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THE THEORY OF THE FIRM AND CONGLOMERATE ENTERPRISE

Until recently[1] it could confidently be said that economists were generally in agreement on those economic objectives consistent with the advancement of society's welfare. From the Adam Smith of *The Wealth of Nations* (1776) to the Adam Smith of *The Money Game* (1969), economics has assumed the desirability of efficient resource allocation, rapid economic growth and, implicitly or explicitly, the full employment of resources without inflation. It could be stated with far less confidence, however, that economists were in general agreement on the means appropriate to the attainment of these objectives. If the current disagreement over the most desirable policies for attaining reasonably full employment without inflation (or more accurately, the curbing of inflation without creating intolerable unemployment) occupies the center of the stage, this is certainly not because the curtain has rung down on those who once differed over the means for attaining allocative efficiency and growth as they resolved their differences in fond embrace. Rather, they have simply agreed to disagree. The classical static case for competitive resource allocation still has subscribers aplenty, but it has always been subject to qualification because of possible externalities, scale economies and income distribution effects, and is still challenged as irrelevant, unattainable, dulled by the Schumpeterian hypothesis and irreconcilable with the theory of the "second best."[2] The wearisome issue of precisely what industrial *structure* is most conducive to optimum industrial *performance* remains a practical issue; and as Alfred Marshall observed in his *Principles*: "The theory of monopolies starts rather than solves practical issues such as these. . . ."[3] More than a half-century has passed and the issues are still with us.

The inadequacies of microeconomic theory in providing tolerably accurate relationships between market structure and firm behavior have been

1 These goals have recently been questioned on the grounds that in their pursuit society may incur excessive costs in environmental and moral deterioration, a broad issue that obviously lies beyond the scope of this essay.

2 *Cf.* W. BAUMOL, WELFARE ECONOMICS AND THE THEORY OF THE STATE (2d ed. 1965); J. MARKHAM, THE AMERICAN ECONOMY 3-137 (1963); Clark, *Toward A Concept of Workable Competition*, 30 AM. ECON. REV. 241 (1940); Lipsey & Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUDIES 11 (1956); Singer, *Industrial Organization: Price Models and Public Policy*, AM. ECON. REV. (May 1970 forthcoming).

3 A. MARSHALL, PRINCIPLES OF ECONOMICS 402 (8th ed. 1964) (1st ed. published in 1890).

dealt with at length in the literature and scarcely need repeating here. How-
ever, these inadequacies can easily be exaggerated. The modern theory of
the firm clearly distinguishes between firms having power over the market
and those tightly controlled by the market. The difference between the two
lies in the locus, breadth and complexity of the decision-making process.
When the market virtually controls the firm the discretionary power residing
in the individual firm to set prices, production schedules, advertising and
research budgets, and so on, is sufficiently weak to be ignored. As the discre-
tionary power of the firm to affect these important variables increases, the
constraining forces of the market place grow weaker. Microeconomic models
are useful instruments for predicting the possible effect significant discre-
tionary power residing in the firm has on these variables. Herein lies the
crucial contribution of theory to policy. The mere possession of such discre-
tionary power is inimical to the public welfare. True, it can be argued that
such power may sometimes be used to promote the public interest but this
is at most a trivial modification of the principle. In general, public policy
must be erected on the assumption that those in possession of substantial
market power will use it to their own advantage, an assumption that factual
histories of monopolistic firms and labor unions surely confirm.

    While microeconomic models may provide very useful insights into how
the possession of market power will probably affect important market
variables, they have their deficiencies and limitations. They are deficient in
that the critical public policy issue often is *whether* a firm has market power,
and *how much*, rather than how it will be used once possessed. Economic
models help identify such indicia of market power as the level of concen-
tration, market shares, profit levels and price-cost relationships, but a deter-
mination of whether a given firm possesses substantial market power, or of
whether a given merger substantially increases concentration, is ultimately a
matter of judgment. Moreover, microeconomic models are limited in their
application to specific and reasonably well-defined markets.

    It is this latter limitation that accounts for the wide gulf separating
contemporary microeconomic theory and whatever explanatory hypothesis
is required for an understanding of the operative mechanics peculiar to the
conglomerate firm. Predictive models of the firm, until very recently, have
been cast in terms of a single product, or at most in terms of a product line
output that can be conceptually expressed as a production index. This
simplistic approach has no doubt arisen largely out of conceptual con-
siderations, but it has in part been attributable to the limitations of two
dimensional geometric models of the firm; Professor Clemens probably had
both in mind when he observed: "It is extremely questionable whether the
ordinary concept of 'the demand curve of the firm' can be applied at all in
the real world of multiple-product firms."[4]

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4 Clemens, *Price Discrimination and the Multiple-Product Firm*, 19 REV. ECON. STUDIES
1, 11 n.1 (1950).

Algebraic formulations, because of their greater capacity for expression, have recently contributed to a clarification of the nature of the conglomerate firm, especially to identifying the possible theoretical consequences of having individual firms engaged in various types of multi-product activities. To illustrate, consider a firm producing the two products, i and j. How and to what extent should we *expect* the production of both i and j in a single firm to lead to outcomes in the market place that differ from those that would be expected were i and j each to be produced by an independent firm? The answer depends on whether there is any interdependence of costs or revenues, or both, between the two products. If we assume for the moment that the marginal costs of i (c_i) are independent of the quantity of j produced (q_j),[5] the basic optimizing equations for the two-product firm are as follows:[6]

[1]
$$\frac{\delta\pi}{\delta q_i} = \frac{\delta\pi}{\delta q_j} = 0$$

That is, the firm will produce both i and j up to where the marginal profitability of each is equal to zero; in algebraic language, the partial derivatives of π (profits) in $\pi = p_i q_i + p_j q_j - C$, where $p_i q_i + p_j q_j$ are respectively the total revenues derived from i and j and C is the total costs of producing both i and j, are set equal to zero.

From [1], the marginal revenue — marginal cost equalities for i and j are:

[2]
$$P_i + q_i \frac{\delta P_i}{\delta q_i} + q_j \frac{\delta P_j}{\delta q_i} = \frac{\delta c}{\delta q_i}$$

$$P_j + q_j \frac{\delta P_j}{\delta q_j} + q_i \frac{\delta P_i}{\delta q_j} = \frac{\delta c}{\delta q_j}$$

The terms in these equations lend themselves to the following economic interpretations:

(a) The cross derivatives $\dfrac{\delta P_j}{\delta q_i}$ and $\dfrac{\delta P_i}{\delta q_j}$ define the interdependence of the quantity demanded of i (j) and the price of j (i);

(b) the derivatives $\dfrac{\delta P_i}{\delta q_i}$ and $\dfrac{\delta P_j}{\delta q_j}$ define the slopes of the partial equi-

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5 For most strictly conglomerate firms the assumption of independence among products of their respective shortrun marginal costs is probably realistic. Shortrun marginal costs are affected only by variable costs, and the variable costs of one product is not likely to be affected by changes in the rate of output of another product. On the other hand, the unit fixed costs, *e.g.*, headquarters administration costs of various products, may very well be interdependent. However, if in the conglomerate firm the costs of two products can be made "joint" costs, the presumption is that the marginal costs schedule of one product will move downward as the output of the other decreases. If this were not the case, the firm would produce them independently. *See* Bailey, *Price And Output Determination By A Firm Selling Related Products*, 44 AM. ECON. REV. 82 (1954).

6 For a more detailed version of this illustrative model, see K. PALDA, ECONOMIC ANALYSIS FOR MARKETING DECISIONS 137-39 (1969).

librium demand schedules for i and j; the algebraic sum of $q_i \dfrac{\delta P_i}{\delta q_i}$ and $q_j \dfrac{\delta P_j}{\delta q_i}$ therefore measure the difference between the price of i, P_i, and the marginal cost of i, $\dfrac{\delta c}{\delta q_i}$.

It may be observed that for a firm operating in perfect competition (confronting a demand schedule with zero slope) in market i and market j, or producing zero output of j, $q_i \dfrac{\delta P_i}{\delta q_i} = 0$; $q_j \dfrac{\delta P_j}{\delta q_i} = 0$; and $P_i = \dfrac{\delta c}{\delta q_i}$; that is, price equals marginal costs. This is also true, of course, under the same assumptions, for market j. If the firm confronts a negatively sloped demand schedule in market i, then $q_i \dfrac{\delta P_i}{\delta q_i}$ is always negative, and the op-timizing price equation for i may be written:

[3] $$P_i = \frac{\delta c}{\delta q_i} - q_i \frac{\delta P_i}{\delta q_i} - q_j \frac{\delta P_j}{\delta q_i}$$

This equation defines the effects of "conglomeration"; that is, the predictable consequences of having the same firm produce both i and j. If the demand schedules for both products are strictly independent, the cross derivative $\dfrac{\delta P_j}{\delta q_i}$ becomes zero and, again assuming no interdependence between the marginal costs of i and j, the effects of "conglomeration" are zero — the prices and quantities of i and j produced in a single firm are the same as they would be if they were produced by separate firms. If i and j are com-plementary products, the cross derivative is positive and the optimum price for the product under consideration would be lower than in the case of product independence. If i and j are substitute products, the cross derivative is negative and the price of the product under consideration would be higher than in the case of product independence.

It follows from the foregoing simple mathematical model that a con-glomerate producing totally independent products, under conventional profits maximizing assumptions, will set prices and rates of output identical with those that would result if each product were produced by an indepen-dent firm. Moreover, even when the product demand schedules which the con-glomerate firm confronts are interdependent, the price and output effects of conglomeration are attributable to the *combination* of market power *and* conglomeration, and not simply to the fact that the firm is a conglomerate. Finally, the combination of market power and conglomeration is likely to lead to higher prices and lower rates of output than single-product firm market organization only when the products in question are substitutes, *i.e.*,

when the cross derivative $\dfrac{\delta P_1}{\delta q_j}$ is negative. The implications of conventional microanalysis for antitrust policy would therefore appear to be:

(1) its concern should be with whatever market power the conglomerate firm may possess and not with the multi-product aspects of the firm; and

(2) mergers involving firms with market power in substitute product markets should be prohibited unless special considerations, and it is difficult to see what they would be, should dictate that the merger occur.

As students of merger and merger policy will readily recognize, this says little more than that so-called conglomerate mergers of this sort have horizontal aspects that should have the approximate legal status of horizontal mergers.[7]

HYPOTHESES CONCERNING CONGLOMERATE FIRMS

Speculation concerning the behavior of the conglomerate firm and its policy implications have ranged over a far wider terrain than that bounded by the conventional theory of the firm. In general, while the numerous and varied hypotheses advanced concerning conglomerate enterprise may individually be intellectually appealing, collectively they provide very little in the way of appropriate guidelines for public policy. This is because virtually every hypothesis has generated its own counter-hypothesis, generally erected on equally persuasive a priori logic, and since in most cases the empirical testing required to confirm or refute either has yet to be done, we are left with a logical stalemate.

The existence of almost diametrically opposing hypotheses at the overall firm behavior level is best illustrated by the views advanced by Professors Edwards and Bower. Corwin Edwards, in one of the earlier treatments of the subject, hypothesized that the conglomerate firm could not be analyzed in terms of the traditional theory of the firm which rested on the assumption that firms maximized profits in each product market. On the contrary:

> A concern that produces many products and operates across many markets need not regard a particular market as a separate unit for determining business policy and need not attempt to maximize its profits in the sale of each of its products, as has been presupposed in our traditional scheme. . . . It may possess power in a particular market not only by virtue of its place in the organization of that market but also by virtue of the scope and character of its activities elsewhere. It may be able to exploit, extend, or defend its power by tactics other than those that are traditionally associated with the idea of monopoly.[8]

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[7] The Federal Trade Commission classifies both "market-extending" and "product-extending" mergers as conglomerate mergers; it is very likely that in many instances both could as easily be classified as horizontal.

[8] Edwards, *Conglomerate Bigness as a Source of Power*, in BUSINESS CONCENTRATION AND PRICE POLICY 331, 332 (Nat'l Bureau Econ. Research ed. 1955).

The crux of the Edwards hypothesis lies in the word *tactics*. It is apparent that nothing in the traditional theory of the firm developed in the preceding section leads to the conclusion Edwards draws. However, as soon as we introduce the concept of business tactics, the number and variety of possible market outcomes is greatly enlarged. It is certainly possible that a firm could use revenues derived from one market to finance business policies in another. It is evident, however, that the practice of such a policy requires that the firm earn above competitive returns in at least one market, otherwise the additional costs imposed on the operations in that market to support other operations would raise their total costs above their total revenues, a nonviable long-run situation. The major weakness in the Edwards hypothesis, however, is that it provides no insights into that set of business incentives peculiar to multi-product firms that take precedence over the normal profits maximization incentive under which single-product firms are assumed to operate. Just because a firm earns profits above the competitive level in one market, there is no presumption that it will use them to support business tactics rather than, say, innovational activities as the late Professor Schumpeter argued so persuasively.[9] If costly tactics are important to the conglomerate firm, it can surely be argued that it would strive to be in the financial position to employ them to the fullest extent possible. It could only afford them to this extent, however, if it strived for maximum profits. The Edwards hypothesis does not provide a resolution to this apparent conflict between the business policy the conglomerate might possibly pursue and the means it would employ to implement it.

The Bower hypothesis[10] offers a reverse image of how the large conglomerate firm functions. According to Bower, the management of large diversified firms, in contrast to that of single-product firms and in contrast to Edwards, is singularly driven by the profits motive. The managements of diversified firms are not inhibited or constrained by being "steel men," "chemical men," or "knitwear men"; instead, they react to a broad range of environmental changes. Where management has no vested interest in, or loyalties to, any one industry it is likely to be unusually alert to profit opportunities wherever they exist. It is not surprising, therefore, that conglomerate management typically employs multiple profit-centers as a control device. The unlimited business horizon and the profit-center approach result in an internal competition for resources that make the conglomerate firm an especially appropriate instrument for allocating resources to their most productive uses. But, Bower argues, these forces that drive managers of conglomerates to be efficient are the same forces that tend to make them socially irresponsible — they are unbridled profits maximizers. The demands for yearly improvements in earnings applied indiscriminately to all divisions

9 J. SCHUMPETER, CAPITALISM, SOCIALISM AND DEMOCRACY 81-107 (3d ed. 1950).

10 Bower, *Planning Within the Firm*. This paper will be included in *Papers and Proceedings of the Eighty-second Annual Meeting of the American Economic Association*, held Dec. 27-29, 1969, New York City, to be published later in 1970.

drive executives to take extreme measures, sometimes such unlawful measures as those uncovered in the electrical equipment conspiracy, to chalk up a good score. However, the same demands provide disincentives for conglomerate executives to take the lead in such social policy areas as race relations and pollution, both of which entail costs. For the same reason, according to Bower, large conglomerates will tend to avoid highly risky innovations because they seriously damage a division's short-run profits record when they turn out to be failures.

Other economists, focusing their attention on the general management rather than the divisional management of conglomerates, have advanced a counter-hypothesis concerning the conglomerate firm's propensity to innovate. Over a decade ago, Professor Richard Nelson developed the proposition that the highly diversified firm should be an appropriate instrument for promoting innovation.[11] Successful research, especially basic research, will turn up a wide variety of inventions. A highly diversified firm is better situated than a single-product firm to recognize and to exploit the profits-earning potential of a wide range of unpredictable inventions and discoveries. It is often argued, for example, that du Pont may not have recognized the commercial possibilities of Nylon had the company remained a basic chemical firm and not ventured into the synthetic fiber industry 15 years before its scientists climaxed their high-polymerization research. A corollary to the Nelson hypothesis is that, other things being equal, a given research and development (R & D) outlay has a higher probability of success in highly diversified than in much less diversified companies. In short, technological progressiveness should vary directly with the degree of conglomerateness.

This is one of the few conglomerate issues that has been subjected to factual analysis. The available data are unsatisfactory and the analysis is highly inconclusive, but the results are consistent with the general proposition that innovational activity is positively correlated with the degree of diversification. A study of 13 broad industry groups shows that in 11 such groups innovational effort, as measured in terms of R & D dollars per sales dollar, is strongly correlated with the degree of diversification as measured in terms of the number of four-digit Standard Industrial Classification census industries in which the firms reported production activity.[12] The correlation also holds for invention output as measured by the total number of patents. To paraphrase and slightly revise one of Professor Edward Mason's frequently quoted caveats:

> No one familiar with the statistical and other material pertaining to [the conglomerate firm and innovational activity] would deny the extreme

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[11] Nelson, *The Simple Economics of Basic Scientific Research*, 67 J. POL. ECON. 297 (1959).

[12] *Hearings on Concentration, Innovation and Invention Before the Subcomm. on Antitrust and Monopoly of the Senate Comm. on the Judiciary*, 89th Cong., 1st Sess., pt. 5, at 1269-81 (1965) (testimony of Jesse W. Markham).

difficulty of constructing from this material a water-tight case for or against the performance of particular [types of] firms. . . . Few, on the other hand, would deny that . . . an informed judgment is possible.[13]

The caveat in this instance merits special emphasis and the informed judgment special restraint. Large diverse industry groups are far from the most appropriate organizational units on which to perform bivariate regression analysis; they are used only because the available R & D data are classified this way. Nor would anyone seriously contend that ratios of R & D dollars to sales, patents, and the number of four-digit industries in which firms operate are anything but the crudest measures of inventive activity and conglomerateness. Moreover, the causal relationship is not clear. Are highly diversified firms technologically more aggressive, or do technologically aggressive firms eventually become more diversified? The judgment to be made obviously rests on an uncomfortably shaky factual foundation, but if one must be made the question of whether product diversification is positively associated with innovational activity merits a faint but somewhat uncertain nod of the head in the affirmative.

Other pronouncements on the conglomerate firm may be described more appropriately as speculations than as hypotheses. Conglomeration, it is argued, promotes the practice of reciprocity because with a larger variety of suppliers and customers, opportunities for firms to practice it are greater. The counter-argument is that with so many suppliers and customers, the bookkeeping required for the rational practice of reciprocity satisfactory to all would be excessively burdensome; the risks of alienating some customers would be high; and the profit-center method of control would be rendered ineffective and misleading. Again, some have speculated that the possibility of greater diversification weakens the incentive large firms might otherwise have to gain greater shares in their present markets — diversification becomes an escape valve for business growth that relieves the pressure on existing markets. On the other hand, some have contended that such growth still increases the power of the firm as a buyer, giving it an advantage over smaller, less diversified firms in dealing with such suppliers as banks, labor unions, and purveyors of advertising time and space. The list of hypotheses and counter-hypotheses, conjecture and counter-conjecture, could be extended, but the marginal social returns of further extension would be negligible.

THEORY, HYPOTHESES AND PUBLIC POLICY

It should by now be apparent that virtually any pronouncement concerning conglomerate enterprise is more likely to reveal the personal sentiments of the individual who makes it than factually or theoretically valid generalizations on how conglomerate firms operate. The traditional theory of the firm, built on the profits maximizing assumption, identifies market

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13 E. MASON, ECONOMIC CONCENTRATION AND THE MONOPOLY PROBLEM 368 (1957).

power and product interdependence as the source of whatever distinguish-
ing market effects conglomerate firms may have. It can be demonstrated
from this theoretical construction that mergers among firms having market
power in substitute lines of commerce should be prohibited except in un-
usual circumstances, but this scarcely adds up to an exciting new dimension
in antitrust policy. Nor is even this modest theoretical demonstration par-
ticularly pertinent to conglomerate mergers as they are usually defined;
mergers among producers of substitute products are generally considered to
be of the horizontal variety. When we leave the conventional theory of the
firm we enter the confusing thicket of conflicting hypotheses and specula-
tions that, until factually tested, provide little that helps chart the course of
public policy toward large conglomerate enterprise.

This confusing state of conflicting hypotheses explains in large measure
the conflicting policy proposals for dealing with the recent conglomerate
mergers. Dr. Willard Mueller, former Director of the Federal Trade Com-
mission's Economics Bureau, stated in his recent testimony before the Senate
Subcommittee on Antitrust and Monopoly:

> As I balance the costs of inaction, a policy of wait and see, against the
> costs of action that subsequent scientific inquiry may prove to be a too
> zealous policy, I choose the latter course without hesitation or reservation.
> For in the present circumstance, should a bold course of action prove
> later to have prevented some increases in economic efficiency, the matter
> can be righted by changing policy.[14]

In sharp contrast, the *Presidential Task Force Report On Productivity and
Competition* strongly recommended:

> [T]hat the Department [of Justice] decline to undertake a program of
> action against conglomerate mergers and conglomerate enterprises, pend-
> ing a conference to gather information and opinion on the economic
> effects of the conglomerate phenomenon. More broadly, we urge the De-
> partment to resist the natural temptation to utilize the antitrust laws to
> combat social problems not related to the competitive functioning of
> markets.[15]

Hopefully, factual analysis will soon disclose which of the two op-
posing courses to follow.[16] According to data recently released by the Federal
Trade Commission, 181 of the 200 largest manufacturing corporations

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14 434 ANTITRUST & TRADE REG. REP. X8, X17 (Nov. 4, 1969) (statement by Dr. William
F. Mueller, Senate Subcomm. on Antitrust and Monopoly).

15 1969 PRESIDENTIAL TASK FORCE REPORT ON PRODUCTIVITY AND COMPETITION, 115
CONG. REC. 6472 (daily ed. June 16, 1969).

16 An intermediate view and, in the author's opinion, a view more consistent with
the theory and facts on conglomerate enterprise, appears in Turner, *Conglomerate
Mergers and Section 7 of the Clayton Act*, 78 HARV. L. REV. 1313 (1965). Professor Turner
concludes that the presumptions on the anticompetitive effects of conglomerate mergers
are not as strong as those on other mergers, but where the probability of competitive
injury is high, such as when conglomerate mergers clearly eliminate potential competition,
they should be prosecuted.

operate in at least 10 distinguishable product markets.[17] These large con-
glomerate firms account for over one-half of all corporate manufacturing
assets and profits, and for about two-fifths of total value added in manu-
facturing. Our lack of knowledge concerning the operative mechanics of
firms accounting for such a large part of our total economic activity — and
the attendant conflicting policies proposed for their governance — is ob-
viously not a trivial matter.

17 BUREAU OF ECONOMICS, FTC, ECONOMIC REPORT ON CORPORATE MERGERS 224 (1969).