

2. The nature of the megacorp

The analysis of how prices are determined under oligopolistic conditions must begin with an examination of the megacorp, the representative firm found in that type of market structure. The megacorp, as the name implies, is a large corporation, typified by the companies included in Fortune Magazine's annual directory of the 500 largest corporations. Size alone, however, whether measured by sales or assets, is not what distinguishes the megacorp, either analytically or descriptively, from business firms in general. There are three other characteristics - each of which requires a specific modification of the conventional microanalytical apparatus - that define the megacorp as the representative firm in oligopoly. These characteristics are (1) the separation of management from ownership, this leading to a different behavioral pattern from that usually assumed in pricing models,¹ (2) multi-plant operation with fixed factor, or technical, coefficients, this producing a different set of cost curves, and (3) membership in at least one oligopolistic industry, this giving rise to a different type of revenue curve for the individual firm. Each of these characteristics, together with their respective theoretical implications, will be discussed in turn.

The separation of management from ownership

The widespread separation of management from ownership in American corporations, first pointed out by Adolf A. Berle and Gardiner C. Means in their classic 1933 volume, has now been confirmed by a more recent study. Individual stockholdings in 169 of the 200 largest non-financial corporations, that study reveals, are so widely distributed that effective control can be assumed to have fallen into the hands of a self-perpetuating management group without a significant proprietary interest in their own particular company.² While a comparable investigation has yet to be made of lesser corporations, there is no reason to assume that the phenomenon is limited only to the 200 largest such firms.

This separation of management from ownership, a characteristic observed in other countries with a similarly well developed market-type of economy, reflects two historical trends: first, the proliferation of stockholders in large corporations over time as personal considerations have necessitated the selling off of portions of the original blocks of

stock and, second, the indispensability of professional, technically trained managers for the successful operations of a large company. These historical trends, themselves the result of creating a business organization the life of which extends beyond that of any single individual, have led to a shift in the locus of control within those firms which have become megacorps. While the stockholders may retain their nominal property rights, the actual power of decision-making has come to reside in the hands of the executive group, consisting of the chief executive officer, the active directors and the various vice-presidents (R. A. Gordon, 1945, ch. 5). The stockholders, diffuse, lacking leadership and unable to give more than occasional thought to the affairs of the megacorp, have become passive *rentiers* whose major concern is the size of the dividends and/or the current market price of their shares.

Note This change in the nature of ownership in what, under advanced economic conditions, is the most important form of property has transformed the capitalism of the nineteenth century into an economic system of quite a different sort. Sometimes referred to as 'managerial capitalism' (Marris, 1964), the new system represents the latest working out of what Marx called the dialectical laws of history and what Veblen spoke of as the evolutionary process. The former system of property rights and social relations, having come under attack because the means of production that were privately owned transcended in importance any one person's individual interest, has not been replaced, as some had hoped, by an antithetic socialism. Instead, in those sectors of the economy where the issue was germane, it has evolved into an entirely different system, one in which certain of the old property rights, primarily those relating to income, are still respected; but others, principally those relating to the disposition of the actual physical facilities, have been abrogated and turned over to a new class of men with a different mandate of responsibility. In the process, as it has become virtually impossible for sons to succeed fathers as heads of businesses, the very nature of inheritance has been drastically altered.

Thus the stockholders have become but one of the megacorp's several constituencies, albeit with certain unique powers. Only they, for example, have the *de jure* right to depose the incumbent executive group, a right which, though seldom exercised,³ nonetheless gives them an advantage in bargaining power over at least some of the megacorp's other constituencies. These other constituencies are the fixed-interest debt holders, the laboring manpower force, the suppliers of material inputs, franchised distributors and the final consumers of the product. But though the stockholders may find themselves in a better bargaining position than some of the megacorp's other constituencies when it comes to the distribution of revenue, their influence over the operating policies that

determine the size of that revenue is no greater. Of all the prerogatives of control, they retain only the right to ratify certain decisions of the management, a right which in most cases is more apparent than real.

Since it is the executive group that wields the effective decision-making power, it is the psychological propensities and goals of that body which will determine the megacorp's behavioral pattern and, following from that, the decision rule which will be observed in setting price and output levels. In the case of the neo-classical proprietorship, it is not unreasonable to assume that the behavioral pattern is to maximize net revenue, that is, the returns above contractual costs, in the short run. In view of the uncertainty as to how long the firm will be able to continue in business as well as the owner-managers' direct financial interest in whatever net income is earned, such a behavioral pattern is not irrational. Anyway, it is the behavioral pattern assumed in the conventional theory of the firm. In the case of the megacorp, however, the situation is quite different.

To begin with, the megacorp is a permanent institution. While it may suffer temporary reverses, its strategic position within the overall economy - its large share of one or more markets, the combination of skills, knowledge and experience embodied in its work force, and its ready access to capital markets - assures against outright demise in all except the most unusual of circumstances.⁴ This sense of permanence pervades the actions of the executive group, and its members are able to make decisions based on long-run considerations that would be unthinkable to those in charge of a firm with a less certain life expectancy. By the same token, the megacorp's managers are unlikely to try to capitalize on short-run opportunities if to do so will jeopardize the company's long-run position (R. A. Gordon, 1945, pp. 331ff; Marris, 1964, p. 63).

This tendency to take a far-sighted view is reinforced by the fact that, except to the limited extent that its members are also stockholders, the executive group has only an indirect personal stake in whatever net income the megacorp may earn in any one year. The way in which stock option plans, bonuses and other forms of executive compensation are structured gives the members of the executive group even greater incentive to avoid short-run gains at the expense of the megacorp's long-run position.⁵ Although the incumbent management runs the risk of incurring stockholder displeasure if reported earnings unexplainably fall below either the previous year's results or those of megacorps in general, this consideration places only a minimum restraint on its actions.⁶ Of course, the executive group would prefer that the megacorp earn more rather than less net income. But net income is desirable, not so much because of the dividends which it makes possible as because of the overall financial strength which it affords the megacorp. The executive

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group's primary loyalty, in fact, is to the megacorp as an ongoing institution, not to the stockholders as owners. Whatever status or sense of accomplishment the megacorp's managers may have is but a reflection of the standing which their company has in the larger community. In working to enhance that position, they are simultaneously adding to their own prestige, and thus there is a considerable harmony between the goals of the executive group and those of the megacorp its members direct.⁷

This is not to deny that, as some writers have pointed out,⁸ an individual megacorp executive will often find himself faced with a conflict between what is in his own best interests and what is in the best interests of his company. But the extent of the conflict is likely to be exaggerated if the best interests of the company are necessarily assumed to be identical with those of the stockholders. That the equity debt holders constitute but one of several constituencies associated with the megacorp has already been suggested. Carrying the logic of this conceptualization one step further, the megacorp must be viewed as having a life - and interests - entirely of its own, separate and distinct from that of any individual or group of individuals. Thus the important point is not whether the actions of an individual manager are inconsistent with the best interests of the stockholders, but rather whether they are inconsistent with best interests of the megacorp *qua* megacorp.

Even so, some divergence of interests between the megacorp and the individual manager can be expected. Several factors, however, serve to mitigate the potential conflict, at least insofar as the members of the executive group are concerned. The first is the process by which a person is chosen to serve on that self-perpetuating body. Each megacorp official is carefully screened as he rises through the organizational hierarchy so that only those deemed to have the necessary loyalty to the company are permitted to advance to the next higher position. Thus by the time a person is selected to serve on the executive group the identification of his own interests with those of the megacorp are likely to be quite substantial. The second factor is the dynamics of a body such as the executive group. The effect of the interaction between its members is to reinforce the group norms which have evolved over the many years, norms which are likely to emphasize a higher duty to the megacorp. As a result, individual interests tend to be subordinated to what is felt to be the more general interests of the organization itself. In fact, it is the interaction between the members of the executive group which enables those more general interests to be defined and articulated. Thus, while the exceptions may be instructive - they may explain, for example, the decline of certain firms or, short of that result, certain aspects of income distribution - it can be assumed, at least for the

moment, that the goals of the executive group are coextensive with those of the megacorp.

The goals of any organization presumably are, as a minimum, to survive and, as a maximum, to grow to the full extent permitted by external circumstances.⁹ The difference between these two limits may not, however, be very great. On the one hand, if external circumstances foreclose the possibility of growth, survival is all that can be expected. On the other hand, if the organization faces a dynamically competitive situation, simply to survive may require that it grow at the highest rate possible.

To the extent that a megacorp exists independently of any one industry, that is, to the extent that it has evolved into a conglomerate enterprise, it is likely to find itself in the latter type of circumstance. To survive in the long run, it must grow at the highest rate possible. There are two reasons for this, both related to the types of resources which give the megacorp whatever economic power it may possess. First, a conglomerate megacorp that grows less rapidly than its counterparts will be handicapped in its efforts to obtain command over the investment funds necessary for further expansion. Even more important - and this is the second reason - it will experience increasing difficulty in attracting the quality of management essential for long-run survival (Penrose, 1959, ch. 2; Downie, 1958, chs. 7-9; Leyland and Richardson, 1964). Since every firm may potentially evolve into a conglomerate enterprise, the broadest generalization that can be made about the goal or goals of the megacorp is that it will seek to maximize its own long-run rate of growth - depending, of course, on what it perceives to be the possibilities for growth.

How the rate of growth is to be measured is less important than this emphasis on growth itself. Still, if there is any one variable upon which attention should be focused, it is the amount of cash flowing into the megacorp over and above current expenses. Any increase in this sum - more broadly termed the corporate levy as on p. 13 above - will mean an increase in the amount of discretionary income accruing to the megacorp, and thus a lessening of the budgetary constraint on expansion. The most generally applicable prescription, then, if the megacorp is to maximize its own long-run rate of growth, is that it should seek to maximize the secular growth rate of the realized corporate levy.

In most cases, maximizing the rate of growth either of sales or of assets will achieve the same end.¹⁰ Still, there are some situations in which to use the corporate levy either to increase sales or to augment balance sheet assets would not contribute to the megacorp's long-run growth. This would be the case, for example, if sales were to be increased

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through advertising outlays representing a larger sum than the additional net income subsequently generated; or if a particular asset which was purchased then failed to produce sufficient incremental revenue to cover its acquisition cost. By the same token, there may be ways for the megacorp to grow in terms of the realized corporate levy without necessarily adding either to sales or to assets. This would be the case, for example, if expenditures on research and development were to lead to a reduction in the cost of production. Since, however, it is unlikely that a megacorp will deliberately spend its funds with a promise of negative returns; and since, moreover, most of the gains in productivity that show up as a reduction in costs seem to derive from other than the megacorp's own efforts,¹¹ it follows that the maximization of the rate of growth of sales or assets is a close approximation to the maximization of the growth of the corporate levy, and all three maximands can in most cases be used interchangeably.

While the above may suffice as a generalized statement of the approximate behavioral pattern for a megacorp, it needs to be modified to take into account the constraints which the megacorp faces as a member of a particular oligopolistic industry. Prices, it must be remembered, pertain only to specific industries. This means that the generalized goal of the firm must be translated into a goal applicable to the individual industry or industries in which the megacorp finds itself. It is this rooting of even a conglomerate megacorp in specific industries that permits the simplifying assumption, at least as a first step, that the megacorp is a member of but a single industry. The analysis throughout the remainder of this chapter and the next will rest on that assumption. However, the basic model does not depend on it, and the assumption will be relaxed in subsequent chapters.

The most important constraint which the megacorp faces as a member of a particular oligopolistic industry is that it cannot use price cuts - at least those likely to come to the attention of its rivals - as a competitive weapon to increase its sales volume and thereby augment its share of the market. The reasons why this is so will be brought out below. For now, it must simply be accepted as a given condition of oligopolistic existence. The prohibition on price competition does not, however, preclude the megacorp from growing in size. The fact is that the industry to which the megacorp belongs is likely to grow itself over time as the general economic expansion increases the demand for the product being supplied. The rate of growth may not be as high as in some industries, those which, enjoying the heady boom of their first years, have not yet settled down to the somewhat more modest growth pattern found within the oligopolistic sector (Abramowitz, 1938);

still, it is likely to be a higher growth rate than that for the economy as a whole.

This growth over time of the industry to which it belongs is the primary source of expansionary opportunity for the megacorp, and simply maintaining an existing share of the industry's market will assure the firm a certain minimum rate of growth. In addition, of course, the megacorp can try to increase its share of the market through non-price forms of competition¹² - even though the chances of success in this regard are slight. Because of the recognized interdependence which exists in an oligopolistic industry, any stratagem by the megacorp to obtain a larger share of the market, even if it goes beyond simply cutting the price, is likely to be neutralized by its rivals' countermoves. Indeed, one of the outstanding empirical characteristics of an oligopolistic industry, and a sure sign that it has reached maturity, is the stability of relative market shares over time.¹³

The only realistic goal, then, for a megacorp within a specific industry is to maintain its relative market share. However, to provide the necessary internal dynamic, that is, to avoid the danger of complacency within the organization, this goal is likely to be modified in practice. The megacorp, it can be assumed, will seek to increase its long-run share of the market even though it recognizes that maintenance of the current market share is the more reasonable expectation. The 'rule of thumb',¹⁴ then, likely to be followed by the megacorp in its efforts to optimize¹⁵ long-run market share is at least to maintain, and if possible perhaps to increase, its current market share. NB

From the separation of management from ownership, it can thus be inferred that the overall goal of the megacorp is to grow at a maximum rate while the goal within any specific industry is to optimize its long-run market share. Under oligopolistic conditions, these two goals are consistent not only with each other but also with a number of other goals which megacorps are said to pursue - such as maximizing sales and maximizing net revenue over the long run.¹⁶ They are not, however, consistent with maximizing net revenue in the short run - or even with maximizing the present net worth of the firm as reflected by the market price of equity shares. The differences between these two sets of maximands are important, and need to be elaborated on.

Two conditions must hold before the optimization of long-run market share will result in the maximization of a firm's present net worth. First, any increase in net revenue in the long run must ultimately be distributed to the equity debt holders in the form of higher dividends. Second, the capital funds market must function well enough so that any increase in the long-run yield of an asset is immediately and accurately

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reflected in the rise of its capital value, or price. Doubts as to the plausibility of this second condition need not detain us. The plausibility of the first condition is questionable enough.

In the face of the legal conventions it seems reasonable to expect that any increase in net revenue will ultimately be distributed to stockholders in the form of higher dividends. After all, it is the stockholders who, according to the law, are the megacorp's owners. It is faith in this principle that leads the average Wall Street investor to assume that any permanent increase in net revenue presages an eventual rise in dividends. Yet the reality, as already suggested, is quite different from what the legal conventions would suggest. In exercising its *de facto* control over the megacorp, the executive group will distribute as dividend payments only that portion of any future increase in net revenue which suits its own purpose and that of the megacorp whose destiny it directs. This means that, in practice, dividends will be limited to what is needed to forestall a take-over bid by an outside management-group plus whatever additional amounts may serve to minimize the cost of obtaining external investment funds.¹⁷ The rest of any increase in net revenue will be retained by the megacorp for its own benefit, largely to finance its desired rate of growth. This is but another way of saying that the interests of the megacorp and those of its equity debt holders are separate and distinct.

The fact that the megacorp retains a substantial portion of its earnings is, of course, widely known. But the dividends not paid out, so the conventional wisdom runs, are reinvested in the business, thereby leading to even higher dividends in the future. The trouble with this argument is that it must be taken largely on faith. Indeed, what little evidence exists on the point would suggest that the argument is part of a myth which has been created to disguise the disparity which exists between the stockholders' legal status as the owners of the enterprise and their actual position as merely one of several constituencies. Were it true that the megacorp's retained earnings are simply held by the firm in the best interests of the stockholders, two conditions would necessarily have to hold: (a) the present net worth of the stockholders' equity in the firm as measured by the market price of common shares could not be increased by raising the current dividend rate at the expense of retained earnings, and (b) the returns on earnings reinvested in the firm are not less than what can be obtained by purchasing new equity shares in other companies. In fact, neither condition prevails. An increase in the individual rate, it has been found, leads to an increase in the value of a company's stock - a dollar increase in dividends having two to four times greater effect than a dollar increase in retained earnings.¹⁸ Moreover, it has been found that the returns on new equity

debt are substantially higher than the returns on reinvested earnings, indicating that stockholders would be substantially better off financially if retained earnings were distributed instead as dividends and reinvested through the capital funds market (Baumol *et al.*, 1970; see also Whittington, 1972).

To the extent, then, that not all of any increase in net revenue will ultimately accrue to the stockholders in the form of higher dividends - and the divergent interests of the executive group and equity debt holders suggest why not all will - the optimization of long-run market share will not necessarily lead to the maximization of the firm's present net worth. If one assumes that the capital funds market functions as well as economists generally hypothesize, this conclusion is simply reinforced.

The preceding counterpoise to the conventional wisdom, it should be noted, is not critical to the argument that follows. If one persists in believing that any increase in net revenue will ultimately accrue to the stockholders, the maximization of present net worth becomes merely another way of talking about the maximization of the firm's growth over time. Making it, rather than the growth of the corporate levy, the variable upon which the executive group will hereafter be presumed to focus requires only a slight, though not insignificant, modification of the pricing model set forth below. It would mean that dividends could not be considered, as they are below, to be a claim on the megacorp's revenue similar to wages, salaries and interest, and therefore a part of fixed costs; and that consequently the megacorp must be assumed to try to maximize the growth of all net revenue, not just that portion accruing to the firm itself in the form of depreciation allowances and retained earnings. It would mean, moreover, that the executive group was constrained in determining the dividend rate only by the prospective return from reinvestment of earnings, and not by the desire to avoid any unnecessary payment to the stockholders.¹⁹ Still, the maximization of the firm's present net worth is not inconsistent with the maximization of the firm's growth over time - if the firm is seen as being identical with its nominal owners. The maximization of net revenue in the short run - or, as it is more commonly phrased, the maximization of profits in the short run - is, however, an entirely different matter. On the distinction between this goal and the optimization of long-run market share rests the question of whether the oligopolistic pricing model developed in this treatise has any novel aspect to it.

Keeping in mind that, for a megacorp, the optimization of long-run market share is equivalent to the maximization of net revenue in the long run, the question is really whether such an enterprise cannot best achieve its goals by maximizing 'profits' over a series of short-run periods.

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Put another way, the issue is whether the maximization of net revenue in the short run is inconsistent with the maximization of net revenue in the long run. In response, it is necessary only to point out that a megacorp, by attempting to increase its 'profits' in the short run, may well diminish its future earning prospects.²⁰ A rise in price, for example, which leads to an immediate increase in net revenue may, at the same time, encourage the entry of a new firm into the industry, thereby reducing the megacorp's long-run market share. That same rise in price may also provoke retaliatory action by the government in the form of an antitrust suit, thereby hampering the megacorp's future freedom of action.

But even beyond this somewhat obvious point, there is a more fundamental reason why the maximization of net revenue in the short run is incompatible with the maximization of net revenue in the long run. It has to do with the decision rule for maximizing net revenue in the short run. That decision rule requires that a firm produce and dispose of through the market that quantity of output for which the marginal costs are equal to the marginal revenue - even if it does not do so with conscious foresight. The megacorp, however, due to the nature of the cost and revenue functions which it faces, is not able to follow that decision rule.

The full explanation of why the megacorp cannot equate its marginal cost with its marginal revenue must wait until the nature of its cost and revenue functions has been specified. This will be done once the two other salient characteristics of the megacorp have been brought out. At this point it is possible only to assert that, reflecting the separation of its management from ownership, the megacorp's behavioral pattern within a specific oligopolistic industry is to seek to optimize its long-run market share; and that this behavioral pattern is analytically different from that postulated in the conventional pricing models. While the latter point still remains to be demonstrated deductively, the first half of the above statement is at least consistent with all that is known about the expressed goals of firms that would likely qualify as megacorps.²¹

Multiple-plant operation and fixed technical coefficients

NB In addition to the separation of management from ownership, the megacorp is characterized by a divisible capital stock and fixed factor, or technical, coefficients. This means that it consists of a number of smaller producing units, called plants or plant segments, and that within each of these smaller producing units the proportion of capital equipment, laboring manpower and other inputs required to turn out the final product cannot, as a practical matter, be altered in the short run. The first aspect, the multiple-plant operation, is directly observable among Ameri-

ca's largest corporations;²² the second aspect, fixed technical coefficients, is readily inferred from other observable characteristics of these same firms.

A plant or plant segment will consist of all the capital equipment necessary to the production process, and since different pieces of equipment have different output capacities, the numbers of each type of equipment found within a given segment will vary. The megacorp's total productive capacity consists of many such segments, either because it is a multiple-plant firm, because combining several segments to form a single plant leads to economics in overhead costs, or because of a combination of the two.

The factor coefficients, meanwhile, are fixed, at least in the short run, for non-economic as well as economic reasons. From basic engineering studies made at the time the capital equipment is first developed for the market, it will be determined what is the most efficient size crew to operate the machinery, together with the most efficient quantity of raw materials to be fed into or through it. These estimates may be modified by later operating experience, but the objective is nonetheless to develop a 'single-best' set of standards for combining inputs, standards which can then be applied by lower-ranking megacorp officials in charge of the plants or plant segments.

In some cases, the nature of the technology is such that the factor proportions embodied in those standards are incapable of being varied. For example, two and only two men may be required to operate a certain type of die-cutting machine; one and only one steering column can be added to an automobile body moving down the assembly line. But even if the nature of the technology does permit variations in the factor proportions, the inclination of the plant or plant segment managers may nonetheless be to go 'by the book', preferring to follow the standards that have been laid down for combining inputs rather than run the risk of seeming to violate established procedures. Still, one or two bold souls can be expected to arise even in the most rigidly bureaucratic of organizations, and their experiments in varying factor proportions may even result in more efficient combinations. The question, however, is whether such successful experiments can then become part of the information flow on which top management officials base their pricing decisions.

To the extent that the experiments reveal a new optimal combination of inputs, they may simply lead to the establishment of new standards. But to the extent that they reveal what are the most efficient combinations of inputs at sub-optimal levels of plant utilization, they provide information which is of little value in the price determination process. For at the time that the executive group must decide upon a price, it cannot

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know what the rate of utilization for individual plants or plant segments will be. It must therefore base its decision upon a cost figure which most closely approximates the costs being incurred in most of the plants or plant segments for most of the time during which the new price is expected to prevail. This cost figure is the cost figure associated with the standards that have been developed for combining inputs.

In other ways, too, these standards, once developed, tend to take on a life of their own. For example, the standards as to how many men are to be used to operate each type of equipment will, upon receiving the tacit approval of the workers involved, become part of a plant's work rules, and in the case of those plants in which the labor force is represented by a trade union the work rules are likely to be incorporated into collective bargaining agreements with the full force of law behind them. This is not to argue that the technical coefficients embodied in managerial practices and work rules will not change over time. Through the adoption of new types of equipment, together with the reevaluation of old practices and the assertion of managerial prerogatives, they are, in fact, quite likely to change. But - and this is the crucial point - not in the short run.

The significance, analytically, of a divisible capital plant with fixed factor coefficients is that it results in the megacorp having a cost curve that is significantly different from the familiar U-shaped cost curve of traditional analysis. The latter is based on the fact that at least one factor of production, generally the capital plant but also, in some formulations, the supervision and coordination of activities which the owner-entrepreneur provides, cannot be increased in the short run; and that therefore, in order to expand output, increasing quantities of the variable inputs, such as labor and raw materials, must be combined with the one or more fixed inputs. It can be shown that there necessarily exists some optimal combination of inputs in the production process, and that as increasing quantities of the variable inputs are combined with the fixed input, the law of variable returns will manifest itself - that is, the firm will at first experience increasing output per unit of input, both total and variable, and then decreasing output per unit of input. In this way there is traced out, geometrically, a U-shaped average variable and average total cost curve with a corresponding mathematically derived marginal cost curve. There is a second explanation, aside from the above technological one, for the U-shaped cost curve. As production expands, the argument runs, the resulting increase in the demand for variable inputs will cause their prices to be bid up, leading to a rise in costs for the firm. Such an argument assumes either that all resources in the economy are fully employed or that the relevant

factor markets are imperfect. This second explanation of the U-shaped cost curve will be treated only parenthetically.

The technological considerations which, in the case of a polypolistic firm with but a single plant, give rise to a U-shaped cost curve are obviated in the case of the megacorp. On the one hand, the megacorp is able to alter its rate of production by either starting up or closing down one or more of its many plants or plant segments. While this implies that the megacorp cannot vary its output except by large, discrete quantities, the judicious management of inventories, together with a flexibility as to the degree to which all inputs together are utilized, nonetheless makes possible a smooth adjustment of output or supply to sales or demand. To illustrate, if sales are less than current production, one of the plants or plant segments currently in operation can be shut down; and if this causes output to fall short of sales, the balance can be supplied out of finished goods inventory. Similarly, if sales are greater than current production, one of the plants or plant segments presently idle can be started up; and if the resulting expansion of output exceeds the level of sales, the megacorp can then proceed to add to its finished goods inventory.²³ Uncertainty as to the future level of sales may complicate the making of decisions in this regard, but it will not alter the underlying adjustment mechanism itself (cf. Johnston, 1961; Whitin, 1968; Fair, 1971).

Alternatively, especially if the custom is to produce only to order, any discrepancy between sales and current levels of output can be overcome by operating the various plants or plant segments more or less intensively. The fact is that the most important source of variation in the production process is not the variation in the ratios at which inputs are combined but rather the variation in the degree to which the several inputs together are utilized within a given time period. Such a variation in the degree of utilization, however, affects both the 'fixed' and 'variable' inputs simultaneously; indeed, during the time period specified, even the 'variable' inputs will be 'fixed' in the sense that the contracts for their services cannot be cancelled or abrogated.²⁴ This implies that this second adjustment mechanism pertains only to very short periods of time, that is, for a day or at most a week, or to those situations in which the size of the market limits a plant or plant segment to less than full operation most of the time. To the extent that the latter type of situation prevails, the cost figure associated with the standards that have been developed for combining inputs will be increased to reflect the average expected utilization rate. Once this adjustment has been made, however, the revised cost figure is likely to be regarded by the megacorp's top officials as the cost of operating their plant or

plant segment with the single-best combination of inputs. For this reason, the above situation stands as no exception to the general rule postulated, namely, that for the megacorp the technical coefficients are fixed in the short run.

On the other hand, because the technical coefficients are fixed, each plant or plant segment, when it is operated, either produces at what is perceived by the megacorp's top officials to be the plant's minimum average variable cost point, that is, at full efficiency, or it does not produce at all. This, in turn, means that as output expands (or contracts) through the starting up (or closing down) of plants or plant segments - and this, except for the more intensive utilization of plants or plant segments already in operation, is the only way in which production can be varied - the megacorp's average variable costs, and hence its marginal costs, remain constant. Average total costs, because of the fixed cost element, will of course decline steadily as output increases, but since it is only the average variable and marginal costs which are germane to short-run pricing periods, this decline in average total costs is somewhat beside the point.

As for the possibility that average variable and marginal costs will rise as output expands because the megacorp will be forced to pay higher prices for its inputs, the fact is that each megacorp will have attached to it a relatively permanent labor force upon which it can draw as the need arises (see below, chapter 7, pp. 227-8). Since the wages which the megacorp offers are likely to exceed the remuneration from alternative sources of employment, the members of the labor force, if temporarily laid off, will prefer to wait until called back to work (cf. Kuhn, 1959; Reynolds, 1960, pp. 199-200). They may, in the meantime, seek interim employment elsewhere as a source of extra income, but they will still consider themselves to be a part of the megacorp's work force; and once the plant or plant segment to which they are attached starts up again, they will return to the job at the same wage rates as before.²⁵ It might, of course, be argued that workers will tend to be laid off in reverse order to their degree of efficiency so that variations in the effective cost of labor, that is wage rates adjusted for efficiency, will still occur. The fact is, however, that layoffs in the case of megacorps are determined by overall plant efficiency and by seniority, not by individual efficiency. This means that within certain ranges as specified below the megacorp is able to alter the rate of output without the effective cost of labor itself varying.

Similarly, given the ability of other firms to expand output at constant average variable and marginal costs, the megacorp will be able to obtain whatever additional material inputs it may require as output increases without the per unit expense rising. Generally, to assure an unlimited

supply of material inputs at constant prices the megacorp will to some extent have previously integrated backwards. If fluctuations in the price of a particular raw material can still not be avoided the megacorp may have to settle for something less than full control over the price of its final product. In that case, the 'price' set by the megacorp is simply the margin between the price of the material input and the price of the final product.

Finally, the megacorp will be able to alter the rate of output without suffering decreasing returns to management. Administrative salaries as part of the overhead expense, will vary on a per-unit basis even if, as is likely, the total sum remains unchanged. But this variation in average fixed costs is again beside the point. The important fact is that an increase in the number of plants or plant segments in operation will place no strain on managerial resources. The executive recruitment, training and advancement policies which most megacorps have adopted will assure an adequate supply of managers, not only for the number of plants already owned by the company but even for any new plants that might be added. These executive development programs together with the management techniques that have been refined over the years (Chandler, 1962) enable the megacorp to transcend the entrepreneurial limits on the expansion of the firm which were long thought to be immutable and which still govern in the case of most neo-classical proprietorships.²⁶

With the megacorp able to alter its rate of output at constant average variable and marginal cost, its cost curves will take the shape shown in figure 1.

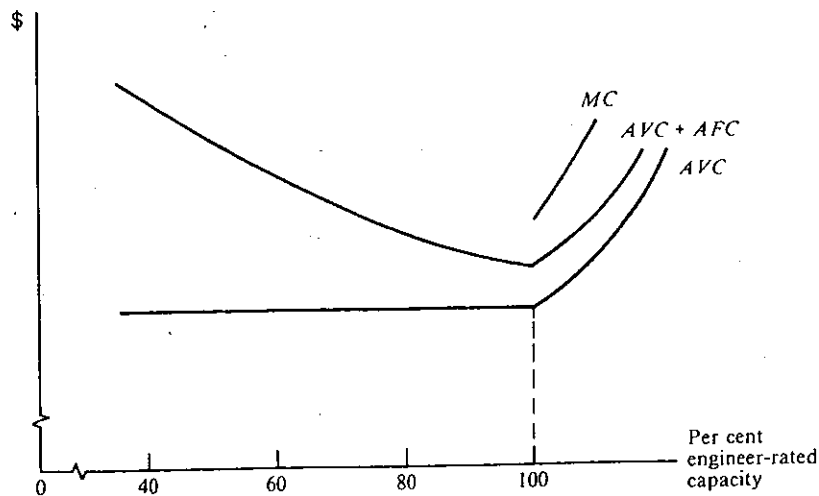


Figure 1

34 The nature of the megacorp

There are several things to be noted here. First, the fixed costs refer to those financial obligations of the megacorp, *de facto* or otherwise, which cannot be attributed to the operation of any single plant or plant segment. They thus include, unlike the customary usage, all dividend payments. While the megacorp is under no legal obligation to make such payments - the law taking the view that dividends are simply the residual income of the firm's owners - the truth of the matter is that the executive group's control of the megacorp would be jeopardized if it failed to meet that financial commitment to only a lesser degree than if it defaulted on some more formal obligation. At the same time, the fixed costs exclude all expenditures on advertising, research and development and other activities designed to protect and enhance the megacorp's current market position. The reason for this exclusion, as well as for the above treatment of dividends, will be brought out more fully in the next chapter. For now, suffice it to point out that the costs incurred from such expenditures are neither inescapable in the short run nor related to current production.

Second, the average variable and marginal cost curves depicted as an unbroken straight line are in fact discontinuous, representing as they do the locus of least-cost points for the various plant segments. They are shown to be parallel to the horizontal axis and coincidental with one another for most of their length only because it has been implicitly assumed that all of the megacorp's plant segments are equally efficient. If this is not the case - and with secular technological progress and plants built at different points in time it is difficult to believe it will be - the two curves not only will have a different shape but will also diverge from one another.

A marginal plant or plant segment of lesser efficiency, one that is likely to be started up again or shut down if output needs to be expanded or contracted, will necessarily have a higher least-cost point and thus can be operated only at a higher average variable cost than the megacorp's other plants or plant segments. Of course, it can produce all of its output at that higher average variable cost, and for this reason the marginal cost will still be constant over that range of output represented by its additional capacity. This means that the marginal cost curve for the firm as a whole will rise in step-like fashion, as shown in figure 2, the number of steps depending on the number of operating cost differentials among the plant segments. At the same time, the higher average variable cost of any marginal plant or plant segment, when added to or subtracted from the average variable costs of the other plant segments, will cause the overall average of per unit direct costs to increase as output expands. This means that the average variable cost curve for the firm as a whole will also rise, though more slowly than the marginal cost curve.

To ignore these effects of operating cost differentials among the various plant segments, however, is not a serious matter. The operating cost differentials themselves are not likely to be very great - or else the megacorp will certainly take steps to eliminate them. This pertains particularly to the plant segments most likely to be operated marginally. In any case, it can be shown that the upward drift of the average variable and marginal cost curves - an upward drift which is quite different from the rise in average variable and marginal cost curves postulated in the more conventional models - is of virtually no analytical significance. The upward drift of the marginal cost curve would be important only if the curve then intersected the marginal revenue curve. As will subsequently be brought out, however, this is not likely to be the case. The upward drift of the marginal cost curve simply means, therefore, that average variable and marginal costs cannot be assumed to be constant for all possible levels of output. Even in this regard, since the differentials in efficiency among plants or plant segments are likely to be small and since, in any case, the cost information received by the executive group prior to making a pricing decision is likely, due to organizational constraints, to represent an averaging out of these differentials, it may well be that insofar as the executive group is concerned the average variable and marginal costs are constant. The latter explanation is at least consistent with the empirical evidence on the cost functions of megacorps cited below. Thus no harm is done, and greater simplicity of exposition is obtained, if it is simply assumed that all of the megacorp's plant segments are equally efficient.

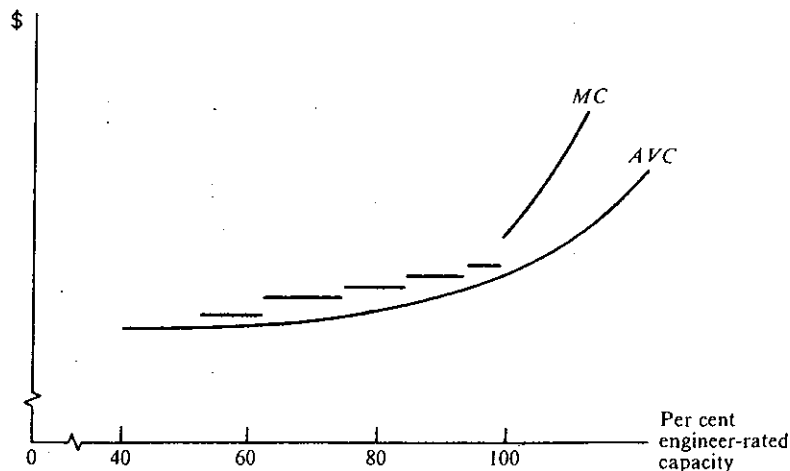


Figure 2

36 The nature of the megacorp

Third, the variable measured along the horizontal axis is not the same as the one generally shown in such diagrams. Instead of quantity per unit of time, the variable measured is the percentage of engineer-rated operating capacity being utilized at a particular moment in time. Aside from conforming to general business usage, this approach has the advantage that the resulting analysis can be generalized to apply to all megacorps, regardless of what their actual output capabilities may be. In the short-run examination of costs, then, the assumption is that capacity as an abstract concept, unrelated to any specific quantity of goods, is the most significant independent variable. It is not necessary to know how much the megacorp is actually producing, only what proportion of total capacity that output represents.

Such an approach has the disadvantage, however, that it is not always clear what is meant by the term 'capacity', especially as the word is sometimes used by megacorp officials themselves (Creamer, 1964; Gift, 1968). In the analysis that follows the term will be defined as the sum of the capacities of all plants or plant segments, these capacities in turn being defined as the quantities which, in the judgment of megacorp officials, each of the plant or plant segments is capable of producing when operated at maximum efficiency, that is, at the lowest possible average variable cost. The megacorp's total capacity thus corresponds to the point on its average variable and marginal cost curves where, as depicted above, they both rise - the marginal cost curve discontinuously. It should be noted that, due to the influence of declining average fixed costs, this point occurs at a lower rate of capacity utilization than that at which average total costs reach a minimum. This leads to the third point of importance.

Once the megacorp has brought all of its plant or plant segments into operation so that each is operating at maximum efficiency, additional output can be achieved only by using the existing capital stock more intensively, for example, by increasing the number of work shifts or by extending operations into the weekends. In other words, beyond a certain point, the megacorp will be able to expand production only if it is willing to incur increasing per unit costs, just like a neo-classical proprietor with his familiar U-shaped cost curve. This being the case, one might argue that the megacorp's cost curves, except for the flat, elongated portions, are no different from those employed in the more conventional theory of the firm.

The point is, however, that only the flat, elongated portions need be taken into account. If the megacorp is to achieve its goal of optimizing long-run market share, it must take steps to assure that it has sufficient capacity to meet whatever demand is likely to arise for its product. It cannot allow an order to go unfilled, since a customer turned away

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may not return after being forced to establish another source of supply. Even if all the other members of the industry are similarly short of capacity, the danger to the megacorp's long-run position still remains. An outside firm contemplating entry into the industry will be greatly encouraged to incur the risks involved if it perceives an existing demand that is going unmet. This last possibility, that of a new firm entering the industry, is particularly unwelcome to the executive group. A new firm, once it gains a foothold, is not easily dislodged, and the established enterprises whose domain has been invaded will find themselves with little choice but to surrender some small portion of the market to the newcomer. Not only are their respective market shares likely to be reduced but, in addition, the task of price coordination will be made more difficult.²⁷ For these reasons the megacorp will, as a normal rule, try to see to it that it has a certain amount of reserve capacity (see below, chapter 3, p. 89). This, however, means that the megacorp is unlikely to operate at more than 100 per cent of engineer-rated capacity. Its doing so, in fact, is a sign either of an extraordinary increase in demand, one that could not be anticipated in advance, or of management incompetence.²⁸

The relevant portions of the megacorp's cost curves, then, are the portions below 100 per cent of engineer-rated capacity - more specifically, the portions between 65 and 95 per cent of engineer-rated capacity.²⁹ *Note* That these are the relevant portions and that they display constant average variable and hence constant marginal costs is confirmed by what empirical evidence is available on the subject. For nearly thirty-five years economists have been investigating the cost curves of business firms. Since the necessary data are most readily available from the records of larger companies, most of the studies have focused on firms which, on the basis of the criteria set forth in this work, would qualify as megacorps. After reviewing the results of those investigations, J. Johnston (1960, pp. 136-48, 168) has declared in his definitive text on statistical cost functions that 'the various short-run studies more often than not indicate constant marginal cost and declining average cost as the pattern that best seems to describe the data that have been analyzed.' See also Walters, 1963, pp. 1-66; Gold, 1966; Koot and Walker, 1970; Zudak, 1970, 1971.) While Johnston's conclusions and the underlying studies themselves have drawn criticism from other economists,³⁰ the fact remains that the evidence is most consistent, not with the U-shaped cost curves that are usually postulated but rather, with the type of horizontal cost curves depicted above. Given the prevalence of multiple-plant-segment operation and relatively fixed factor coefficients among the largest corporations in the United States, these empirical findings are hardly surprising.³¹

Membership in at least one oligopolistic industry

Finally, the megacorp is characterized by membership in at least one oligopolistic industry. This is implicit in the very definition of the megacorp as the representative oligopolistic firm. The fact that the megacorp is an oligopolist means that, unlike the neo-classical proprietorship in a Walrasian situation, it is not a price taker (Wiles, 1956, ch. 4; Machlup, 1952, pp. 85-92, 111-15). First, it does not simply throw on the market for whatever price can be obtained the output which it has decided to produce. Rather it sets a price, then produces and sells at that price whatever quantity the market will take. It is for this reason that the price in an oligopolistic industry is sometimes referred to as an 'administered' price - that is, a price which is seller determined. While the phenomenon of the administered price is not confined to oligopoly, it is nonetheless an almost unfailing characteristic of that type of market structure.³² Of course, in a static model in which adjustments to exogenous disturbances occur instantaneously, how a firm responds to a change in industry demand is of little consequence. Whether it varies the price charged for its product or varies the quantity of that product supplied, the new equilibrium that will be reached is the same. But in a dynamic economy such as that of the United States, the manner in which the firm adjusts to the ever recurring disequilibria in the product markets will itself partially determine what growth path is followed. Varying the price charged rather than varying the quantity supplied does make a difference as to how things turn out.³³ This is why pricing models based on the assumption that the firm simply throws its output on the market for whatever price can be obtained must be rejected as inapplicable to the oligopolistic sector of the American economy. It should be noted that these models include, beside the conventional polypolistic model set forth in economics textbooks, the entire body of neo-classical pricing models - thus making most of what passes for contemporary microeconomic analysis irrelevant insofar as the oligopolistic sector is concerned. Among the general equilibrium systems thus called into question are those associated with Walras, Cassel, Lindahl, Hicks, Samuelson, Patinkin and Solow. For if these models are inapplicable to the oligopolistic sector, as significant as that sector is in the overall economy, one cannot help but question how useful they are for understanding the economy as a whole.

Second, because the megacorp supplies such a large share of the market, it cannot assume that its own individual actions will have no discernible impact on the industry. Rather it must anticipate that any change in price or other move it may make to improve its relative position will lead to a reaction by the other firms in the industry. It is this

recognized interdependence among the members of the industry, not the number of such firms or the shares of the market they supply which, as pointed out earlier, defines oligopoly.³⁴ What this recognized interdependence means is that no individual firm can, by itself, alter the current price level. If a megacorp should attempt to raise its price unilaterally, in the hope of increasing its profit margin, it will find that so many of its customers will switch their purchases to other firms in the industry that its total revenue will fall. On the other hand, if a megacorp should attempt to lower its price unilaterally, in the hope of increasing its sales, it will find that the other firms in the industry will quickly follow suit to prevent the loss of customers. Thus relative market shares will remain unchanged, the only consequence being that the industry price is lower. But since the industry's short-run demand curve is likely to be price inelastic, the megacorp's total revenue will once again fall.³⁵

Industrial view

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The above argument assumes that the oligopolistic industry produces a single, homogeneous product so that any small variation in price is sufficient to cause all buyers to switch their purchases to the firm or firms quoting the lower price. If this condition does not hold, that is, if the industry supplies a product which is capable of being differentiated on the basis of which particular firm has produced it, the situation is more complicated - though not fundamentally different. In that event, one has a case of oligopoly with product differentiation.

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The distinction between an oligopoly with product differentiation and one without is the distinction, for the most part, between an industry selling to the consuming public, that is, to households, and one selling to other groups of business firms. Actually, there is no such thing as an industry producing a single, homogeneous product. What one finds is that almost every industry produces a full line of products, the line including many different items. In the case of industries which sell to other business firms, especially on a continuing basis, the customer is generally able to evaluate objectively the relative merits of the different items in the product line and knows with some degree of certainty which particular item meets its own technical needs. It is the price of this one, homogeneous item which the customer is alone concerned with; and in a market of this type, because of the need to quickly match any rival firm's quotation lest a sale be lost, only a single known price can prevail.³⁶ This need not be true, however, of an oligopolistic industry with a differentiable product - that is, an industry which sells primarily to households or to other business firms on an infrequent basis. Due to the buyer's inadequate knowledge, different firms can charge different prices for what, ignoring superficial differences, are essentially identical items.

It is important to recognize, however, the purpose which these price differentials serve. It is to stabilize relative market shares, that is, to equalize any supposed advantage that one firm's product may have over another's, whether that supposed advantage arises from long-standing reputation, more intensive advertising, better servicing arrangements, or the like. Thus the above argument can be extended to include oligopolistic industries with differentiable products by noting that not only can an individual firm not alter, by itself, the current price level but also it cannot, by itself, alter the customary differential in price between its own products and those of the other firms in the industry - unless the change is necessary to offset a shift in consumer preferences that would otherwise lead to a shift in relative market shares (Schneider, 1966).

Since no individual firm can alter the current price level, any decision to revise prices must be made by the industry as a whole - or at least by all the leading firms acting together as a collective entity. This, in turn, gives rise to what William Fellner (1949, ch. 1) has termed 'joint profit maximization'. The firms that comprise the industry are likely to have learned through historical experience³⁷ that it is in their own self interest to avoid price competition among themselves and seek instead to maximize the net returns for the industry as a whole. While the simplest and most effective means of assuring this unity of pricing action is for the members of the industry to meet together formally as a cartel, such an approach is illegal under United States law (cf. Dewey, 1959, ch. 12; Neale, 1960, ch. 1). This does not necessarily eliminate collusion as a possibility (see Eichner, 1962, pp. 46-50; Sultan, 1975); but the fact is that, in order to avoid direct violation of the Sherman antitrust act, the members of oligopolistic industries will have, over time, devised various other means of coordinating their pricing decisions. The most widely employed of these, and the one which will therefore be taken to be typical, is price leadership. This is the practice whereby one firm, the largest and/or most powerful, assumes the role of initiating price changes. It is, of course, necessary to distinguish between firms which are, in the aggregate, large and firms which, in a particular industry, supply a large share of the market. A firm may be large in the aggregate because of its diversified activities, yet supply a smaller share of a particular market than one or more other firms in the same industry. Generally, it is the firm with the largest share of the market which acts as the price leader, though a smaller firm, one with lower costs and expanding more rapidly, may arrogate to itself that role (see Markham, 1951, pp. 891-905; Stocking and Watkins, 1951, chs. 6-8).

The 'joint profit maximization' or price leadership model of oligopoly which follows is to be distinguished from the 'dominant firm' model

in which the largest firm sets the price on the assumption that the potential demand for its product is simply the total industry demand less whatever the other firms within the industry are capable of supplying. In this alternative model, the other firms do not necessarily match the price announced by the dominant firm, and as a result, the latter's share of the market will vary as industry sales vary. As Worcester (1957) has pointed out, the 'dominant firm' model is an unstable one, since it will, unless the industry is subject to decreasing returns to scale over time, necessarily evolve into monopoly or oligopoly with price leadership. This does not mean that the model may not be relevant at a certain point in an industry's history (Eichner, 1969, pp. 159-60). Nor does it mean that the price leader in an oligopolistic industry will not occasionally find it convenient to overlook what the competitive fringe of firms in its industry may be doing. It simply means that the 'dominant firm' model, since it implies an eventual decline in the market share of any firm which follows the model for any extended period of time, is not generally relevant to the oligopolistic sector of the economy where stability of market shares is the general rule. No matter how large a share of the market a price leader as the dominant firm may have, it cannot long tolerate the erosion of that position such as will occur when a significant number of other firms are free, in the face of declining demand, to pursue an independent pricing policy. Eventually, the price leader will be forced to take some type of retaliatory action, reminding other firms of the interdependence which exists among them.

The very fact that it is the largest and/or most powerful firm means that the price leader has sufficient financial strength to force any errant member of the industry back into line on prices - by means of a price war if ultimately necessary. Usually, however, the mere fact that the price leader is prepared to take such drastic action is sufficient to assure uniformity of pricing action. While the element of coercion lies at the base of the system of price leadership, it is by no means the sole factor. There is also the common interest which exists in an oligopolistic industry of avoiding price competition. For in an oligopolistic industry price competition is apt to lead to a price war - and a price war, for large firms with significant fixed costs, can be quite destructive, both because of the extent to which prices can be cut while still covering 'out-of-pocket' or variable costs and because of the considerable resources which can be consumed in such a struggle (cf. Telser, 1966a; Cassady, 1963).

Even aside from the element of coercion and the recognized community of interest, however, there is the important fact that the pricing decision in an oligopolistic industry is, in a real sense, a collective act. While the laws of the United States prohibit the members of any industry from conferring together over prices, various informal channels of

communication nonetheless exist. Interviews granted to trade magazines, statements made at stockholder meetings and similar public utterances by megacorp officials serve to create an industry-wide consensus which the price leader must necessarily take into account before making its pricing decision. This is not to deny that the actual price decided upon is likely to be the one best calculated to advance the price leader's own interests or that the other members of the industry, if the decision were theirs to make, might choose some other figure. But - and this is the premise on which the analysis that follows will be based - the price leader in deciding upon a particular price is in effect acting on behalf of the entire industry (cf. Henderson, 1954; Almarin Phillips, 1964; see also Almarin Phillips, 1961, 1962). Through the mechanism of price leadership it is possible to coordinate prices without directly violating the Sherman antitrust act.

Not only must pricing decisions in an oligopolistic industry be coordinated, but also the price, once determined, must be maintained, that is, adhered to, by all the members of the industry until such time as they are able collectively, with the price leader in the forefront, to decide on a new price level. On the one hand, there is little point in developing a common position on prices, this to avoid the dangers of price competition, if all firms are not then going to follow those prices. On the other hand, because of the difficulty in developing such a consensus, price changes cannot be too frequent. The interval over which the industry price can thus be expected to remain unchanged is what is meant by the pricing period. It falls within the short period of Marshallian analysis (J. Robinson, 1971, ch. 2), and it varies from industry to industry, depending on the characteristics of the markets involved. In the automobile industry, for example, the pricing period is a year, the same as for many other consumer durable goods; in the steel industry, it is six months, an interval not untypical of metals that serve primarily as material inputs. This tendency for the price in an oligopolistic industry to change only infrequently follows from the fact that the price is an administered one, with time required not only to coordinate the setting of a new price level but also to assess the impact of the previous change in the price level.³⁸

Of the several methods that have been devised for assuring that the industry price is maintained throughout the pricing period, the one which will here be taken as typical is the open price list - the publication and distribution of prices to customers by each of the firms in the industry. Since the prices are identical, the lists, too, will be identical. Indeed, it is not unknown for the firms in some industries simply to distribute as their own the price leader's list.³⁹ For those industries in which transportation costs are significant, the open price list is likely

to be supplemented by a multiple basing point system. Certain cities, usually those in which plants are situated, are designated as base points and the price of the article then calculated on the basis of the price published in the open list plus the cost of transportation (generally specified as by rail) from the nearest base point to the place of sale.⁴⁰ In this way, two companies, one with a plant located at the base point and another with a plant some distance further away, can be certain of quoting identical prices to any prospective customer regardless of where the customer may be located.

It might be expected that the temptation to shave prices below those published in the open list would be irresistible, especially since this would enable a firm to increase its relative market share. But such a ploy, to turn out advantageously, must be concealed from the other members of the industry lest they retaliate. The very fact that a particular firm was suddenly gaining customers at the expense of its rivals would be *prima facie* evidence that the firm was secretly cutting its price. Thus any success which price shaving might have is likely to lead immediately and automatically to its detection and to reprisals from the other firms in the industry.⁴¹ Oligopoly being in a certain sense a description of behavior that has been learned over time, firms in oligopolistic industries can be expected to have had sufficient experience with the untoward effects of price shaving to eschew it as a competitive weapon in all except periods of unusually depressed demand (cf. Cyert and DeGroot, 1971). This reinforces the point made earlier, namely, that in an oligopolistic industry no firm can or will, by itself, alter the current price level.⁴²

The analytical significance of this fact is that, for the individual megacorp, a demand curve in the conventional sense cannot be said to exist (R. Robinson, 1961). The price that will be charged by the megacorp for its product during the current pricing period is determined by the industry as a whole acting through the price leader. The individual megacorp has no control over what that price will be nor, once the price has been determined, can it unilaterally alter that price. This limitation on the firm's discretion is even true, to a large extent, of the price leader itself. To the individual megacorp, then, the price that can and will be charged at varying levels of capacity utilization is constant. At what level of capacity the megacorp will actually operate, given that constant price, will depend on two factors over which, for all practical purposes, the megacorp has no control: (1) the quantity demanded from the industry as a whole at that price, reduced to the portion of total industry demand the megacorp has currently succeeded in capturing through non-price forms of competition, and (2) what is by far the more important factor, any shift in the industry demand curve resulting from

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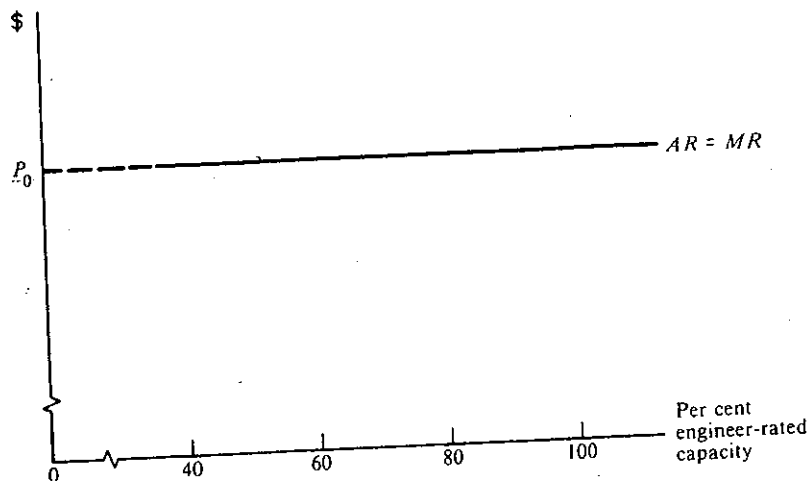


Figure 3

changes in aggregate economic conditions. It is because the megacorp cannot, as a practical matter, affect the demand for its product by altering its price that a demand curve in the conventional sense does not exist.

Still, a demand curve in the sense of a revenue function can be stipulated. This revenue function, as depicted in Figure 3, is a line parallel to the horizontal axis at a height equal to the price P_0 . Since the price charged by the industry as a whole during the current pricing period will be constant whatever the rate of capacity utilization, the average revenue and marginal revenue will also be constant. This gives the revenue curve the appearance of an infinitely elastic demand curve.

The megacorp's individual short-run revenue curve would thus appear to be identical to that of a polypolistic firm. While geometrically similar, the two are quite different behaviorally. In a polypolistic industry, though a firm is likely to view the current industry price as something which is exogenously determined when deciding how much to produce - and it is in this sense that its demand curve will appear to be infinitely elastic - it will at the same time be continually testing to see if the industry price cannot be altered to its benefit. If the firm has a sense that demand is unusually strong at the current price level, it may quote a higher figure to a prospective customer; and if the customer, feeling that he is unlikely to obtain a better price from any other source, agrees to the figure quoted, then a new industry price will be established on which all the firms in the industry will thereafter base their output decisions. Of course, the prospective customer has the option of refusing to make the sale at the higher quoted price, in which case the industry

price remains unchanged. On the other hand, if the firm has a sense that demand is weak, if in fact it finds that the goods currently being produced are simply being added to inventory, it may quote a price below the current industry price; and again, if this offer is accepted, a new industry price will be established. Though fixed and ascertainable at any given moment of time, the industry price level in a polypolistic industry is a constantly fluctuating figure as changing supply and demand conditions affect the bargaining between buyer and seller.

This continual testing of the industry price level, with the resulting fluctuations in price, is not to be found in an oligopolistic industry. Instead, as has already been indicated, each firm is likely to adhere scrupulously to the industry price schedule until at least the end of the current pricing period when, at the price leader's initiative, the schedule may be changed through collective action.⁴³ Even though demand may be unusually strong or unusually weak, an oligopolistic firm will forgo the opportunity for improving its own position by deviating from the industry price level, for experience has taught it what the reaction of its rivals is likely to be.

In conclusion, then, the characteristics of the megacorp which are analytically important are (1) the separation of management from ownership with its resulting effect on decision-making criteria; (2) the multiplicity and/or segmentation of plants, enabling the megacorp to produce over those ranges of output at which it customarily operates at constant marginal cost; and (3) the membership within an oligopolistic industry, in which all firms are aware of their interdependence and behave accordingly, thereby giving rise to an individual short-run revenue curve that is infinitely elastic. Of course, in the actual world, even among the companies included in Fortune Magazine's annual directory of the 500 largest corporations, these characteristics will not be observed, in their entirety, in all cases. In this sense, the portrait of the megacorp which has been sketched represents an ideal or pure type - just as the neo-classical proprietorship, with its profit-maximizing entrepreneur operating a single plant firm in a competitive industry, is also an ideal type.⁴⁴ Of the two hypothetical prototypes, however, it would appear on the basis of the available empirical evidence that the megacorp comes closer to reflecting actual conditions in the oligopolistic sector of the American economy. It thus represents a better *a priori* foundation upon which to begin the analysis of oligopolistic pricing.

The megacorp's short-run pricing situation

Having specified the megacorp's analytically significant characteristics - these characteristics, in turn, determining the nature of the megacorp's

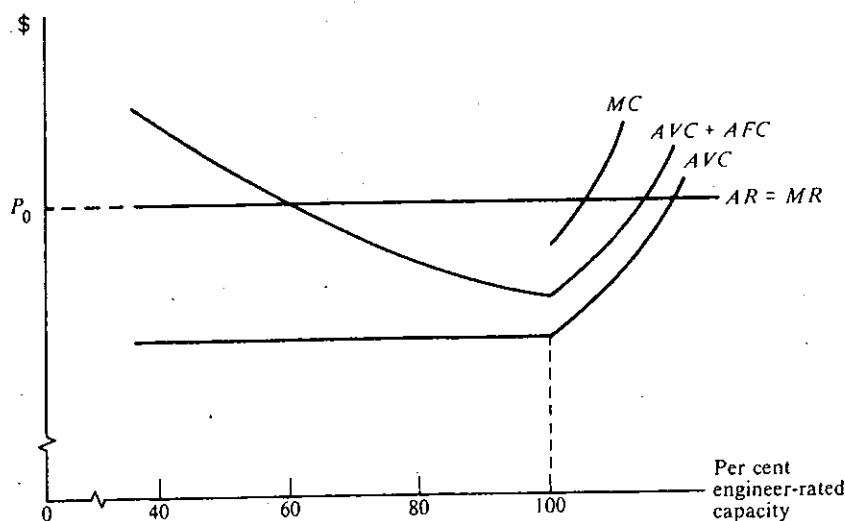


Figure 4

cost and revenue functions - it is now possible to examine the short-run pricing situation which the individual megacorp faces. To do so, it is necessary only to superimpose the stipulated cost and revenue curves on the same set of axes, as is done in Figure 4. What the diagram reveals is that from the short-run perspective of the individual megacorp the price in an oligopolistic industry still remains indeterminate, as it is in other models. Over the ranges of output at which the megacorp customarily operates, that is, between 65 and 95 per cent of engineer-rated capacity, marginal cost and marginal revenue are both constant. Since the two curves at no point intersect one another, the rule for short-run net revenue maximization - the equating of marginal cost with marginal revenue - cannot be applied. This conclusion still holds even if, due to operating cost differentials among the various plants or plant segments, the average variable and marginal cost curves have a slight upward tilt to them. Only if the marginal cost curve rises sufficiently to intersect the marginal revenue curve will the price be determinate; as long as the megacorp has reserve capacity, however, even if those reserve units are less efficient, no such intersection is likely to take place.

Of course, if the megacorp should operate beyond its normal range of output, and in particular beyond 100 per cent of engineer-rated capacity where marginal cost rises sharply, the maximization of net revenue is possible. There are even occasions when, due to extraordinary circumstances, the megacorp may find itself operating in that range.⁴⁵ But

those occasions are the exception. For the reasons already indicated, the megacorp will make certain that it has capacity to spare. This capacity can be fully utilized in the short run only if the megacorp is prepared to shave its price below that of the industry. However, this is an option foreclosed to the megacorp by the very nature of the industry to which it belongs. Put another way, the price in an oligopolistic industry will normally be set so as to result in the members of that industry operating at between 65 and 96 per cent of engineer-rated capacity - and hence over ranges of output at which marginal cost and marginal revenue cannot be equated.

Thus, there is no answer to the question of how prices are determined under oligopolistic conditions as long as the focus remains on the individual firm. In seeking a determinate solution to the oligopolistic pricing enigma, it is necessary to shift the focus from the level of the firm to that of the industry as a whole. This can be done easily enough, given the ground already covered in this treatise. Since it is the megacorp-price leader which acts as surrogate for the entire industry in the setting of price, all that need be done is to indicate how the cost and revenue functions of that one firm are transformed when it acts, not just on its own behalf but on behalf of its fellow oligopolists as well. NB

If it can be assumed that no other member of the industry has a lower average variable cost curve than the price leader - and, for the reasons indicated above, this is not an unreasonable assumption to make - then no change need be made in the cost curves depicted in figure 4. With no other firm able to produce the same article at a lower cost, and with price shaving precluded as a means of increasing relative market share, no other firm is likely to be willing to offer that product at a lower price. Any additional supply will be obtainable only at the price announced by the price leader, and this means that the price leader's cost curves are the relevant ones for decisions made at the industry level. Indeed, it is to the cost curves of the price leader that one must look for an explanation of both the height and shape of the marginal portion of the industry supply curve.⁴⁶ The case is quite different, however, with respect to the revenue curves depicted in figure 4.

When acting as surrogate for the industry as a whole, the megacorp-price leader need not accept the current industry price as exogenously determined. It can announce a change in that price - either an increase or a decrease - confident that the other firms in the industry will follow suit.⁴⁷ Under these circumstances, when it varies its own price, the megacorp-price leader is in effect determining both the new price that will then prevail throughout the industry and, given the industry demand curve, the quantity of output that will be sold at that new price by all firms together. Since its own level of sales will change along with 4

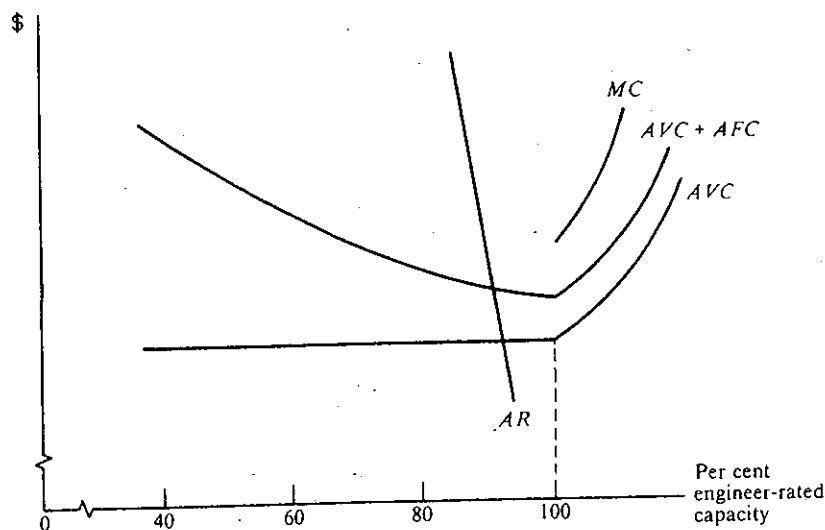


Figure 5

those of the other industry members - in proportion to its share of the market and in the direction opposite that of the price movement - the megacorp-price leader will have an average revenue curve that is negatively sloped such as the one shown in figure 5 (Triffin, 1949, pp. 28-9; see also Dewey, 1969, ch. 2). Though the magnitude of the slope will be different, this average revenue curve will have the same price elasticity of demand, at any given price level, as the industry demand curve itself.⁴⁸ For this reason, when the megacorp-price leader acts on behalf of the entire industry, its average revenue curve can be viewed as simply the marginal portion of the industry demand curve.

Yet even when the analysis is shifted in this manner to the industry level, the price under oligopolistic conditions still remains indeterminate. According to the best available empirical evidence, the demand curve in any industry the size and significance of most oligopolies is price inelastic in the vicinity of the prevailing price (cf. Houthakker and Taylor, 1966; Stone, 1954; Hirsch, 1950-1). This means that the marginal revenue curve, such as the one associated with the average revenue curve depicted in figure 5, must necessarily be negative. There being no way to equate a negative marginal revenue curve with a positive marginal cost curve, the rule for short-run net revenue maximization still cannot be applied.

The import of the above argument is twofold. First, it implies that the Chamberlin-Robinson model and its derivatives are irrelevant to the oligopolistic sector of the American economy - irrelevant even insofar

as the megacorp-price leader is concerned.⁴⁹ To provide a determinate solution, that type of model must presume an average revenue curve that is not just price elastic but, indeed, sufficiently price elastic to take into account the existence of positive marginal costs. Yet, as just pointed out, any average revenue curve which would be that price elastic is hardly the type of average revenue curve which a megacorp-price leader is likely to face. Second, the above argument implies that the firms in an oligopolistic industry do not seek to maximize net revenue in the short run. This, of course, merely bears out the proposition advanced earlier as to the megacorp's behavioral pattern. To maximize net revenue in the short run, the firms in an oligopolistic industry would, acting together through the megacorp-price leader, have to raise the industry price well above the levels actually observed in the oligopolistic sector. Why they do not generally do so will become clear once the analysis has been shifted from the short run to what is the perspective of the megacorp itself - the long run.

Appendix to Chapter 2

Alternative Behavioral Assumptions¹

Economists who balk at accepting the assumption of short-run profit maximization that is basic to neo-classical theory fall into two distinct camps, each pursuing at an oblique angle to the other the goal of providing a more realistic micro level analysis. In the one camp are those economists who question whether business firms maximize anything. In the other camp are those who propose that short-run profits be replaced by some other maximand.

The economists who, like Simon (1955), Cyert and March (1963), and Monsen and Downs (1965), question whether business firms maximize anything start with a recognition of the same institutional development emphasized in the main body of the chapter - the emergence of the megacorp with its hierarchical structure and separation of management from ownership (see also Margolis, 1958). Because of the organizational factors which this development introduces into the decision-making process - for example, the conflicting goals of different departments, the blocked lines of communication - it is unreasonable, these economists argue, to expect a megacorp to maximize anything. The most that can realistically be anticipated is that the megacorp will achieve a 'satisfactory' level of profits - or whatever else may be essential to the organization's survival. Those who hold this view may conveniently be labeled 'behavioralists', even though the term leads to some oversimplification of viewpoint.

However valuable the behavioralist approach may be for injecting a greater note of realism into theoretical discussions, it nonetheless has an inherent limitation, one that marks this approach as a conceptual box canyon. The implications of satisficing behavior cannot logically be analyzed except as a departure from maximizing behavior. This means that, unless some other 'satisficand' besides short-run profits is posited, the conventional neo-classical pricing model is still central to the analysis. For only after noting the consequences

of firms seeking to maximize their short-run profits can the effects of a weaker thrust in that direction be determined. What this means is that the 'satisficing' part of any behavioral assumption is likely to be only modificatory, and not metamorphic.² The motivational engine remains the same; it is just that the engine has less power. Indeed, one can argue that a pricing model will lead to the same conclusions whether one assumes satisficing behavior or maximizing behavior, the only difference being the time required to reach the long-run equilibrium position (cf. Day, 1967; Day and Tinney, 1968).

Of course, it is not necessary to posit short-run profits as the sole satisficand. Most behavioralists would, in fact, consider profits to be only one of the many goals of the firm. Still, the essential point remains - that to understand the implications of satisficing behavior one must begin by indicating the consequences of maximizing behavior. If the goals of the firm are no longer one-dimensional, then it is the consequences of pursuing multiple maximands simultaneously that must first be determined. It is only in this way that one can learn whether the several goals are actually in conflict with one another, thereby imposing satisficing behavior as a necessary part of constrained maximization (cf. Encarnation, 1964); or whether, in fact, the several goals can be collapsed into one by more precise specification. What is here being argued is that, before the assumption of satisficing behavior can be allowed to inject a greater note of realism into the discussion of pricing behavior, the implications of other maximands besides short-run profits must first be examined.

A number of economists, beginning with Higgins (1939) and including most recently Ferguson (1965) and Horowitz (1969), have posited that there is a generalized utility function which the managers of megacorps seek to maximize (see also Scitovsky, 1943; Reder, 1967; Cooper, 1949; E. Edwards, 1961). Among the variables besides profits suggested for inclusion within this utility function have been survival, security, control, managerial salaries, staff, prestige, power, leisure and the 'quiet life'. This approach, like the theory of consumer behavior from which it is derived, suffers from a fatal defect to the extent that there is no way of assigning specific values to the relative weights attached to each of the multiple goals. Moreover, since there is hardly any form of corporate behavior which cannot be explained in terms of some additional objective sought by management, it can easily degenerate into an exercise in *ex post* rationalization. The generalized utility maximization approach, then, simply creates a set of empty boxes; and for this reason, as Papandrea (1952) pointed out not long after the idea surfaced in the literature, it is of little help in developing an operationally useful pricing model with general applicability.

To the extent that any one of these other goals can be measured separately and its impact then distinguished empirically from that of the profits objective, the above criticism does not hold. Two different kinds of maximands which meet this criterion have been suggested, and each has led to a different kind of behavioral model. One approach, following the lead of Berle and Means (1933), emphasizes the conflict between the interests of the executive group which controls the megacorp and the interests of the persons and/or the organization whom the managers are supposed to be serving in a fiduciary role. This is the 'individualistic' model. The alternative approach, one that builds on certain sociological concepts, emphasizes the commonality of interest between the members of the executive group and the organization whose destiny they direct. This is the 'organic' model.³ Both approaches fall under the general rubric of managerial theories of the firm.

Economists who, like O. Williamson (1964),⁴ adopt the individualistic approach are in the mainstream of a tradition which has always assumed that each person will seek to maximize his own personal welfare. They have merely transposed this view of human nature to the corporate setting, one in which those with the decision-making power are excluded from any significant profit share. In such a setting, these economists argue, the members of the executive group will seek to maximize the income which accrues to them directly. Such income may take several forms, including direct compensation, other emoluments such as pensions, bonuses and stock options, various perquisites such as expense accounts, executive aircraft, hunting lodges and lavishly furnished offices, and staff assistants.

The shortcoming of this approach is that it makes no difference insofar as the setting of price levels is concerned. If their own welfare is the only goal which the members of the executive group pursue besides short-term profits, they will still want to maximize the megacorp's net revenue. Since the various types of income which accrue to the executives themselves are all part of the overhead expense, they will have no bearing on what price is chosen in pursuit of the executive group's goals. Indeed, the only difference is that part of the revenue which might otherwise show up as corporate net income will appear instead under some expense heading. In other words, the pursuit of their own personal interest by the members of the executive group affects only the distribution of income within the megacorp, not the manner of response to external pressures. This distributional effect is not unimportant. It gives rise to a type of economic rent that may be distortive of values in general. Still, the price and allocative impact is probably negligible. This means that, insofar as providing the behavioral foundation for an alternative to the neo-classical theory of the firm is concerned, the individualistic approach does not lead very far. Its underlying assumption - that the members of the executive group seek to maximize their own individual welfare, and not profits - is thus also modificatory rather than metamorphic. NB

The 'organic' approach does not suffer from the same limitation. To the extent that the interests of the executive group and those of the megacorp itself are identical, they will both want to see the firm *qua* organization grow at a maximum rate. Maximum growth of the firm as a desideratum has two important advantages - aside from being operationally definable and empirically meaningful. The first is that it encompasses a number of other maximands (and optimands) which have been put forward as alternatives to short-run profits. These several other variables upon which, it has been suggested, the megacorp's executive group focuses are (a) market share, (b) the absolute level of sales, (c) the rate of growth of sales, (d) the rate of growth of assets, and (e) net revenue over the long run. Depending on the context, each of these variables can be considered the appropriate proxy for gauging whether the megacorp is achieving maximum growth.

That the firm struggles for relative market position has been suggested by a number of economists, including Abramowitz (1938), Helflebower (1954) and Duesenberry (1958, ch. 6). As the main body of this chapter points out, the optimization of long-run market share is the equivalent, under the type of pricing constraint that prevails in an oligopolistic industry, of maximizing the long-run growth of the megacorp. The secular expansion of the industry to which it belongs will, if the existing share of the market is retained, assure the megacorp a certain minimum rate of growth; if the market share can be increased, the

megacorp's rate of growth will be even higher. Viewed in this dynamic context, the absolute level of sales is simply a proxy for relative market share, and it is hardly surprising that Baumol (1958 and 1959, chs. 6-8), in the consulting activity out of which arose his sales maximization hypothesis, found that business executives attached primary importance to this variable.

Note added
The emphasis on sales by business executives has, of course, been interpreted as more than just a concern with relative market share. The megacorp, so the argument runs, is willing to sacrifice some of its short-run profits in order to obtain a larger sales volume. This point, carried to an extreme, has led to the development of a pricing model in which sales are maximized subject to a minimum profit constraint.⁵ To the extent that this constrained sales maximization model implies that prices will be held down by the industry as a whole in order to stimulate sales over the long run or that individual firms will use part of their sales revenue to try to increase their relative market shares through expenditures on advertising and other modes of non-price competition, it is fully in accord with the arguments presented below. However, to the extent that the sales maximization hypothesis is taken to mean that the megacorp, acting alone, can manipulate its sales volume in the short run through the price variable, it flies in the face of all that is known about oligopolistic industries - including the implicit curb on unilateral pricing initiatives and the price inelasticity of the industry demand curve.

Unfortunately, it is the latter interpretation which is sometimes placed on the constrained sales maximization model.⁶ Since such an interpretation requires the least departure from the short-run, static framework of more conventional pricing models, it is not surprising that it has proven attractive to some economists. Even the alternative interpretation, however, that firms are concerned with sales over the long run, cannot be accepted without further refinement. As Baumol himself quickly came to realize, a dynamic version of the constrained sales maximization model must rest on the assumption that it is the rate of growth of sales, and not the absolute level, that is being maximized.⁷

Marris has, in a separate seminal work, posited that what megacorps actually seek to achieve is a maximum rate of growth of assets, rather than of sales (Marris, 1963 and 1964, ch. 2). But a little reflection makes it clear that the two maximands are roughly equivalent to one another, the differences being of little practical import. As the main body of this chapter points out, both are close approximations to the maximand which, assuming an optimal investment program, will lead to the highest rate of growth for the megacorp over time. This third, and most basic, maximand is the rate of growth of the corporate levy - taken to mean the discretionary or residual income accruing to the megacorp itself over and above projected dividend payments.

Once the time horizon has been pushed forward to encompass a maximum rate of growth over an extended period of time, an important transformation occurs in the theory of the firm - whether growth is measured in terms of sales, assets or the corporate levy. In a dynamic model of this sort, one cannot assume a fixed capital stock. This change in underlying premise implies more than just the possibility that output can be expanded without encountering rising marginal costs. It means, even more importantly, that the megacorp's growth rate will be governed not just by the industry price level but by the type and amount of investment being undertaken as well. Indeed, the two types of decisions are inextricably linked. A change in the industry price relative to costs will alter the amount of investment that can be financed internally, and the rate

of investment will, in turn, partially determine what price can be charged. This last point is especially true if the concept of investment is broadened to include advertising and other forms of non-price competition.

With the emphasis placed on growth over the long run, the amount of profit - or net revenue - ceases to play the same critical role that it does in the neo-classical theory of the firm. Rather than being an end in itself, it becomes merely an instrument for achieving the more fundamental goal of growth. In fact, a 'satisfactory' level of profit can be defined as the amount of revenue in excess of costs which enables the megacorp to maximize its growth over time. This metamorphic impact on the theory of the firm is the second advantage of postulating growth as the megacorp's desideratum.

Before profits can be relegated to this secondary role, however, explicit account must be taken of the third group - in addition to the managers and the megacorp itself - whose interests are directly bound up with the behavior of the firm. This third group consists of the stock, or equity debt, holders. In the neo-classical theory of the firm, it is usually assumed that whatever profits are earned will ultimately be distributed to stockholders in the form of dividends. This makes it possible to argue, following Lutz (1945, p. 56) and Buchanan (1940, pp. 179-87), that maximizing the growth of the firm over time is the equivalent of maximizing the present value of the firm, measured by the market price of outstanding shares (see also Modigliani and Miller, 1958; Jorgenson, 1963; Vickers, 1968).

Net revenue distributed to stockholders as dividends represents, however, a diminution of the internal funds, or cash flow, available to finance the megacorp's expansion. There is thus a basic and unavoidable conflict between the interests of the stockholders and those of the megacorp itself - just as there is a similar, though less significant, conflict between the interests of the megacorp and those of the executive group. This conflict is reflected in the difference between maximizing the rate of growth of dividends over the long run and maximizing the rate of growth of the corporate levy over the same time period.

Single-minded pursuit of the latter goal - that of maximizing the rate of growth of the corporate levy - is, of course, not possible. It would imply a dividend rate close to, if not actually equal to, zero; and the present socio-legal climate precludes this as a possibility. Indeed, as pointed out below, the existing institutional arrangements are likely to require that the dividend rate be increased over time by a certain fixed percentage. For this reason, the goal of maximizing the rate of growth of the corporate levy must necessarily be subject to a minimum dividend (or rate of growth of dividend) constraint. The same is true if the growth of sales or of assets is posited as the maximand. It is thus a minimum rate of growth of dividends, and not a minimum level of profit, which is the limiting factor in the dynamic version of the constrained sales maximization model of megacorp behavior and its two close substitute formulations.

No comparable constraint need be taken into account if one simply assumes that the megacorp seeks to maximize the rate of growth of dividends or - what is the equivalent under perfectly functioning capital markets - the present value of the firm measured by the market price of outstanding shares. The reason for not adopting this simpler alternative, for assuming instead that the megacorp will seek to maximize the rate of growth of the corporate levy subject to a minimum rate of growth of dividends, is given in the main body of the chapter.

Whatever approach is followed, however, the dynamics of the pricing decision remain the same. As long as the concern is with the growth of some target

variable over time, the capital stock can no longer be assumed to remain unchanged, and the pricing and investment decisions must be viewed as being inextricably linked. To assume therefore that the megacorp seeks to maximize the rate of growth of dividends, rather than the rate of growth of the corporate levy, is to employ no less metamorphic a behavioral assumption. The growth rate of the megacorp *qua* organization will, it is true, be somewhat lower and the growth rate of income flowing to the equity debt holders somewhat higher,⁸ but short-run profits must still be treated as being largely instrumental in nature. What this means is that economists who substitute the present value of the firm for short-run profits are making a far more significant change in the maximand than they usually realize.

With the rate of growth of dividends assumed to be an exogenously determined fixed percentage, it can be demonstrated that maximizing the growth rate of the megacorp - whether that growth rate is measured in terms of sales, assets or the corporate levy - is equivalent to maximizing net revenue, or profits, over the long run. This is because, with dividends viewed as a quasi-contractual cost and thus a part of the overhead expense, any increase in net revenue, or profits, is also an increase in the corporate levy. The equivalency of maximum growth and maximum long-run profits is, of course, even clearer if the growth rate is measured in terms of the increase in dividends paid out. The purpose of this chapter has been to show that all of these variants of long-run growth maximization are quite different from short-run profit maximization, and that indeed short-run profit maximization cannot realistically be pursued as a goal by the megacorp. Once the distinction between maximizing net revenue over time and maximizing net revenue momentarily is recognized, the behavioral foundation for a more relevant microeconomics has been laid.

Such a behavioral foundation is, of course, to be found in a number of earlier works. The dynamic models of Baumol (1962), Marris (1964) and John Williamson (1966) warrant special mention in this connection.⁹ If one insists on identifying the interests of the megacorp with those of the nominal owners, then Vickers' book (1968), along with the contribution by Lintner (1971), must be added to the list. But whatever the merit of these various works in providing a more realistic view of megacorp behavior, they nonetheless all suffer from a crucial deficiency. They offer no theory of price determination. Careful examination of the models will reveal that in each instance the industry price is treated as something which is exogenously given - the megacorp's discretion being limited to the question of what proportion of its net revenue should be retained and what proportion paid out in dividends. This may be adequate for dealing with a megacorp that is a price follower, but for a megacorp that is a price leader, it leaves unexplained the most significant aspect of behavior - the price that will be announced on behalf of the industry. And this in turn means that the question of how oligopolistic prices are determined is left hanging in the air. It is this deficiency - the indeterminacy of price in the oligopolistic models hitherto available - which the chapter that follows will attempt to correct.