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**Market Structure and
Firm Behaviour : An Empty Box?**

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MARKET STRUCTURE AND FIRM BEHAVIOUR: AN EMPTY BOX?

Introduction

The main concern of this paper is to examine the extent to which the concepts of 'market' and 'industry' as used in economic theory serve as suitable bases for a research programme into the question of the state of competition in the modern economy. The author strongly believes that the only meaningful way of dealing with the question of business competition in the modern world is from a dynamic perspective. This would seem to be an uncontroversial position. After all, who would not prefer to be 'dynamic' rather than 'static'? We have all come across Hayek's powerful strictures against perfect competition. He notes (Hayek, 1948) that the latter paradoxically rules out all manifestations of agents actively *competing*: 'Advertising, undercutting, and improving ("differentiating") the goods and services produced are all excluded by definition — "perfect competition" means indeed the absence of all competitive activities'. Economists usually nod their heads in agreement when confronted with such criticisms of the mainstream theory.

What accounts, then, for the overwhelming dominance of the static neoclassical approach of Cournot, Edgeworth and Walras in economic theory, and of that bastard hybrid of classicism and neoclassicism — the 'Marshallian' model found in intermediate microeconomics textbooks — as the major influence on empirical work in industrial economics? The answer given by Stigler (1957) is that the static market structure approach offers superior 'precision' (and is therefore more 'scientific') than any dynamic analysis of the competitive process.

But in what sense is the mainstream theory thought precise? The following propositions seem relevant:

- (a) Competition is conceived in a manner that makes it amenable to objective measurement: the degree of competition can be measured by the inverse of some index of the concentration of firms within a market.
- (b) Decisive predictions can be derived of an inverse relation between profitability within the market and this measure of competition.
- (c) It is possible to construct statistical tests with this measure of competition as the key independent variable which (successfully) explains the level of profitability within an industry.

Position (c), until recently a powerful weapon in the legitimization of mainstream textbook theory, has had its underlying methodology seriously questioned.¹ Proposition (b) has proved more robust. The standard theory, emblazoned in textbooks, poses a strict uni-causal relationship:

Market Structure → Behaviour of firms

Many attempts have been made to derive this proposition analytically (see Waterson, 1984), and serious weaknesses may be pointed out (Auerbach and Skott, 1984). But our main concern in this paper is proposition (a). The impossibility of delineating the market in an objective and consistent manner makes measures of market concentration worthless, and renders proposition (b) unworkable, whatever its presumptive logic. While a great deal of effort in the economics literatures has been devoted to alternative measures of concentration [concentration ratio, Herfindahl index, entropy index, etc.], the literature on the delineation of the object being measured — the market itself — is remarkably thin. It is not our opinion that these problems have been ignored because they are of trivial consequence.

There has grown up an empirical literature of enormous magnitude and influence which makes use of 'market concentration' as a key independent explanatory variable. Such investigations have been of two kinds: first, cross-sectional studies of the kind envisaged in proposition (c), where the variable being 'explained' is average industry profitability, but similar work has been carried out to account for levels of industry research, advertising, wages, etc. (see, for instance, Philips, 1971). Such research, however, is worthless if it does not give serious consideration to the problems of the measurement of 'market' or 'industry' extent. The problem with time series research (the second kind of investigation) is no less serious! Studies measuring trends in economy-wide averages of concentration in different markets over time show a long term upward trend in manufacturing industry, especially in the UK., (e.g. Hart and Clarke, 1980). Such research serves as the basis for the 'stylised fact' that there is a secular tendency towards lower levels of competitiveness — towards 'monopoly capitalism'.² This research is based on the implicit presumption that the extent of the market — the arena of competitiveness — *can be taken to have remained constant over decades*. If there are reasons to believe in a long term tendency for 'market extent' to expand over time, one may argue that such 'stylised facts' point in *precisely the wrong direction*. But such argument is beyond the scope of this paper. Our conclusion is that the foundations of the static theory of competitiveness are ill informed and ill thought-out. In the last section we provide some hints at a reconstruction of the concept of competitiveness.

Market Delineation and Mainstream Theory

The problem of market delineation

In a formal sense, it is possible to construct general equilibrium or Sraffa-type models of an economy which incorporate the 'invisible hand' process of competition without any reference to the concepts of 'market' or 'industry'. The burden of market delineation was taken on by the Marshallian approach, since it is industrial or market 'structure' which critically shapes the performance of firms. This can be seen most clearly in the construction of the most crucial variable of structure, the index of market concentration, which is often used by itself as a surrogate for the

degree of competition within a market. There are two ways in which the Marshallian approach is at a disadvantage with respect to its neo-classical progenitor: first, with its greater pretence to realism, it has more difficulty than does the latter model in sweeping away real world problems simply because they are found to be troublesome, and second, the explicit introduction of a time dimension in the Marshallian model raises difficulties not present in the neo-classical transactions approach.

What in fact would be the prerequisites for a successful market measure in the Marshallian context? The following characteristics would seem to be crucial in answering the question — what is a market?

- a. *Qualitative delineation*. It must be possible to separate these markets *qualitatively* one from the other, with unambiguous lines of demarcation
- b. *Consistent delineation*. The criterion/criteria used for delineation must be *consistent* between markets and over 'time', the latter concept referring both to:
 1. Marshallian 'time' in which we distinguish between the short and long run, and
 2. Historical time. Here, if the measure is not to be constant over different periods, we have to be able to demonstrate that a systematically and uniformly applicable methodology for showing changes in the boundaries of the market is available.
- c. *Independent specification*. The market must be specified in a manner which makes its delineation independent of the behaviour of the participants in that market, if the statement 'market structure affects conduct' is to be meaningful in the powerful form in which it is put forth in standard theory.

We believe it is impossible to fulfil these criteria in the context of the Marshallian paradigm, and that the research programme which flows from it is incapable of completion. This is all in the context of the grand purposes of economic theory. For practical pursuits, it has always been *implicitly* recognized that the above criteria are incapable of realisation, so that, for instance, the drawing of industry boundaries for anti-monopolies or anti-trust purposes, have always *implicitly* made use of an interaction of 'structural' and 'behavioural' variables, but often rather apologetically, as if a pure structural approach would be possible *if only enough information were available*.

Alternative approaches to market delineation in economic theory

How, then, is the problem of delineation of the market dealt with in economic theory? Discussions are in fact very rare, as may be seen by a perusal of the more prestigious current publications. The question as a rule is:

a. defined away,
or considered to have

b. 'practical' difficulties which require 'practical' solutions.

Strategy *a* is certainly the best route to a Nobel Prize. Thus, in a pure general equilibrium transactions model, goods are simply labelled qualitatively, as well as in time and space. In this context, all problems of market delineation are eliminated:

1. There are no firms in the pure transactions model, so we exclude the practical and conceptual difficulties caused by diversification: the linkages between products in the context of the firm's internal locus of decision-making, on the one hand, and in the context of its external market environment, on the other.
2. The good is defined in space, so that the delineation of the market is identical with the delineation of the product (as a result these problems are often conflated in the literature): geographical questions can be avoided. Having defined the 'commodity' we have defined the *market* for that commodity.
3. The market *is* where exchanges actually take place — there is no problem of *ex ante* and *ex post* delineation of the market, because it is defined only for the instantaneous moment of transaction. Since the instantaneous model has none of the problems related to time, it can avoid as host of Marshallian conundrums:
 - a. Over what time dimension do we measure the relevant parameters? For instance, if we need to calculate elasticities of demand as a method of market delineation, are they long or short run elasticities?
 - b. Is our delineation on the basis of markets (the 'short run') or in terms of industries (the 'long run')? There may be a 'market' for biscuits which is relevant for the construction of a concentration measure, but such a domain may be too narrowly defined for the appropriate entry barriers. On the other hand, the tobacco 'industry' might be overly broad for delineating functional 'market' concentration, even if it contains the relevant domain for the measurement of entry barriers.³ This implies not only alternative, and possibly conflicting systems of classification of products based, on the one hand, on substitution in consumption (elasticity of demand) and in production (elasticity of supply), but as well as a geographical conflict between where goods are consumed and where they are produced.
 - c. How do we deal with changes over time, such as movements in technology, which challenge the validity of our initial categories?
 - d. Most significantly, how can we maintain our market delineations in a consistent, independent way over time *when these markets*

are inevitably shaped by the behaviour of participants?

The perspective adopted from the transactions model is that conceptual difficulties in market delineation do not really exist, and such 'practical' problems as are present may be dealt with by way of *ad hoc* solutions to the problem. These latter solutions have received a great deal of attention in economics, first, as a result of the pressing need for some sort of solution to the problem of market delineation in various practical contexts such as the analysis of monopoly situations, but, second, because of the *clear implication from general equilibrium theory that the problem of market delineation is one of relatively trivial consequence*. This lighthearted approach has influenced the Marshallian tradition, and through the latter's pretence at practical relevance has made its effect upon the mainstream of industrial economics.

The situations in the two models are, however, very different. In the transactions model we may speak without ambiguity of 'the market' simply by specifying where buying and selling actually take place, since without the dimension of time there can be no distinction between *ex ante* and *ex post* measures of this concept. In the Marshallian model, however, the introduction of continuous time makes it impossible to delineate the market simply by specifying where trade takes place, since to be meaningful as a behavioural variable in continuous time *the market must be considered (like the cost curve) as an ex ante concept*. When we use market analysis to explain and predict economic outcomes, we are interested in how this parameter constrains and affects the behaviour of participants within this domain. So, for instance, if there were only two shops selling food in a particular section of London, we would hesitate to apply a duopoly analysis to this 'market' even if almost every household in this neighbourhood purchased its food in these shops, unless we had clarified for ourselves what kind of access customers had to shops in other neighbourhoods, and were certain that *objective conditions* (distance, cost of transport, etc.) had dictated that they were functionally limited to neighbourhood shops. If with small price differentials purchasers were in a position to break their habit of neighbourhood shopping and use an alternative, it would seem pointless to delineate the neighbourhood as the relevant unit of analysis for explaining and predicting the behaviour, prices and profits of the two shops. In other words, it would be impossible to delineate the market until we had separated necessity from convenience (see Steiner, 1968) for the shoppers in this case, and, more generally, had specified the market's domain *independently of the actual behaviour of its participants*. In order to have coherent explanatory power, market analysis must be capable of such independent *ex ante* delineation. The impossibility of this task in the Marshallian framework⁴ is, as we shall see, one of its central failures and has been reflected in problems in the development of industrial analysis.

Of the several attempts to deal with this problem perhaps the most

venerable is that attributed to Cournot and to Marshall, whereby the domain of the market is set where the price (inclusive of transport costs) of the commodity is uniform. There is an important sense in which this is a useful way of looking at the world, since, for instance, one of the most pointed indications of the internationalisation of world grain production and the elimination of insulated submarkets (especially in the Third World) since the end of the Second World War has been the development of universally applicable international grain prices. For all its attractiveness, this notion cannot be the foundation of a market measure, as it precludes, by definition, the possibility of testing the usefulness and applicability of the perfectly competitive model's prediction that deconcentrated markets will tend to price uniformity.⁵ It makes nonsense of any attempt to explore, for instance, why two brands of aspirin, side-by-side on the counter shelf sell for different prices, since we would have to declare them to be in different markets in order to be consistent. In this case the definition would exclude many central issues in market analysis concerning the possibility of price discrimination, countervailing power, consumer ignorance or other forms of 'market failure'. Unfortunately, therefore, the long list of assumptions about the *behaviour* of both producers and consumers which would be needed to generate this elegant solution to the problem of market extent make it inappropriate as a *structural* measure.

The other attempt at a 'straightforward' operational solution to the problem is to specify the domain of the market so that it includes all those firms which are conscious of each others behaviour.⁶ Once again this may be a useful way of dealing with problems in the context of a case study of 'short-run' pricing behaviour within an apparently oligopolistic market. It cannot in any way, however, serve as a more general solution to the problem, since the delineation of the market as a structural parameter cannot be successfully separated from the behaviour of its participants. Neither of these 'practical' approaches to the problem of market delineation can be considered as serious candidates for a solution: it is to the most formidable contender that we now turn.

Market Analysis: Attack and Defense

The elasticity of demand and its critics

The (cross) elasticity of demand is the central device suggested for the delineation of the market in almost every textbook where the issue is raised. *Despite the fact that it has never been used in practice* it has retained its status as a principled solution to the problem on the grounds that obstacles could be overcome if sufficient information were available. This is indeed a curious state of affairs, since the arguments presented below suggesting the unviability of the elasticity of demand *in principle* are extremely well known. It is perhaps worthy of note as an aspect of the history of ideas that an intellectual discipline will preserve even an impractical and logically incoherent tool of analysis in the absence of a viable alternative.

The underlying and essential problem with the use of cross-elasticities to delineate market boundaries is that the level of 'cut-off' is totally and completely arbitrary from the point of view of economic theory, and that they cannot be applied in a consistent and meaningful way. One of the authorities to whom the cross-elasticity solution has been attributed is Kaldor (1935), but it is clear that Kaldor's concern, in the context of the monopolistic competition debate was to distinguish different 'types' of markets ('pseudo-monopolistic' versus 'monopolistic'), and that his proposed solution was a 'practical' and not a principled, theoretical one. In fact Kaldor's earlier comment on this question highlights some of the crucial issues:

[Mrs. Robinson's concept of an 'industry'] implies the assumption that the products of different firms consist of a 'chain of substitutes' surrounded on each side by a 'marked gap' within which the demand for each firm's product is *similarly sensitive* with respect to the price of any of the others. The 'boundary' is thus defined as the limit beyond which this sensitiveness ceases or at any rate becomes a different order of magnitude. No doubt for each *particular* producer there exists such a boundary. But there is no reason to assume (except in some very special cases, involving a peculiar grouping of consumers) that this boundary is the *same* for any group of producers: or that the sensitiveness of demand for the products of any particular producer is of the same order of magnitude with respect to the prices of *any* group of his rivals. Some producers will be 'nearer' to him, others 'further off'. *If the demand for cigarettes in a particular village shop is more affected by the price of beer in the opposite public-house than by the price of cigarettes in the shop at the nearest town, which of the two would Mrs. Robinson lump together into 'one industry': the seller of cigarettes plus the seller of beer in the village, or the seller of cigarettes in the village plus the seller of cigarettes in the town?* (Kaldor, 1934, emphasis added).

The first point to note here is why Kaldor's question is a paradox at all. While the discussion of this question proceeds purely in terms of elasticity of demand, it is implicit that there would be something a bit absurd about aggregating cigarettes and beer, to the exclusion of cigarettes more geographically separated, since in the real world the physical similarity of all cigarettes (i.e. their common characteristics from the point of view of 'supply') would make this a rather pointless exercise. We have then an example of the real world intruding in on the pure transactions mode of thought.

Kaldor's very discussion of the question of the aggregation of goods using a cross-elasticity measure points to the most fundamental issue: *cross-elasticity cannot be used in any systematic way to delineate goods*. Let us say we were looking for a delineation between two classes of products, M¹ . . . M⁶ we call 'meat' and B¹ . . . B¹⁰ we call 'bread':

M¹, M², M³, M⁴, M⁵, M⁶, B¹, B², B³, B⁴, B⁵, B⁶, B⁷, B⁸, B⁹, B¹⁰

The simple fact is that since all demand elasticities are contingent on the level of aggregation, *they cannot be used to determine the initial level of aggregation in a consistent way*. If M³, for instance is 'poultry', why have we decided to use such a category instead of separate ones including chicken, turkey, etc., or even more narrow ones contingent on the packaging, quality, etc. of these products? Now in the real world, these problems will be decided for us by the levels of initial aggregation set by the Standard Industrial Classification system (see below) which, being largely decided on 'supply' considerations are irrelevant to the needs of a consistently demand based criterion. We would base our cut-off on the 'intrinsic' difference between, say, M⁶ and B¹, but this is not really playing the game, and not very helpful in the context of using this tool to decide the geographical delineation of the market, where of course the same problem is posed.

The criticisms contained here are those which exist *in principle*, and since at an applied level there are a host of further problems that have prevented this tool from ever having been made operational, we feel no particular need to be merciful on grounds of practicality. Furthermore, the issue is invariably discussed *as if a resolution to the problem could be made in this purely static context*. In the real world, one has to decide whether one is referring to a relatively short run or long run concept of (cross) elasticity of demand. In any attempt at empirical estimation, one will probably have to make use of observations over whatever time span is available and hope that they are sufficiently comparable between different products. Once we enter into the dimension of time, it is impossible to ignore the Marshallian distinction between short and long run, since market delineations based on substitution in demand may be very different from industry (long run) delineations based on substitution in supply. This sometimes results in the rather casual comment that delineation should be based upon elasticities of demand *and (!) supply*,⁷ though the integration is never clearly specified. The market-industry distinction may cause a problem in the conflict between a demand oriented butter-margarine delineation and the supply oriented delineation between butter and cheese. Moreover, the geographical domain of production may differ from the geographical domain of consumption; below we shall be discussing the complications brought about by the existence of international trade.

The defense of the industry and practical applications

The use of market (industry) analysis in economic theory is indeed so ubiquitous that spirited defenses of the concept are hard to come by:

Flippant examples purportedly destructive of the industry concept in a product differentiated economy (such as the alleged close substituted of nightclub admissions, pleasure cruises and cold showers) are not persuasive; for each of these there can be twenty queries such as those concerning the evident degree of substitutability between

cigarettes and kitchen sinks, automobiles and roller skates, or concrete and gunpowder. A serious endeavour to couple our powers of observation with our knowledge of the concept of cross-elasticity of demand might have shut off a great deal of pseudomethodological quibbling over the acceptability and validity of the industry concept in a price theory that deals with a product-differentiated economy. (Bain, 1972, p. 192.)

It is easy to be sympathetic with practical economists such as Bain who, after all, have to 'get on with the job', whatever the objections of highfalutin theorists: in the absence of a usable alternative, the industry, whatever objections are posed, will retain its central role because of the need felt to order firms (or the activities of firms) in some other way than as an arbitrary conglomeration.

We now explore the actual statistical data that are used to designate the industry. Our overall hesitation with their ubiquitous use in an unquestioning manner is as follows: there are quite enough difficulties involved with the implementation and interpretation of firm data *even without* the further set of arbitrary assumptions, conjectures and surmises necessary for the construction of industry statistics. The system of industrial classification is international, with the problems and philosophy of implementation especially close between the U.S. and the U.K., though differences make straightforward national comparisons difficult.

If we look at the U.K. classification system, we note that it

... has been prepared to conform with the organisation and structure of industry and trade as it exists within the United Kingdom. All relevant factors such as the commodity produced or service given, the raw materials used and the nature of the process or the work done has been taken into consideration (Central Statistical Office, 1968).⁸

Clearly, what we have here is some sort of 'industry' or supply side delineation. The economist confronting these rather loose criteria for the first time may demand to know why they can not be made more 'rigorous'. Three reasons come to mind:

- i. The criteria have to be non-technical enough so that they can be administered by the Census and reported on by business. Even in present circumstances, there is probably a substantial difference between the amount of detail reported by very large firms with large separate accounting divisions and that by smaller ones.
- ii. The Census is, after all, reliant upon the goodwill of firms who must supply the information by allocating their activities into categories which, very likely, have little relevance to their own perception of their affairs and who must reveal information which they would prefer to keep confidential. The demand for more detail always threatens to put a strain upon that goodwill.

iii. The Industrial Census is made to serve multiple purposes and a certain vagueness is therefore inevitable. A common grouping on the basis of supply characteristics would take a different form if its purpose were to register industrial competitiveness than if it were used to measure raw materials use or trends in the evolution of the labour market between manual and non-manual work. In reality, it must be made to serve all these needs.

If we look at the 1968 Standard Industrial categories, we see that they break down into 27 broadly based Orders such as

- Order IV — Coal and Petroleum Products
- Order VI — Metal Manufacture

Within these Orders may be found 181 Minimum List Headings. So within Order III — Food, Drink and Tobacco, we may find (partial listing):

- 217 Cocoa, Chocolate and Sugar Confectionary
- 218 Fruit and Vegetable Products
- 219 Animal and Poultry Foods
- 221 Vegetable and Animal Oils and Fats

These Minimum List Headings are sometimes further broken up into 'product' listings. It has been implied upon occasion that the Minimum List Headings can be used to represent 'industry' or supply characteristics while product designations closely approximate 'market' or demand delineations. A brief glance at the SIC catalogue makes it clear that this is not so, and that the main purpose of the product listings is to disaggregate further the supply-based Minimum List Headings. As we can see under MLH 217, for instance, there are two further divisions, the first of which, especially, is unlikely to be thought to describe a 'market' in a meaningful way:

i. *Cocoa and chocolate*

Manufacturing cocoa powder, drinking chocolate and chocolate confectionary of all kinds. Cocoa butter is included.

ii. *Sugar confectionery*

Manufacturing boiled sweets, toffee, caramels, marzipan, liquorice, chewing gum and all other types of sweets.

In a world made simple for the Census (and for Marshallian theory) each firm would have its activities allocated to a specific classification. As firm activity becomes progressively more diversified, the need for allocation of these activities becomes more pressing, though the problem may be somewhat eased by long term improvements in the quality of firm accounting data. The Census takes its unit of classification to be the 'establishment', and 'the whole of the establishment is classified according to the main activity' (Central Statistical Office, 1968).

The allocation for all of an establishment's activity to one product category could lead to an overestimate of the importance of principal activities, or a misrepresentation of the distribution of the production of certain products where a large percentage of output is produced by firms as ancillary activities. In the case of the 1963 U.K. Census, however, the average 'industry homogeneity' for all manufacturing establishments was 90 per cent (Sawyer, 1976) which would seem to indicate that the problem was of a trivial order of magnitude. It is worth noting, however, that the 1947 U.S. Census, which reported the same level of average industry homogeneity found it necessary to incorporate a 'resistance factor' so that 'abrupt and unrealistic' small changes in the balance of an establishment's activities would not result in industry code changes (Conklin and Goldstein, 1955), which would indicate that this problem is somewhat worrisome to those close to the source of data collection. The rubric from the Census to enterprises does not indicate what measure they should use to designate 'principal activity', such as sales, value added, total assets, net assets, or labour employed (each of which would imply a different theory of business behaviour). Wherever it is possible to do so, ancillary activities such as transport, wholesale and retail distribution are listed as separate establishments (the necessary detail likely to be forthcoming only from the larger firms). Failing that, they are allocated to existing establishments. In the 1963 and 1968 Census products with sales of less than £10 million have been excluded: the outputs of certain establishments have been aggregated in a more or less arbitrary way when the products seemed to be reasonably 'homogeneous', (Hart and Clarke, 1980, pp. 131-2).

Lastly, it is important to observe that changes in industry definitions and product designations, the introduction of new categories and the elimination of obsolescent ones dictate that only a proportion of them are available for any comparison over an extended time span, (Hart and Clarke, 1980, chapter 2). It is likely that some of these changes are responses to the evolution of the competitive process and, most especially, technological innovation, so that they take place in a non-random fashion, leaving the remaining categories unsuitable as a sample to illustrate or measure changes in competition over time, (Hart, Utton and Walshe, 1973, p. 24). On the whole, the Census categories, which are fairly consistently based on supply characteristics are more useful than the middle which would result if the advice of some economists were followed and greater aspects of demand were incorporated, (as in Suits's comment on Conklin and Goldstein, 1955). Our intuitive feeling about the Census classifications is that they may be usable for indicating certain trends in industrial development (e.g. diversification), but they are totally unsuitable as fundamental measures of the 'competitiveness' of the economy.

The Market: Interaction of Structure and Behaviour

The Phillips critique and the problem of entry

In Bain's pioneering study (Bain, 1956), the 'largest' barrier to entry in

consumers goods industries was that of product differentiation due to advertising. This raised for Phillips the disturbing possibility that, in the oligopolistic sector of the economy at least, it might well be possible to reverse the presumptive lines of causation in the structuralist model where for instance, technological factors generate high minimum efficient scale in an industry, which acts as a barrier to entry and results in high concentration. Phillips suggests that an oligopolistic industry *may* adopt a *strategy* designed to exclude entry through collective agreements, the creation of product differentiation barriers to entry, and a host of other practices, (Phillips, 1972b). In Phillips's words — 'Structure, Conduct, and Performance — and Performance, Conduct, and Structure?' (Phillips, 1972a).

In recent years, it has become even more clear that such apparently 'structural' variables as the level of excess capacity in an industry may well in part be an aspect of oligopolistic manipulation of the environment which might be faced by potential rivals (see Williamson, 1963 and Spence, 1977). Bain was able to maintain a purely structuralist conception of his barriers to entry partially because the levels were based on his own subjective determination. When explicit statistical estimates were attempted of the barriers to entry in various industries, these problems became more difficult to ignore. It might be barely possible to accept in structuralist terms of reference that high barriers to entry into, say, the sulphur industry might be due to control of the raw material by dominant firms, or into the ethical drugs industry due to patent protection, but must one consider the product differentiation barrier in the chewing gum industry (Mann, 1966) as being of the same kind? Similarly, one *may* choose to consider an estimate of the capital requirements and the 'risks' of an industry as first approximations to structural barrier to entry parameters, but what is one to do in a purely structural context with such variables as the intensity of research and development and of advertising?⁹

The Phillips critique and extensions thereon have emphasized that when firms have substantial market power, it is impossible to describe economic outcomes in 'structural' terms with those minimal assumptions about behaviour hitherto thought sufficient, since indeed it is that very behaviour which will shape the environment in which firms exist. It is our contention, however, that this is a more general proposition — one that cannot be confined to oligopolistic and monopolistic markets: when we view economic behaviour from a perspective that explicitly embodies the passage of time, *it is not meaningful to conceive that the behaviour of participants is determined by a set of market parameters which are exogenous to this behaviour.*

'Uncertainty, Evolution and Economic Theory'

Our critique of the structuralist approach under all conditions, whether oligopolistic or not, is best explained with reference to the well-known article by Alchian (1950). Therein is established, in its most extreme form,

the basis of the structure-performance paradigm: Alchian argues that concerns about the internal workings of a firm, about whether they actively or consciously pursue the goal of profit maximisation are irrelevant. In a *competitive environment* the survivors will be those who successfully adapt. In this context — essentially a Social Darwinist one — reservations about the standard theory which stem from the impossibility of profit maximisation in a world of uncertainty, or about the 'unrealistic' nature of the assumptions in an empirical sense are irrelevant. The pressure to survive will in the long run dictate the 'behaviour' of firms, since only those following a 'correct' course will continue to exist. We can thus describe and predict the 'behaviour' without reference to the desires and propensities of the individual entrepreneur.

We may describe Alchian's conception in terms of a purely static model, which somewhat distorts its probabilistic character but embodies the essential message: in the long term equilibrium, the firm in the perfectly competitive market can only survive by producing at what is in fact the profit maximising output and selling it at the market price. Any factor which prevented the firm from selling at this price, be it due to inefficiency or benevolence,¹⁰ would cause it to disappear.

The key difficulty with this formulation¹¹ may be seen by imagining a county in England in the late middle ages, populated by villages each of which possesses its own (solitary) shoemaker. Let us assume that transport costs are inconsequential, so that the market as 'objectively' measured covers more or less the whole county. What if, as a result of habit, tradition and ignorance on the part of all concerned, shoes are only purchased and sold *within* each village, with the resultant price, set by custom and tradition substantially above 'minimum long run average cost' (whatever that may mean in this context)? It is clear here that the 'objective' specification of a [deconcentrated] market environment is not a sufficient condition to predict either the *functional* delineation of the market, or the price resulting in such a 'market'. *The market environment implicitly specified by Alchian includes not only the physical possibilities for exchange (as dictated by transport costs, etc.) but a repertoire of abilities, attitudes and propensities on the part of the participants in the market ('entrepreneurs' and consumers) which would make the environment in which business takes place competitive.* As is well known, even in a purely static context, market outcomes must be *initiated* by one or another participant. This is even more obvious in a context that exists over time. As Scherer succinctly puts it '... if no firms in the industry happen to conform to the optimal pattern, the selection process can bog down altogether for there will be no "fit" to expand, multiply and drive out the less fit' (Scherer, 1980, p. 38). Thus until we have a precise idea of the pattern of behaviour to which firms *do* adhere, it will be impossible to delineate in a meaningful way the boundaries of the very 'industry' to which these firms belong.

It may be suggested that we have misrepresented or misunderstood the

Alchian argument, and that its very purpose is to illustrate that only 'minimalist' assumptions about business behaviour are necessary to generate a competitive environment — they involve only the lowest level of self-seeking and desire to survive:

... suppose that, in attempting to predict the effects of higher real wage rates, it is discovered that every businessman says he does not adjust his labour force. Nevertheless, firms with a lower labour-capital ratio will have lower cost positions and to that extent, a higher probability of survival. The force of competitive survival, by eliminating higher-cost firms, reveals a population of remaining firms with a new average labour-capital ratio (Alchian, 1950).

In other words, a 'natural selection' process combined with only minimal (implicit) assumptions about firms' self-seeking behaviour (those necessary to create the 'force of competitive survival') are enough to generate a competitive *outcome*. Alchian's article converged nicely with Friedman's contemporary attack on the role of 'assumptions' as opposed to predictions in economic theory (Friedman, 1953). Our objection here to the Alchian model is that because of its (implicit) static framework, it focuses exclusively upon *outcomes* as opposed to processes, and it therefore has a rather rigid, all or nothing quality. Let us, for the sake of argument assume that a minimal amount of self-seeking on the part of our shoemakers would *eventually* result in a 'competitive' outcome by virtue of the Darwinian iterative process outlined by Alchian. But *what is the time dimension necessary to bring about this outcome?* Is it one year or a hundred? How quickly will this process have to reach its conclusion for us to declare that the environment in which it takes place is 'competitive'? Alchian's analysis of competition in static terms, with its focus on final outcomes ignores the critical dimension of time, which can only be understood in the context of competition as a dynamic process of equalisation.

The static approach in this extreme form posits that given the most minimal assumptions about the behaviour of individual firms, we can use exogenously specified market structure to predict (final) outcomes. On the contrary, we argue that whatever the 'long run' static outcome, the behaviour and attitude of firms will crucially affect the process of competition and functional specification of 'the market' as surely as a change in the 'objective' variables affecting market structure — a change towards 'rational' self-seeking profit maximising behaviour on the part of our shoemakers, an increase in the efficacy of their business practices, a widening of their horizons in a geographical sense away from the traditional village will affect the actual 'extent of the market' and the *rate* at which profits tend to equalise between firms as surely as a reduction in transport costs.

Markets and International Trade

A recognition of the problematic nature of the distinction between *ex ante*

and *ex post* delineations of the market is implicitly recognised in some statistical work, and may be seen in a study by Weiss (1972) where geographical submarkets are defined not *ex post* where sales are seen to take place, but in terms of an *ex ante* delineation based upon an index of transport costs. In international trade, as we have pointed out, even the crude *ex post* corrections for market delineation (subtracting production which is exported and adding imports) are often not performed even for open economies like the U.K. The arguments made (besides those that relate to data limitations) are that:

- (a) some imports are not competitive, since they are merely inputs into domestic production. (This may not be clear from the SIC categories.)
- (b) some imports are controlled by domestic producers and multinationals (cars and matches being prominent examples).
- (c) the *threat* of imports may be as important as the imports themselves.

These arguments are often used to suggest that the whole question can be ignored.¹² However, when import corrections are made, the conventional conclusions suggesting a rising level of market concentration for the 1960s and 1970s in Britain seem to be reversed. This result holds even when it is assumed that as much as one quarter of these imports are controlled by domestic companies (Utton and Morgan, 1983, chapter 2). Unfortunately, as hinted at in argument (c), such a procedure is not even approximately valid, since a market as an *ex ante* concept must dictate a sphere of *potential* competition. It is no more legitimate to decide on the level of international incursion into a domestic market by examining the level of imports than it would be to plot a demand curve for a product by looking at sales figures. If domestic firms react to the threat of foreign competition by lowering their prices, then no actual imports may be recorded. If, however, domestic firms maintain uncompetitive prices, then import penetration may well be rising as foreign competitors move in. In other words, a lack of competitiveness may show up in a decline in profitability or an increased import penetration. Even if we should observe such multinational control, so that the functional level of market concentration remains unchanged, does this mean that nothing has changed in the competitive environment? In the U.S., television manufacturers in the late 1960s responded to the threat of Japanese competition by shifting their production 'off-shore' to foreign subsidiaries and affiliates of U.S. owned firms (Millstein, 1983). This shift in behaviour was a competitive response to an increasingly competitive environment, with important implications for many aspects of firm behaviour. In static, market structure terms, nothing has changed in the competitive environment almost by definition if market concentration is unchanged, but this presumption of an objective statistical measure is illusory.

Thus practical economists have been left to themselves to try to improvise a usable definition of the market for empirical purposes. At a level of 'intermediate' theory, attempts to come up with practical but reasonably

principled approaches to market definition (which might be usable in an anti-monopolies or anti-trust, if not in a global, context) make invariable concession to the fact that any such measure must embody both structural and behavioural parameters. *An ultimate solution to the problem of market delineation is not to be found, however, because a market is not a 'thing' to be measured but a behavioural relation.*¹³ Practical solutions may be useful and necessary in particular contexts, but the 'market' or 'industry' cannot serve as a primary unit of analysis in economic theory.

Concluding Remarks

The corpus of microeconomic theory in its various manifestations is complex and sophisticated, but in the context of industrial economics the issues directed by the theory reduce to one straightforward question: what determines the behaviour of firms and, in particular, what are the constraints on their pursuit of profit (or other objectives)? As we have noted above, mainstream theory attempts to give clear answers to these questions through the use of the theoretical construct of the 'market'. Industrial economics has adapted market analysis to create practical tools such as the concentration ratio for the analysis of concrete situations. Are these constructs useful, or do they cause us to focus on minor irrelevant or even deceptive aspects of the problem?

Our responses to these questions should now be unambiguous: the 'market' or 'industry' cannot be used as the basis of a research programme into the competitive process as suggested by mainstream analysis. *Nothing* here should be taken to suggest any criticism of research efforts which delineate areas of study into the tobacco industry, metal box industry, etc., (as in Prais, 1981). It is not the delineation *per se* to which we object, but the presumption of mainstream analysis that it can form the basis of a 'structural' determinant of behaviour.

What alternatives exist to the static, market based approach to competition? An important beginning is to note that the key agency for economic decision making in modern economies is *the firm*, which is the most primitive source from which the bulk of high quality business data is likely to emerge. Instead of analysing dubiously constructed 'industry profit rates', we should deal with the lesser, but sufficiently troublesome questions surrounding the rate of profit and valuation of individual firms. Once the firm is the focus of our study, it is clear that it is not merely subject to an exogenously specified (market) environment, but is a key instrument through which that environment is formed and by which it evolves. Only by a much more thorough analysis than has hitherto been thought necessary of the external and internal forces impinging on firm behaviour — managerial, technological and financial — can real progress be made into the nature of the competitive process.

Notes

1. A crucial change in the relatively uncritical acceptance of this approach was signalled by the publication Phillips (1976); see as well the series of articles on this topic in the *Journal of Industrial Economics* for June, 1984.
2. Recent examples of this literature include Cowling (1982) and Aaronovitch and Sawyer (1975). An examination of the central propositions of the monopoly capitalist doctrine may be found in Auerbach and Skott (1984).
3. These examples are taken from industries used in statistical tests by Hart and Morgan (1977).
4. Note that even in our example we have made an implicit assumption about 'price rationality' on the part of buyers — we have presumed that if objective conditions permit them to pursue cheaper alternatives they will do so, and not persist in their present behaviour out of custom, laziness, or consumer loyalty. This aspect of the problem is brilliantly discussed in Kaldor (1935).
5. Once again, see Steiner (1968) for critiques of this and many of the other attempts to construct objective 'market' measures.
6. Steiner (1968) reconciles himself to this 'practical' solution. Earlier supporters of this approach are Robinson (1931, p. 12) and Mason (1939): '(a seller's market) includes all buyers and sellers of whatever produce whose action he considers to influence the volume of sales.
7. '... In economic theory, an industry is a collection of firms making products which are highly substitutable; formally they have high cross-elasticities of demand or supply', and '... the Census of Production industry used here... is not in practice always closely related to the economists's definition of an industry as a group of products with high cross price-elasticities of demand and supply'. Both quotations are from Hart and Clarke (1980), pp. 2 and 11 (emphasis added).
8. This publication offered the most detailed, albeit brief description of the rationale of the classification system. For 1980, '... an attempt was made to align the United Kingdom classification as closely as practicable to the NACE, the classification in use by the Statistical Office of the 'European Community' (Business Statistics Office, 1980). Our emphasis on the international standard industrial classification of the United Nations (which formed the basis of the pre-1980 U.K. and the present U.S. system) is in order to link it to existing empirical work in these countries.
9. Orr (1974) treats these latter variables as purely exogeneous 'structural' constraints. He also includes market concentration as a barrier to entry.
10. In a probabalistic model it may be due to (randomly distributed) bad luck.
11. Other difficulties exist which are peripheral to our main consideration, such as Winter's (1964) clarification that 'survivability' is not necessarily to be identified with profit maximisation in a world of uncertainty. Alchian's article has had its most direct influence upon industrial economics in the literature concerning the 'survivor technique', the case for which is most strongly asserted in Stigler (1958).
12. See Hart and Clarke (1980) pp. 105-6 and Cowling (1982) chapter 6.
13. An analogy can be made with those foolish attempts to make scalar measurements of human intelligence, which can only be meaningfully observed as an on-going *process* interacting with the environment (see Rose, *et al* 1984).

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