co.	19.477	20.732	36.434	37.698	41.796	32.898	15.571	17.775
American Bakeries Co.	69.588	133.222	127.250	155.429	-	-	84.500	72.400
General Baking	21.636	13.047	9.043	7.197	3.549	-0.427	1.744	4.338
Bituminous Coal*								
Consolidation Coal Co.	53.117	63.283	43.017	28.040	27.914	34.090	31.258	31.597
Peabody Coal Co.	8.371	7.484	6.861	7.687	8.191	10.663	10.852	12.332
Island Creek Coal Co.	-	-	-	-	-	-	-	25.130
Textile Mill Products*								
Burlington Industries	5.590	5.966	4.983	11.445	12.006	8.813	10.951	12.033
Stevens (J. P.) & Co.	8.515	6.003	4.301	8.503	8.097	6.036	8.325	6.169
Cone Mills Corp.	24.938	10.874	5.944	13.488	6.326	3.856	3.949	5.649
Dan River Mills Inc.	21.172	10.752	7.404	13.958	10.704	6.090	7.631	8.500

*Industries with eight firm concentration ratios below seventy percent.

**Industries with eight firm concentration ratios above seventy percent.

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