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# THE STRUCTURE WITHIN INDUSTRIES AND COMPANIES' PERFORMANCE

Michael E. Porter\*

THE theory of industrial organization has by and large viewed the industry as a homogeneous unit. Firms in an industry are assumed to be alike in all economically important dimensions except for their size. In this context, a considerable body of research posits that many industries are characterized by the existence of market power shared among their firms.<sup>1</sup> This market power results, following Bain and others, from the presence of structural barriers to the entry of new competition and from industry characteristics (such as seller concentration) which lead to the recognition of mutual dependence among competitors and thereby stop interfirm rivalry short of the competitive ideal. Barriers to entry equally protect all firms in the industry from new entrants and the fruits of mutual dependence recognition accrue symmetrically to all firms, as well. Thus market power is an asset shared by all firms in an industry in proportion to their sales. Above-normal profits are the manifestation of this market power, and the profit rates of firms in an industry should be equal except for random (and hence uninteresting) disturbances.

This theory of industrywide or "shared asset" profit determination, versatile as it has proven to be, is at odds with both commonplace observation and a small but growing body of systematic empirical studies. All firms in the typical industry are clearly not alike: they follow very different strategies along dimensions such as their degree of vertical integration, breadth of product line, distribution arrangements, and so on. An industry's member firms also frequently earn rates of return on invested capital that exhibit considerable variance. For example, General Motors has persistently outperformed Ford, Chrysler, and

American Motors.<sup>2</sup> IBM outperforms other computer manufacturers. Crown Cork and Seal (a smaller firm) persistently outperforms National Can, American Can and Continental Can. Finally, there are several statistical investigations of profitability that have produced results inconsistent with the shared asset theory of market power. Demsetz (1973) has, for example, found that the profits of smaller firms are not higher in concentrated industries than they are in unconcentrated ones, though the profits of larger firms are.<sup>3</sup> Shepherd (1972) argued that market power is firm-specific and dependent on the firm's own market share, implying that profit rates increase systematically with size within an industry. Yet Marcus (1969) found that the relationship between firm size and profitability within an industry is erratic, with some industries exhibiting positive relations, some negative relations and others no apparent statistically significant relation at all.

The purpose of this paper is to present a theory of the determinants of companies' profits which rests on the *structure within industries* as well as on industrywide traits of market structure. Built on the concepts of strategic groups and mobility barriers, this theory provides an explanation both for stable differences in competitive strategies among firms within an industry, and for persistent intraindustry profit differences among firms. I will show that the theory is consistent with the previously reported statistical results noted above. Next, I will present the supportive results of a new statistical test which examines the structural determinants of profitability for firms differently situated within their industries. Finally, I will show that the empirically supported theory refutes the Demsetz/Mancke view that large firms earn higher profits largely because they are more efficient or lucky, and not because they possess market power.

<sup>2</sup> For these and the other firm profitability data, see the helpful compilations in *Forbes*, January 1, 1977 and earlier years.

<sup>3</sup> A consistent result is obtained by Osborn (1970), who finds that concentration has little (or a negative) effect on the profitability of small, fringe firms in an industry.

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<sup>1</sup> This is the familiar structure-conduct-performance paradigm of industrial organization. See Bain (1956). Scherer (1970) provides a comprehensive review.

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### I. The Theory of Strategic Groups, Mobility Barriers and Firms' Profits

Let us take as our unit of observation the industry, consisting of a group of competitors producing substitutes that are close enough that the behavior of any firm affects each of the others either directly or indirectly.<sup>4</sup> Common observation suggests that the firms in an industry often differ from one another along a variety of dimensions—degree of vertical integration, level of fixed costs, breadth of product line, extent and media composition of advertising, outlays on R&D as a percentage of sales, geographically served markets, nature of distribution channels employed, presence of in-house servicing capacity and so on.<sup>5</sup> These variations reflect differences in the competitive strategies of the firms in that industry, where their competitive strategies are firms' choices about the major competitive decision variables.<sup>6</sup> These strategic differences emerge in a variety of ways, reflecting initial differences among firms in their tangible or intangible assets and other factors which will be discussed below.

An industry can thus be viewed as composed of clusters or groups of firms, where each group consists of firms following similar strategies in terms of the key decision variables. Such a group could consist of a single firm, or could encompass all the firms in the industry. I define such groups as *strategic groups*.<sup>7</sup> Firms within a strategic group resemble one another closely and, therefore, are likely to respond in the same way to disturbances, to recognize their mutual dependence quite closely, and to be able to anticipate each other's reactions quite accurately. Between strategic groups, however, the situation is different.

<sup>4</sup> There are many subtleties in defining an industry; for purposes of this paper I will assume that the *outer* boundaries of the industry have been defined to everyone's satisfaction.

<sup>5</sup> For example, for a study demonstrating differences in R&D behavior within industries, see Mansfield and Wagner (1975).

<sup>6</sup> Not only do competitive strategies within the industry vary among competitors, but their "external" situations vary as well. Some firms in the industry may be independent, single industry firms, some may be part of a vertically related group of businesses in a larger firm and some may be divisions of diversified companies. These differences can be viewed as a special case of the theory of strategic groups, and their impact has been examined by Newman (1978). We will concentrate here on intramarket strategic differences.

<sup>7</sup> Hunt (1972) first coined this term. I will have more to say about Hunt's contribution below.

The principal implication of strategic groups is that their presence within an industry fundamentally affects the expected distribution of firms' profit rates in two ways. First, barriers to entry differ among strategic groups. For example, entry into a strategic group consisting of full-line, nationally advertised brand name producers will be more difficult than entering a strategic group of regional producers of private-label merchandise, even though both produce the same physical product. Second, the presence of multiple strategic groups affects the process of competitive rivalry, broadly defined. Mutual dependence is recognized more readily within a strategic group than between firms in different groups, and thus the configuration of strategic groups will determine how "competitive" rivalry in the industry will be and the degree of rivalry among particular groups. Also, some groups may have superior bargaining power with suppliers and buyers, and may face lower cross elasticities of demand with substitute products produced by other industries.

Those strategic groups within the industry that possess high mobility barriers, are relatively more insulated from rivalry by their place in the configuration of strategic groups, have superior bargaining power with adjacent industries and face lower elasticity of demand with substitutes will enjoy high profits, and vice versa. Thus the distribution of profit rates among an industry's member firms will reflect two broad sets of structural influences. First, common industrywide structural traits of an industry such as market growth, the structure of buying industries and generalized buyer purchasing behavior for the product will raise or lower the average profit potential of the industry as a whole. Second, however, profitability of the individual firm will depend on the *structure within the industry* (i.e., the firm's strategic group membership and the configuration of other strategic groups within the industry).

The concept of strategic groups inevitably raises the question of industry boundaries. Are strategic groups merely properly defined industries? I stress that this is not the case. The interfirm differences in strategy that define strategic groups reflect different approaches to operating in the same competitive arena, and so some interdependence must be recognized. For example, a firm's level of vertical integration, the

breadth of its product line, and many of the other traits described above do not impose differences on the product at all. The idea is that firms within an industry compete viably with one another, although they are not all identical and may not compete on equal terms. The concept of strategic groups allows us to systematically integrate differences in the skills and resources of an industry's member firms and their consequent strategic choices into a theory of profit determination.

#### *Strategic Groups and Mobility Barriers*<sup>8</sup>

The theory of entry barriers has identified them as characteristics common to the industry that insulate all member firms equally from potential entrants. Yet the differences in firms' strategies that define strategic groups imply differences in marketing methods, technologies and scales of activity that can make the standard sources of entry barriers—economies of scale, product differentiation, heavy requirements for capital, cost advantages and proprietary knowledge<sup>9</sup>—vary by strategic group. Entry can be blocked into one of an industry's strategic groups and easy into another. Product-differentiation barriers, for example, are greater for heavily advertised national brands than for the products of private-label manufacturers whose goods have no brand name at all. Economies of scale are most significant in protecting the firm that has a large share, is vertically integrated, has a captive distribution and service network, or uses national advertising media. The importance of entry barriers, then, depends on the particular strategy adopted by the firm.<sup>10</sup> This implies, for example, that there can coexist stable market shares among the leading branded firms in the industry, on the one hand, protected by high entry barriers, and rapid entry and exit

(or turnover) among small unadvertised or private label producers, on the other hand.<sup>11</sup>

When strategic groups are present, entry barriers are partly specific to the strategic group and not entirely common to the industry. Furthermore, entry barriers not only insulate firms from entrants new to the industry, but they also insulate firms in a strategic group from entry by members of another group (intergroup mobility). If, for example, an industry's members differ greatly in product differentiation, with one group of producers advertising branded goods nationally and another group selling unadvertised goods, members of the latter group will face a deterrent to entering the advertised group similar to that confronting a new firm entering the industry. Entry barriers, then, can be framed more generally as *mobility barriers* which offer this dual protection. Mobility barriers provide some firms in an industry with persistent advantages over others.

The proposition that entry barriers generalize to mobility barriers provides an explanation for why some firms in an industry persistently earn higher profits than others, and why firms adopt different strategies even though not all strategies are equally successful. Without mobility barriers firms with successful strategies would be quickly imitated by others, and firms' profit rates would tend toward equality except for relatively transient differences in firms' abilities to execute the "best" strategy in an operational sense. The existence of mobility barriers means that some firms can enjoy systematic advantages over others which can be overcome only by strategic breakthroughs that lead to structural change in the industry, and not merely through better execution.<sup>12</sup>

If firms in some strategic groups have systematic advantages over others this raises the important question of how these groups form. Mobility barriers (and hence strategic groups) amount to structural elements of an industry, but these

<sup>8</sup> See Caves and Porter (1977) for fuller discussion of this concept.

<sup>9</sup> For the standard treatment of entry barriers, see Bain (1956).

<sup>10</sup> Brock (1975, chapters 1–5), for example, finds dramatic differences in capital requirements, economies of scale, and product differentiation as entry barriers between integrated system producers producing mainframe and peripherals, and peripherals only producers in the computer industry. Accordingly, no entry occurred into integrated systems from 1960 to 1973 despite the rapid growth of this segment, while numerous entrants came into the peripheral only segment.

<sup>11</sup> Stonebraker's (1976) statistical examination, for example, found the coexistence of high rates of return among large firms in an industry and highly variable rates of return and high failure rates among small firms.

<sup>12</sup> While these cannot be explored in any detail here, the theory of mobility barriers also has implications for the appropriate pattern of entry by outside firms, the likelihood of de novo entry versus intergroup shifts into a particular group, and other aspects of entry behavior. See Caves and Porter (1977).



structures were originally created or actuated by firms discovering how to exploit differences in their initial assets. If firms differ in skills or resources, some will outdistance others in racing towards the strategic groups with higher mobility barriers (and profits) as the industry develops. But within limits defined by the underlying structure of the industry, mobility barriers can be erected by investments in advertising, R&D, building an in-house service capability, etc., which sacrifice short-run profits for later profits due to the presence of these structural defenses. These investments in building mobility barriers are generally risky, however. If firms differ in their goals or risk posture, some firms may be more prone to make such investments than others and this will lead to different strategic groups. Further, business units which differ in their relation to a parent company (e.g., in being part of a vertical set of entities versus a free standing firm) may differ in goals in ways that will lead to strategy differences, as may international competitors with different situations in their other markets.<sup>13</sup>

The historical development of an industry provides another explanation of why firms with comparable decision-making capabilities may have adopted different strategies. In some industries, early entry may provide some entrants with lower costs of adopting some strategies than later entrants. An additional factor is that as an industry develops, learning occurs and uncertainty is reduced along a number of dimensions such as the size of demand, product characteristics most preferred by buyers, production technology, etc. In addition, mobility barriers due to scale economies, product differentiation, and other causes may change, either as a result of firm investments or exogenous causes.<sup>14</sup> These changes mean that

<sup>13</sup> For supporting data see McEachern and Romeo (1978). It should be noted that luck or historical accident can result in a firm being in a particularly favorable strategic group—there need not be a conscious positioning. This is particularly likely when the structure of the industry has changed.

<sup>14</sup> Changes in the structure of the industry can either facilitate group formation, or work to homogenize groups. For example, technological changes or changes in buyer behavior can shift industry boundaries bringing entirely new strategic groups into play in the industry by increasing or decreasing product substitutability and hence shifting relevant industry boundaries. Conversely, maturity in an industry which lessens the buyer's desire for manufacturer service capability, or for the reassurance embodied in the manufacturer having a full product line, can work to reduce the mobility barriers that accrue to some strategic dimensions and thus reduce the number of groups.

later entrants may be unable to replicate some strategies chosen by earlier entrants, and therefore select quite different ones. The irreversibility of many forms of firm investment decisions precludes early entrants from adopting the strategies of the subsequent entrants later on. A related point is that the process of historical evolution of an industry tends to self-select different types of entrants at different times, and can lead to the joint presence in an industry of firms with different time preferences, degrees of risk aversion and other goals, in addition to different strategies.

### *Strategic Groups and Oligopolistic Rivalry*

The presence of strategic groups affects the process of interfirm rivalry and hence average profits in an industry, as well as the dispersion of firms' profits. Divergent strategies reduce the ability of oligopolists to coordinate their actions tacitly because firms with different strategies will have different preferences about market prices, rates of new product introduction, etc. These different targets are hard to reconcile and tend to make tacit coordination harder to sustain once achieved and tend to be destabilizing.<sup>15</sup> In addition, the mutual flow of information and the ability to rapidly detect cheating will be less for firms with divergent strategies and thereby with less interaction via common customers, suppliers and channels of distribution. The stability of tacit coordination is reduced, reducing average industry profits.

While the general proposition that strategic asymmetry increases industry rivalry is a beginning, it begs the question of how the particular configuration of strategic groups in an industry relates to the competitive outcome, and how a given strategic group is affected by rivalry with other groups. Are all strategic groups equally potent in influencing industry rivalry? How do changes in the make-up of strategic groups affect the outcome?

As I have argued elsewhere (Porter, 1976), the

<sup>15</sup> This observation was first made by Michael S. Hunt (1972), pp. 12–23 in a study of the major home appliance industry. Howard H. Newman (1978) built on Hunt's basic idea by observing that interindustry differences among firms in their "external" circumstances could have the same effect of leading to different preferences among firms in an industry for the key strategic variables. He and Porter (1976) present supportive statistical tests.

impact of strategic groups on industry rivalry depends on three factors that also hold the key to the rivalry of particular groups with each other: the *number and size distribution* of groups, the strategic "*distance*" between groups and the *market interdependence* among groups. Other things held constant, the more numerous and more equal in size the strategic groups, the more strategic asymmetry enhances rivalry. Conversely, if one strategic group constitutes a small portion of an industry while another is a very large portion, then strategic asymmetry is likely to have little impact on rivalry since the power of the small group to influence the large group is probably low. Strategic distance refers to the degree to which strategies in different groups differ in terms of the key strategic decision variables, such as advertising, cost structure, R&D, organization of production, etc. The greater this distance, other things being equal, the more difficult tacit coordination becomes and the more vigorous is rivalry likely to be in the industry.

The third dimension of intergroup competition, market interdependence, is the degree to which different strategic groups are competing for the same customers rather than customers in distinctly different market segments.<sup>16</sup> Diversity of strategies will enhance rivalry among groups the most where market interdependence is high; when strategic groups are targeting for very different segments, their effect on each other is much less severe.

All three factors interact to determine the pattern of intergroup rivalry in the industry as a whole. In addition, following this reasoning the impact of intergroup rivalry on a particular strategic group will depend on its situation along the three dimensions. Rivalry is not symmetric, but rather is asymmetric reflecting strategy differences that make preferences, information flow and relative power among firms asymmetric. The impact of rivalry on a firm will depend on the position of the other players. A particular strategic group will be most exposed to rivalry from other strategic groups if it competes for the same market segments as other groups that are large in size and follow different strategic approaches to it. Thus strategic groups have implications not only for rivalry in the industry as a

whole, but for the pattern of rivalry *within* the industry.

The presence of strategic groups also affects rivalry in a broader context. Different strategic groups may enjoy greater bargaining power vis-à-vis suppliers and customers than others due to differences in scale, threat of vertical integration or product differentiation following from their differing strategies. Differences in product differentiation, quality and other characteristics resulting from strategy differences can also lead to differences among strategic groups in the overall elasticity of demand due to substitute products produced by other industries. These are further reasons why profits may differ for different strategic groups.

#### *Strategic Groups and Firm Profits within an Industry*

We can summarize these ideas to present a theory of firm profit determination. Industrywide traits of market structure (such as industry growth and the structure of buying industries) influence the profits of all firms in the industry, and hence the industry's average profitability. In this context, however, the height of mobility barriers protecting a particular strategic group determines its potential profitability. The degree to which these potential profits are eroded by rivalry with other strategic groups is determined by the position of the strategic group in the group structure in the industry as described above, and the potential profits of the group also depend on its bargaining power with adjacent industries and its exposure to substitute products. We need a number of additional elements to complete the model of firm profit determination. First, the profitability of the strategic group will be influenced by the degree to which firms *within* the group compete among each other. While mutual dependence should be fully recognized within groups that contain few firms, it may be more difficult to sustain if there are numerous firms in the strategic group or if the risk profiles of the firms differ.

The second element is differences in firms' scale within the strategic group. While firms following similar strategies will likely be of comparable scale, scale differences may work to the disadvantage of smaller firms in the group where

<sup>16</sup> For a discussion justifying the presence of different market segments within an industry, see Porter (1976), chapter 3.

there are aspects of the strategy (e.g., captive distribution) subject to economies of scale.

The third element is differences in the cost of mobility into the strategic group. These can result from differences in the timing of firms' movement into the strategic group—later entrants may face disadvantages if there are absolute cost advantages of being early in establishing brand names, locating raw materials, etc., or the cost of mobility may differ because an established firm possessed initial assets from its operations in other industries which could be jointly utilized in the new group.

The final element in the theory is the ability of the firm to execute or implement its strategy in an operational sense. Some firms may be superior in their ability to organize and manage operations, develop creative advertising themes, make technological breakthroughs with given inputs of resources and the like. While these are not structural advantages of the sort created by mobility barriers and the other factors discussed above, they may be relatively stable advantages if the market for managers, scientists and creative personnel is imperfect.<sup>17</sup> Those firms in a group with superior abilities to execute strategies will be more profitable than other firms in the same group.

In view of the interacting nature of these considerations, the profit potential of a firm in any group is affected by the outcome in those strategic groups that interact closely with its group but have higher mobility barriers. These groups have greater profit potential than the less protected group if competition *within* them is not too great. However, if competition within them is fierce for some reason and prices and profits are competed down, this will ruin the profits of the firms in the interdependent groups less protected by mobility barriers. Lower prices (or higher costs through advertising competition, etc.) spill over via market interdependence to require that less protected groups respond, driving down their own profits.

Thus there is a nested property to firms' profit potential within an industry. We can imagine a rank ordering of the strategic groups in an indus-

try in terms of their mobility barriers. Where market interdependence among groups is significant, recognition of mutual dependence in the group most protected by mobility barriers is a necessary, though not sufficient, condition for supernormal profits in the other less protected groups. An outbreak of warfare which sours profits for a protected group, then, sours profits for all other directly or indirectly market interdependent groups ranking lower on the mobility barrier hierarchy.<sup>18</sup>

Collecting all these ideas, the structure within an industry consists of its configuration of strategic groups, including their mobility barriers, size and composition, strategic distance and the market interdependence relative to each other. The firm will have higher profits if it is located in a group with the best combination of high mobility barriers, insulation from intergroup rivalry and substitute products, bargaining power with adjacent industries, the fewest other members, and suitability to the firm's execution ability. One or another of these elements may involve a tradeoff with the other. For example, the strategic group with highest mobility barriers (and greater profit *potential*) may have to compete more vigorously with other groups than one with lower mobility barriers (lower potential profit), or a firm entering the group may be a relatively small scale (less profitable) member of the group.

The presence of a structure within industries serves as an explanation for the puzzling statistical results described earlier. If small firms are likely to operate in strategic groups unprotected by mobility barriers, the theory would suggest that concentration, and hence mutual dependence recognition, among leading firms will have little positive effect on small firm profits as Demsetz (1973) and Osborn (1970) found.

Marcus' (1969) results are similarly explicable. The strategic group model implies that intraindustry profit rates will vary if there are heterogeneous strategic groups. However, the particular relation between a firms' size within an industry

<sup>17</sup> Since there are information costs and potentially impacted information in identifying superior personnel in other firms, and transactions costs of switching employment from one firm to another, the imperfection of this market is plausible.

<sup>18</sup> Another possibility is that firms in the protected group (or any group) will partially recognize their mutual dependence, holding price but competing among themselves on other variables or investments in entry deterrence. This would provide a price umbrella for other firms even though profits were competed away in the protected group, and profits in less protected groups could be higher despite lower mobility barriers if they can control intragroup rivalry.

and profitability will depend on the configuration of strategic groups if we do not control for group structure, as Marcus found. If the leading firms operate in strategic groups protected by mobility barriers, insulated from intergroup rivalry and with superior bargaining power over suppliers and customers relative to smaller firms, then the relation between size and profitability would be positive. However, the relationship could go the other way if smaller firms in the industry followed specialist strategies achieving high product differentiation and great technical know-how in their particular product niches, while the large firms followed broad line strategies achieving lower product differentiation and there were few economies of scale in the industry.<sup>19</sup> Significantly, Marcus found that size and profits were positively related in 35 industries, negatively related in 9 industries but not related statistically in fully 74 of his 118 industries, suggesting the importance of the unmeasured structure of groups within industries.<sup>20</sup>

## II. An Empirical Examination of the Theory of Strategic Groups

Testing the implications of the theory directly in a broad sample of industries presents formidable problems for two reasons. First, securing financial performance data for individual firms in a large sample of industries is hampered by the consolidated financial results of diversified companies and the presence of privately held firms in most industries. Second, becoming sufficiently well informed about a large sample of industries to identify their configurations of strategic groups

<sup>19</sup> Large firms cannot shrink to become small firms, or set up divisions to compete as small firms, because of mobility barriers. Large firms also may face difficulties in trying to enter the segments occupied by small firms if these are inconsistent with quality images, distribution arrangements or other aspects of the large firms' strategies in their existing segments. Large firms may have initially chosen the now less profitable strategies because of differences in initial assets, structural change in the industry, differing goals, etc.

<sup>20</sup> The theory is also consistent with McEnally's (1976) result that the variance of firm rates of return within industries with high entry barriers exceeds that of industries with low entry barriers. High entry barriers, which McEnally measures conventionally in the industrywide sense, implies the presence of some strategic groups very protected by mobility barriers, probably coexisting with others that are not. The range of strategic group profits would likely be greater under these circumstances than in an industry where no strategic groups had high mobility barriers.

is a formidable task, because almost an industry study of each industry would be required.

I chose as a result to proceed indirectly, using the relative size of a firm in its industry as a proxy for its strategic group membership. The basic sample consisted of 42 consumer goods industries at the three-digit or IRS "Minor" level of aggregation used in a previous study.<sup>21</sup> I divided firms in each industry into two categories that I shall call industry *leaders* and industry *followers*.<sup>22</sup> Industry leaders were defined as the largest firms in the industry, accounting for approximately 30% of industry sales revenue—an arbitrary figure; all other firms were defined as followers (after the exclusion of the fringe firms). Starting with the largest size class in which firms appeared in an industry, I summed sales revenues of successively smaller size classes until 30% of industry sales was reached, including in the leader group the entire size class in which the 30% cutoff occurred.<sup>23</sup> The final sample consisted of 38 industries.<sup>24</sup>

### *Leaders, Followers and the Strategic Group Hypothesis*

How can we utilize this simple dichotomy between industry leaders and industry followers to test the implications of the theory of strategic

<sup>21</sup> Porter (1974, 1976). The 42 industries are listed in table 1 and figure 6-1, respectively, of these two sources.

<sup>22</sup> For each industry, I excluded firms with assets of less than \$500,000. This was because previous research has shown that there are biases in the way these firms report profits relative to larger firms due to entrepreneurial withdrawals (see Stigler (1963); Marcus (1969)).

<sup>23</sup> The inclusion of the entire size class where the 30% cutoff fell meant that the actual proportion of industry sales accounted for by my leader group varied upward from 30%, depending on the bunching of firms in the discrete IRS size classes. Where the leader group identified by this procedure constituted 75% or more of industry sales, the industry was excluded from the sample since the validity of the leader/follower distinction was questionable. This resulted in the exclusion of four industries, cigarettes, tires, motor vehicles, and costume jewelry. The sensitivity of the results to changes in the percentage chosen for purposes of excluding industries was tested; the results did not change materially and hence the original sample of 38 industries is used throughout.

<sup>24</sup> A qualification that should be noted is that deficiencies in the IRS procedure of assigning entire firms to their principal industries may mean that firms classified into the leader group tend to be more diversified firms and not "true" leaders. However, there is no evidence that diversified firms are more profitable than undiversified ones which would systematically bias the results, and we have argued earlier that the firm's pattern of diversification will relate to its choice of strategy in a particular industry.



groups for the distribution of firm profits within an industry? To do this, we must associate the leader/follower dichotomy with the unmeasured pattern of strategic groups in the industry. Because of differences in its firms' functional activities, each strategic group will have its own efficient scale, and hence the variance of firm sizes within groups should be less than the variance between groups. When firms are divided by size class, therefore, the probability is small that strategic groups will be split although each division may contain more than one strategic group.<sup>25</sup>

The leader/follower dichotomy may be particularly apt for dichotomizing strategic groups in a sample restricted to consumer goods industries. While the configuration of strategic groups will vary from industry to industry, the leader group should encompass those strategic groups in the industry which are characterized by strategies potentially achieving economies of scale in production technology, vertical integration, captive distribution, in-house repair and service facilities, national advertising, and so on if these economies exist in the industry. The leader group should also encompass strategic groups with broad product lines and large sales forces. The follower group, on the other hand, is likely to encompass strategic groups composed of firms following specialist or narrow-line strategies, regional strategies, nonintegrated strategies, and so on. Thus the leader/follower distinction captures some of the variance among strategic groups.

My theory suggests that different elements of industry structure will provide mobility barriers or affect the pattern of rivalry for different strategic groups. Heavy scale economies in production, distribution or service, for example, would act as mobility barriers for broad-line, integrated firms in the leader group but not for followers. Thus a central prediction of the theory is that different structural models will be appropriate to explaining average firm profitability in the leader and follower groups, given the likely differences in strategy between firms in the two groups.

To test this, a number of measures of industry

<sup>25</sup> The absence of a more complete size distribution of firms than the large discrete size classes given by the IRS precluded more sophisticated approaches to dividing the size distribution.

structure were compiled as shown in table 1.<sup>26</sup> Where large production economies of scale or product differentiation through heavy advertising exist, these would act as mobility barriers for the leader group and increase its potential profitability. For the follower group, the effect of the scale-related mobility barrier measures is ambiguous, and will depend on the net of two effects. On the one hand, mobility barriers protecting leaders will create a potential umbrella for followers. On the other hand, the presence of large production or advertising scale economies implies a cost disadvantage for followers. If intergroup rivalry exists, this would imply a negative relation between follower profits and scale economies or advertising. As a result, the sign of the relation is ambiguous, though we would expect the significance of production scale economies and advertising to be much greater for leaders than followers.

Top-end concentration proxies the likelihood that firms in the leader group can achieve mutual dependence recognition and thereby reap the potential profits created by any mobility barriers. Thus concentration should be positively related to leaders' profits, while leaders' profits would be inversely related to the number of firms in the leader group. How top-end concentration would affect the follower group is ambiguous in the same way as the effect of scale-related entry barriers was. Concentration could work to increase follower profits through raising leader group profits and thereby creating an umbrella for followers. On the other hand, the umbrella would not operate unless followers were protected by some mobility barriers. A concentrated leader group might represent a more potent threat to the followers where the two groups are strongly interdependent, increasing the depressing effect of intergroup rivalry on followers' profits. An a priori prediction of the effect of concentration on followers cannot be definitive given the limited number of structural measures available, though we would expect it to be less positive than for leaders (or even negative).

<sup>26</sup> The data sources and construction of the basic variables are described in detail in Porter (1976), Technical Appendix. The time period was chosen for consistency with that of the previous study for comparative purposes. It has the additional benefit of being relatively less affected by diversification than later years would be, since a major diversification wave occurred in the United States in the late 1960s and early 1970s.

TABLE 1.—VARIABLES USED IN THE STUDY

Return on Equity in the Leader and Follower Groups:	Net profit after taxes as a percentage of stockholders' equity, averaged over the period 1963–1965.
Number of Firms in the Leader and Follower Groups:	The absolute number of firms in the leader and follower groups.
Four-firm Concentration Ratio:	The proportion of industry sales accounted for by the largest four firms, 1963.
Eight-firm Concentration Ratio:	The proportion of industry sales accounted for by the largest eight firms, 1963.
Relative Market Share ( <i>RELSH</i> ):	The ratio of the average share of industry shipments of leader group firms to the average share of industry shipments of follower group firms. <sup>a</sup>
Adjusted Four-firm Concentration Ratio:	The four-firm concentration ratio divided by the number of firms in the leader group. This is an interactive measure of the relative share of the top end firms and the number of leaders, the latter positively influencing the degree of rivalry in the leader group.
Advertising/Sales in the Leader and Follower Groups:	The ratio of advertising to sales, averaged over the period 1963–1965, for the leader and follower groups.
Industry Advertising/Sales ( <i>A/S</i> ):	The ratio of advertising to sales for the industry as a whole, averaged over the period 1963–1965.
Minimum Efficient Scale of Production ( <i>MES</i> ):	An estimate of the minimum efficient scale of plant expressed as a proportion of industry sales, 1963. <sup>b</sup>
Interactive Measure of Production Economies of Scale ( <i>MESD10</i> , <i>MESD20</i> ):	The product of minimum efficient scale and a dummy variable equaling 1 if the cost disadvantages of small plants exceed a given percentage (10% or 20%), and zero otherwise. This variable reflects the proposition that scale economies are the most potent barriers where the cost disadvantage of small plants is high. <sup>b</sup>
High Scale Economy Barriers ( <i>HIBAR</i> ):	A composite variable measuring the height of scale economy barriers, constructed by standardizing <i>A/S</i> and <i>MESD20</i> and taking the higher of the two for each industry in the sample.
Concentration-Scale Economy Interaction ( <i>CBAR</i> ):	<i>HIBAR</i> multiplied by adjusted four-firm concentration. This variable measures the interaction of concentration and high scale economy barriers.
Absolute Capital Requirements for Production:	The minimum efficient scale of plant multiplied by the industry average capital to sales ratio. This gives a measure of the capital required to build an efficient plant.
Industry Growth:	Industry growth in demand, expressed as the ratio of 1965 industry shipments to 1958 industry shipments.
Regional Dummy Variable:	A dummy equal to 1 if the industry is local or regional and zero otherwise.
Convenience Goods Dummy Variable:	A dummy equal to 1 if the industry is a convenience goods industry and zero otherwise. The definition and importance of this characteristic of industry structure is discussed in Porter (1974).

<sup>a</sup> Where average shares equaled the total shipments of firms in the group divided by the number of firms in the group.

<sup>b</sup> The construction and use of this measure is described in Caves, Shirazi, and Porter (1975).

Much greater average size of leaders relative to followers, however, would probably have little impact on leader profits, but adversely affect followers.

Rapid industry growth should increase both leader and follower profits by reducing the necessity to fight for market share to achieve satisfactory growth. But its impact is likely to be more potent for followers who are more vulnerable to intergroup rivalry from leaders than vice versa, and where larger numbers and generally

lower mobility barriers may imply more intense intragroup rivalry. Reduction of the incentives for interfirm rivalry within the leader group, already strongly recognizing its mutual dependence, may be relatively less important.

### Empirical Results

Table 2 presents mean values of leader and follower rates of return, and simple correlations with measures of industry structure. The correla-

TABLE 2.—SELECTED MEAN VALUES AND SIMPLE CORRELATIONS BETWEEN GROUP RATES OF RETURN AND INDEPENDENT VARIABLES

	Average Leader Group Rate of Return	Average Follower Group Rate of Return	Industry Average Rate of Return
Mean	11.68%	10.84%	
Standard Deviation	6.17%	3.48%	
	Correlations <sup>a</sup>		
Average Leader Group Return	1.00	0.14	0.61
Average Follower Group Return	0.14	1.00	0.52
4-Firm Concentration Ratio	0.23	-0.20	-0.02
8-Firm Concentration Ratio	0.21	-0.18	-0.06
Relative Market Share of Leaders to Followers	0.06	-0.14	0.07
Adjusted 4-Firm Concentration Ratio	0.41	-0.07	0.22
Minimum Efficient Scale ( <i>MES</i> )	0.30	-0.16	0.11
<i>A/S</i>	0.42	0.10	0.57
<i>HIBAR</i>	0.58	0.11	0.57
<i>CBAR</i>	0.68	0.11	0.59
Absolute Capital Requirements	0.28	0.48	0.40
Industry Growth Rate	0.29	0.44	0.50

<sup>a</sup> With  $n = 38$ , a simple correlation of 0.27 is statistically significant at the 95% level.

tion between rates of return of leading firms and follower firms in the same industry is strikingly low (0.14). If the profitability of all firms in an industry were affected alike by industry structure (as the shared-asset theory holds), we would expect a strong correlation between leaders' and followers' profits. The low correlation is consistent with firms' profitability depending on their position within the industry and the array of strategic groups in the industry.

Firms in the leader group are on average more profitable than those in the follower group (11.68% vs. 10.84%) while the standard deviation of leader group rates of return is greater.<sup>27</sup> This modestly supports the notion that mobility barriers and rivalry determinants are generally more favorable in the leader group, though apparently wide variations exist depending on the particular industry. The fact that leaders are not necessarily more profitable is demonstrated by a closer look at the data. Of the 38 industries in the sample, the mean rate of return of the follower group was 0.5 or more percentage points higher in 15 industries. Figure 1 shows the industries where followers were more profitable, as well as those industries where leader group profits were much higher than follower group profits.

The industries in which follower rates of return are higher appear generally to be those where economies of scale are either absent or not great

<sup>27</sup> The difference in means is not statistically significant.

(clothing, footwear, pottery, meat products, carpets), and/or where the industry is highly segmented into numerous distinct product lines or varieties (optical, medical, ophthalmic, liquor, periodicals, carpets, toys and sporting goods) and firms can potentially achieve high product differentiation by specializing in a particular niche. The industries where leader group rates of return are greatly higher seem to be generally those with heavy advertising (soap, perfumes, soft drinks, grain mill products, cutlery), and/or research outlays (radio and television, drugs, photographic equipment). These findings are in accord, albeit casually, with the theory presented earlier and will be further examined in the statistical results below.

Comparing the correlations between rate of return and the structural variables for the leader and follower groups in table 2, we observe that top-end concentration and the simple and interactive measures of economies of scale in production are positively associated with leader profits but negatively associated with follower profits. Industry advertising is positively correlated with both leaders' and followers' profits, as are *HIBAR*, *CBAR*, capital requirements and industry growth. However, industry advertising, *HIBAR*, and *CBAR* are more correlated with leaders' profits, while growth and capital requirements are more correlated with followers' profits.

FIGURE 1.—RELATIVE PROFITABILITY IN THE LEADER AND FOLLOWER GROUPS

Follower Rate of Return <i>Much</i> Higher (4.0 or more % points) Than Leader Return <sup>a</sup>	Follower Rate of Return 0.5 to 4.0% Points Higher Than Leader Return	Leader Rate of Return 2.5 to 4.0% Points Higher Than Follower Return	Leader Rate of Return <i>Much</i> Higher (4.0 or more % points) Than Follower Return
Meat Products	Sugar	Dairy Products	Wine
Liquor	Tobacco (besides Cigarettes) <sup>b</sup>	Grain Mill Products	Soft Drinks
Periodicals	Knit Goods	Beer	Soap
Carpets	Women's Clothing	Drugs	Perfumes, Cosmetics, and Toilet Preparations
Leather Goods	Men's Clothing	Jewelry	Paint
Optical, Medical and Ophthalmic Goods	Footwear		Cutlery, Hand Tools, and General Hardware
	Pottery and Related Products		Household Appliances
	Electric Lighting Equipment		Radio and Television
	Toys and Sporting Goods		Photographic Equipment and Supplies

Note: In the 12 other industries not listed, average leader group rate of return generally exceeded, and in some cases equaled, follower group rate of return.

<sup>a</sup> Since the IRS data preclude measurement of the underlying within-group variances in leader and follower profits in the same industry, statistical tests of these differences were not possible.

<sup>b</sup> Cigarettes were excluded from the sample because of the inability to separate leaders and followers due to the discrete IRS sizes class. See note 23.

This pattern of correlations is generally supported by the regression analysis, reported in table 3. The equation for industry average rate of return is quite similar to previous results reported by Comanor and Wilson (1967, 1975) and Porter (1976). However, when the equation is estimated separately for leader and follower group rates of return, the striking differences suggested in the correlation analysis emerge.<sup>28</sup> Concentration has a positive influence on leader profits, and it is nearly statistically significant if it is interacted with the number of firms in the leader group. However, concentration has a negative and significant influence on follower group profits.<sup>29</sup> None of the measures of relative numbers of firms or relative market shares of

<sup>28</sup> Our procedure of estimating separate rate of return equations for the leader and follower groups in the industry is potentially afflicted by the problem of "seemingly unrelated regressions." Since the observations for leader and follower profits are drawn from the same industry, there may be unmeasured factors affecting industrywide profits which would cause the residuals from the two equations to be correlated, violating the assumptions of ordinary least squares and requiring the application of generalized least squares. (For a discussion of this problem see Zellner (1962) and Theil (1971) pp. 294–303.) However, the correlation between residuals in ordinary least squares equations 4 and 8 in table 3 was only 0.0048, and thus there was no evidence that this problem required special estimation procedures.

<sup>29</sup> This result is consistent with Demsetz (1973). Concentration in the leader equation is afflicted with multicollinearity, which may explain its relatively low significance in the face of a strong, positive simple correlation in table 2. This result may also help explain the puzzling negative sign that has sometimes been obtained for concentration variables in multivariate studies.

leaders to followers was significant for the leaders' profit (these results are not reported), while all of them are negative and highly significant for followers' profits.<sup>30,31</sup> Growth and capital requirements are potent positive and significant (in a two-tailed test) influences on followers' profits, while they are either not significant at all or are of borderline significance in the leader group. *A/S* and the production scale economy measures are positive and strongly significant influences on leaders' profits, though not significant for followers (both tend to have a negative though insignificant influence for followers). *HIBAR* proves to be nearly equal in explanatory power to *MES* and *A/S* introduced linearly in the leader equation, and the interactive measure *CBAR* proves to be the best measure of scale economies and top-end concentration in the leader equation.<sup>32</sup> Interestingly, industry average *A/S* proves to be

<sup>30</sup> A large number of different specifications of the included variables and experimentation with alternative functional forms produced no basic change in the results reported.

<sup>31</sup> Marginal concentration, or the share of industry sales accounted for by the fifth through eighth firms in the industry, proved not to be a significant variable. Its simple correlations with industry average, leaders' and followers' profits were  $-0.17$ ,  $0.08$  and  $-0.07$ , respectively, illustrating a non-significant asymmetry in its effect on leaders and followers. However, numerous alternative specifications of marginal concentration failed to produce a significant coefficient in either the leader or follower equations despite controlling for cross industry differences in the number of leaders and followers.

<sup>32</sup> *HIBAR* and *CBAR* are negative but not significant in the follower equation.



TABLE 3.—MULTIPLE REGRESSION EQUATIONS EXPLAINING LEADER, FOLLOWER, AND INDUSTRY AVERAGE RATES OF RETURN

	Intercept	Four-Firm Concentration	Eight-Firm Concentration	RELSH	Average Leader Share	Adjusted Four-Firm Concentration	Industry Growth	AIS	MES	MESD20	CBAR	Capital Requirements	Regional Dummy	Dummy for Convenience Goods Industries	R <sup>2</sup>	Corrected R <sup>2</sup>
1.	5.588 (2.475)	-0.0697 (2.77)	-0.016 (0.25)		0.001917 (1.759)	0.05333 (4.190)	0.001751 (1.703)			0.001588 (1.817)		0.0002730 (3.580)	1.6591 (1.027)	-1.0779 (1.351)	0.630 <sup>a</sup>	0.558
2.	8.126 (3.455)	-0.050 (2.40)			0.001334 (1.200)	0.06041 (4.238)						0.0002589 (3.371)	0.22111 (0.157)		0.660 <sup>a</sup>	0.580
Industry Average Rate of Return																
Leader Rate of Return																
3.	-0.8206 (0.125)				0.003012 (1.004)	0.072191 (2.061)	0.005267 (1.862)					0.00025163 (1.199)	3.4597 (0.778)		0.344 <sup>b</sup>	0.217
4.	6.001 (0.976)	0.024 (0.43)			0.00119 (0.385)	0.09638 (2.586)			0.005633 (2.464)			0.0001910 (0.951)	-0.64334 (0.175)	-3.7017 (1.774)	0.455 <sup>a</sup>	0.328
5.	5.833 (0.1409)				0.13154 (1.495)	0.0011481 (0.424)	0.009188 (2.624)		0.005295 (2.592)			0.0000785 (0.398)		-3.4746 (1.867)	0.489 <sup>a</sup>	0.390
6.	9.887 (2.052)				0.001541 (0.667)						0.08023 (4.875)	0.000123 (0.723)	-1.585 (0.524)	-2.489 (1.502)	0.514 <sup>a</sup>	0.438
Follower Rate of Return																
7.	6.771 (2.078)	-0.07088 (2.241)			0.003130 (2.097)	0.004057 (0.235)	-0.000100 (0.078)					0.0004009 (3.839)	1.4075 (0.636)		0.489 <sup>a</sup>	0.390
8.	5.134 (1.557)	-0.07680 (2.627)			0.003660 (2.349)	-0.006274 (0.314)			-0.0002103 (0.172)			0.0003885 (3.609)	2.2929 (1.162)	1.1789 (1.054)	0.507 <sup>a</sup>	0.392
9.	7.354 (2.697)	-0.0927 (2.683)			0.00387 (2.199)	-0.00129 (0.065)			-0.000158 (0.141)			0.000426 (4.075)		0.6105 (0.592)	0.505 <sup>a</sup>	0.410
10.	4.116 (1.793)				0.004096 (2.726)	-0.006215 (0.320)			-0.0000244 (0.022)			0.004577 (4.185)		0.5324 (0.516)	0.505 <sup>a</sup>	0.410
11.	4.285 (1.888)				0.004182 (2.826)	-0.01725 (0.905)			-0.000492 (0.448)			0.0004476 (4.254)	1.2219 (1.174)		0.519 <sup>a</sup>	0.426
12.	4.235 (1.907)				0.004250 (2.930)	-0.008070 (0.432)			-0.0001395 (0.129)			0.0005190 (4.598)		0.4383 (0.439)	0.537 <sup>a</sup>	0.447
13.	8.640 (3.529)	-0.07528 (3.104)			0.003293 (2.458)	-0.007784 (0.455)			-0.0001873 (0.192)			0.0005562 (5.595)		1.4285 (1.548)	0.636 <sup>a</sup>	0.551
14.	8.702 (4.085)	-0.09650 (3.436)			0.002983 (2.704)							0.0045538 (5.917)		1.0978 (1.422)	0.797 <sup>a</sup>	0.579

Note: Figures in parentheses are *t*-values.

<sup>a</sup> Multiple correlation coefficient significant at the 99% level.

<sup>b</sup> Multiple correlation coefficient significant at the 95% level.

a better structural measure than either leader or follower *A/S*. This may be because advertising efficiencies of the leaders cause their measured advertising rates to understate the mobility barriers due to product differentiation.<sup>33, 34</sup>

The results, then, are consistent with the central prediction of the theory of strategic groups that important differences exist in the structural features that explain profit levels for differently situated firms in an industry.<sup>35</sup> The regression planes explaining firm profitability differed substantially in the leader and follower groups, and the pattern of results was in accord with the discussion above. Clearly the theory of strategic groups is richer in its hypothesized influences on firm profits than can be captured in the crude leader/follower dichotomy and the simple measures of industry structure available here. While such a crude test of the theory cannot be taken as definitive, though, this test does add support for the view that the structure within industries has an important influence on firm profitability.

### III. Are High Profits Due to Efficiency and Luck?

Demsetz (1973) has argued that the profits of leading firms in concentrated industries are due to their greater efficiency, and not to market power considerations. In the same vein, Mancke (1974) argues that firms that are lucky in their

<sup>33</sup> Since the number of firms in the leader group and follower group varied among industries in the sample, there was a potential problem of heteroscedastic disturbances. The variance of average group profits might be higher when there were fewer firms. Regressions weighted with the number of leader and follower firms were computed to test for this possibility but produced no basic change in the results and are thus not reported.

<sup>34</sup> Controlling for *A/S* and the other measured variables, followers appear to do relatively better in convenience goods industries while leaders do better in non-convenience goods industries. This may well be because of the generally greater retailer power in convenience goods. Followers also appear to be more successful in regional industries as we would expect, though the results are not statistically significant.

<sup>35</sup> These results combined with the differing relative profitability of leaders and followers in figure 1 cast doubt on the universality of the result that firm market shares are positively related to profitability (Gale, 1972; Shepherd, 1972). It appears that high share firms are not profitable in all industries, but only in those industries where mobility barriers (*MES*, *A/S*) are high. Gale and Shepherd, in failing to include mobility barrier measures in their tests, may have proxied their existence with market share and misinterpreted share's causal significance.

drawings from probability distributions surrounding competitive moves such as new product introductions will be more profitable. These lucky firms will be able to fund faster growth, and thus will outdistance their competitors and concentrate the industry. Thus the leading firms in concentrated industries will be more profitable because they are lucky and not because they possess market power.

The fact that industry concentration increases the profits of large firms but does not increase the profits of smaller firms, first reported by Demsetz (1973) and verified by Round (1975) with Australian data, is taken by these authors as potent evidence supporting this theory. If firms in concentrated industries collude, then smaller firms in the industry should share in the collusion, according to Demsetz. Profit rates of both small and large firms should be positively related to profits. If, on the other hand, superior efficiency explains both high concentration and high profits, then Demsetz argued that only the profits of large firms would be correlated with concentration.<sup>36</sup>

While the shared asset theory of profit determination offers no explanation for Demsetz' result, the theory of strategic groups provides an alternative explanation as noted earlier. If there are economies of scale in the industry or product differentiation advantages to having a full line or large size, then mobility barriers will protect leading firms and they may be insulated from intergroup rivalry. Concentration will increase mutual dependence recognition among leaders. Followers, however, will generally be protected by different varieties of mobility barriers and in some cases much lower mobility barriers, and top-end concentration will adversely affect their exposure to intergroup rivalry.

This explanation for Demsetz' result rests squarely on market power considerations, however. My major disagreement with Demsetz is that he ignores the existence of mobility barriers in protecting relatively successful firms from incursions by others. Why would the less efficient firms not seek to replicate the strategies of more efficient firms—presumably the unfortunate firms would want to be efficient and more profitable too, and something must be preventing them

<sup>36</sup> Demsetz (1973), pp. 5-7.

from copying the successful actions of the "efficient" firms.<sup>37</sup>

The statistical results reported above cast further doubt on Demsetz' view that profits are unrelated to market power. Demsetz' theory offers no explanation for why the structural determinants of profitability would be different for the leader and follower groups—in his theory structural determinants are deemed irrelevant. Further, my results show that in many industries the leading firms are not the most profitable at all. While the theory of strategic groups can be marshalled to explain this, explanations are hard to come by in Demsetz' framework. Would he have us believe that the firms which have grown large are not efficient? Efficiency in Demsetz' sense, as distinct from structural considerations, does have a place in a theory of firm profit determination. Demsetz' point is that firms may well differ in their ability to execute strategies, which is a part of the theory presented above. Further, dynamic considerations such as those raised by Demsetz and Mancke may offer reasons behind the development of strategic groups. However, without mobility barriers their theories are not sufficient to explain the persistent and systematic profit differences we observe among firms in an industry. The theory of strategic groups offers the beginning of an explanation, and hopefully the support provided for it here will stimulate others to subject it to further tests.

<sup>37</sup> The same objection applies to Mancke's (1974) argument. Something must deter other firms from copying the lucky firms' new products, etc.

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