

On the Nature of Industrial Market Power in the
United Kingdom

by
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I. Introduction

Harry Johnson described Industrial Organisation as a 'peripheral' subject, 'on which the British have always been extremely weak'. On the face of it, there seems to be some justice in this. For one thing, Industrial Organisation has not achieved the sort of lively interaction between theory and measurement that has developed in other fields, such as the Demand for Money, the Consumption function, the determinants of investment, and so on, in which we can enjoy the sight of econometric models being quite tightly specified with respect to the definition and choice of variables to be included, the functional form, and the sign and even magnitude of coefficients to be expected, supposedly before any confrontation with the actual data.

In contrast, it is quite typical for Industrial Organisation papers to begin with a statement like 'economic theory tells us to include variables X, Y, and Z in our regression equation', with no elaboration of said 'theory', followed by a string of Ordinary Least Squares equations that show, implicitly or explicitly, evidence of a rather desperate search for the best 'fit' amongst a number of alternative specifications of functional form, databases, and explanatory variables.^{1/}

Furthermore, even after all this 'mining' of the data, the results achieved are usually rather poor, on the usual statistical criteria, at least by the standards of econometric work in other fields.

Yet, although the invocation of 'economic theory' in Industrial Organisation is rarely supported by explicit exposition, or even

references to where such an exposition might be found, there does indeed exist a quite rich body of micro-economic theorising which could be called on to justify the proposition, which is central to this field, that there is a relationship between some measure(s) of the structure of a market, and the profits earned by the firms selling in that market.

In fact, there are two such bodies of theory - one dealing with oligopoly, the other with the threat of new entrants to an industry - and this is a part of the problem, though they both share, and are critically dependent on, a common basic assumption of the primacy of 'market price' as an instrument determining industry sales and market shares.

In this paper, I shall try to argue that this assumption is implausible and misleading; that it leads to a pre-occupation with the industry or 'market' that is unwarranted, and is largely responsible for the feebleness of the empirical results. In the next section we will examine Oligopoly theories, then, in section III, models of Barriers to Entry. In section IV, an alternative theory, based on a notion of market power as a firm, not an industry-specific force, is sketched out and compared against some empirical results on UK manufacturing. Section V summarises and concludes the paper.

II. Oligopoly Pricing

There are two types of oligopoly models : those which allow collusion between sellers, and those which do not. The difficulty with maintaining a collusive cartel is supposedly the incentive each member has to cheat on the others by shading its price. Since, in general,

the rewards from successful cheating are greater the smaller a seller is relative to the total market (because the perceived elasticity of demand is higher) and since, as Stigler as shown, the chances of cheating being detected are less the greater the number of sellers, it could be reasonable to propose that the margin a cartel can maintain between price and costs is related to some measure of the size distribution of sellers.

Models of non-collusive pricing have developed into a respectable branch of mathematical economic theory, beginning with Cournot in 1838. In these models, firms set prices (or quantities) independently; each maximising profits subject to some expectation as to how the other sellers will react - sub-species of these models being differentiated largely according to the particular 'reaction rules' that they assume. Most are duopoly (two-seller) models, and find that the price will be set lower than its industry profit-maximising (monopolistic) level. Cowling and Waterson ingeniously extend the analysis to the general n-seller case, and obtain an expression for the price-cost margin as a function of, inter alia, the Hirschman (Herfindahl) measure of the size distribution of sellers.²⁷ The reason for this relationship is, as with collusive models, the fact that it becomes likely to be more profitable for a seller to cut price, the smaller its share of the total industry market; in this case because the smaller the seller, the smaller the reaction to its actions, and so the smaller the combined effect of action and reaction on the market price.

One rather obvious problem with these models is that the ad hoc reaction rules assumed in general turn out to be wrong ex post, but no-one adjusts their behaviour to take account of this; another is their

a priori ruling-out of the possibility of collusion.

Nevertheless, although the body of collusive and non-collusive oligopoly theory is awkward and not well-integrated, it does seem to cohere in its major qualitative prediction; namely that market power (i.e. the degree to which the monopoly price can be approached) is a characteristic of the industry, not the individual firm, and, in particular, is related to the size-distribution of sellers in the industry.

How does this proposition stand up against the available empirical evidence? The table in the Appendix summarizes the results of nine studies of profitability in UK manufacturing industries. Except for Cowling and Kelly, the authors all use cross-sectional data at the three-digit (minimum list heading) level of disaggregation. Coverage and the time period sampled vary somewhat between the studies. Row three of the table reports the significance levels found for concentration variables.^{3/}

As a whole, the results give little support to the hypothesis that seller market concentration is a significant determinant of profitability in the UK manufacturing sector. In the regressions in columns one to five, and nine, the concentration variable is 'significant' statistically only once, and then marginally.^{4/} Cowling and Waterson, do find their Herfindahl measure of concentration of be reasonably significant, but this may reflect no more than a simple correlation between the Herfindahl and the dependent variable.^{5/} Hart and Morgan found that the price-cost margin and the seller concentration ratio are, by themselves, correlated, but that when other explanatory variables are introduced

concentration loses its significance, suggesting that it may be no more than a proxy for these factors, with not much independent ability to affect profitability.

In their study of food companies, Cowling and Kelly did achieve significant coefficients for concentration in a multi-variate regression, so it may be true that seller market structure is important in this particular sector of manufacturing. Be this as it may (there are alternative interpretations for concentration variables, to be mentioned in section IV below), the weight of the evidence seems to suggest that the central proposition of oligopoly theory is not valid for the UK manufacturing sector as a whole.

Where, then, does the theory go wrong? The answer, I suggest, is that oligopoly models make too much both of the difficulty and of the importance of sellers co-ordinating their actions. Even without explicit collusion, there are a number of effective ways in which the firms in an industry can allow a co-ordinated industry price to emerge, as Scherer's survey illustrates (chapter 6). The acceptance of one of the firms as a 'price leader', for example, is a common phenomenon. Scherer's list of examples (p.167) covers about 15 per cent of US industrial value added, and is not intended to be exhaustive.

Really, it is not very surprising that oligopolistic firms should be able to come up with ways to avoid frittering away their profits in unnecessary price competition, given that it is manifestly in their interest to do so.^{6/} Economists may have been misled by their own difficulties in formally modelling price formation into assuming that

firms find it just as hard to actually do it. Indeed, we seem to have made the problem hard in the wrong places. It is not that the oligopolists are supposed to have any difficulty in knowing what the joint profit-maximising price is, as might reasonably be thought an important real-world problem. On the contrary, demand and cost curves are typically assumed to be known and fixed. The problem is really not with price at all. It is with quantity; with market shares. Under the conditions of the market demand curve, any firm slightly under-cutting its rivals' price can sell as much as it wishes (within the limit of the total market demand). This extreme price responsiveness of market share gives each member of the cartel or collusive agreement an incentive to try and cheat its colleagues by price-chiselling. All the oligopoly models can be seen as attempts to formulate assumptions about rivals' reactions which imply a stable distribution of market shares, to counter the inherent slipperiness of the oligopoly situation as it is initially set up.

Is, then, sharing the market really a basic problem limiting collusive success, given that the process of achieving price coordination does not in fact generally appear to be too difficult? Such evidence that is available suggests that it is not. For example, Atkin and Skinner, from a survey to which 205 'medium to large' UK companies responded, concluded that

"pricing is an area of marketing which is totally neglected. Pricing as a marketing tool is rarely practised" (ii).

Only 17 per cent of their respondents reported price to be 'vital' in overall marketing strategy (p.74). To be consistent with the orthodox oligopoly model, 100 per cent should have so replied.

On reflection, I do not find this surprising. It may well be that 'marketing' - the improving or defending of market share - is typically far from a trivial matter of adjusting price, even when there is a relatively high substitutability between the products of different firms in the same industry (as, for example, in all the dominant firm-pricing industries cited by Scherer, above). There are many extremely difficult problems to be overcome - formulating a promotional and advertising strategy, establishing and maintaining distributive, wholesale and retail outlets, building up good-will and a reputation for reliability, maintaining supplies of output, financing expansion - by a successful marketing operation, even when 'the price is right'.

The implication from all this is, then, that the flaws in oligopoly theory can be traced to its too-unquestioning appropriation from microeconomics of the notion of the simple demand curve - the device making sales just a function of price. It seems, in reality, that selling, or marketing, is a difficult business involving the use of many instruments. Of these, price may even be the least popular, since price competition is a negative-sum game for the selling group as a whole. Good theories should take account of all this.

III. Entry Threat Models

The second substantial group of industrial organisation models is concerned with the likelihood of new firms entering an industry, and with the proper response to this by the firms already in place behind the industry demand curve.

Interest in modelling the entry situation was, initially at least (that is, before mathematicising set in) nourished by the traditional and deeply felt belief in the strength of the forces of competition as an ultimate constraint on the exercise of monopoly power. Scherer writes that

"It is (the) entry phenomenon, more than long-run substitution between different products, which prompted J.M. Clark, Sir Roy Harrod, P.W.S. Andrews, and others, to insist that the long-run demand curves confronting monopolists and oligopolistic groups tend to be highly elastic, approaching the horizontal" (pp. 200-1).

That is, monopoly profits are a short-run, transitory phenomenon. This doctrine has, of course, powerful laissez-faire implications, although the possibility remains of the competitive forces working sufficiently slowly to justify some public intervention to hurry along the process.

Formal modelling has proceeded along two paths, depending on whether entry is 'smooth' or 'lumpy'. When the long-run average cost curve is horizontal, so that firms can enter at any scale efficiently, the modeller's problem is basically just to explain why monopoly profits are not wiped out instantly. This is done by pre-supposing some 'friction' which prevents instantaneous entry, and assuming that the rate of entry is then (usually) a function of the excess of price over some 'normal' or perfectly competitive level. The analytical problem is simply to determine the most profitable way for existing firms to delay the inevitable competing-away of all their monopoly profits.

Even if its particular assumptions were valid (I shall argue below that they are not), it is difficult to argue that this literature

has contributed insights sufficiently surprising or useful to justify the quite substantial resources of mathematical ability and journal pages that have been committed to it.

Of more interest are those models in which, due to some indivisibility such as a minimum efficient scale of production, entry is likely to take place either at some rate large enough to affect the demand curve facing existing firms, or not at all. This, the 'lumpy entry' situation, was studied first by Bain (1956) and Sylos (1962), and their work synthesized and extended in a famous paper by Modigliani (1958). These are comparative static models, yielding a price, to be charged indefinitely, which will optimally forestall entry.^{7/} In a survey paper, Bhagwati reports that

"The premium that can be charged, consistent with the prevention of entry, varies directly with the minimum scale of the entrant's plant, and inversely with both the size of the total market, and price elasticity of industry demand" (pp. 306-7).

These conclusions, though not surprising, are certainly more interesting, and lead to more empirically testable hypotheses, than those of the 'smooth' entry theorists.

However, both groups of models share the basic assumption that it is the excess of price over its competitive level that induces entry. The rationale of this is that an excess price is a signal, in fact the only signal, received by potential entrants concerning the profitability of being in an industry. It is assumed that

"The entrant is likely to read the current price policies of established firms as some sort of a 'statement of future intentions' regarding their policies after his entry has occurred" (Bain, p.95; quoted by Scherer, p. 229).

I find this unconvincing, for two reasons. First, of all the important variables determining the profitability of an industry, price is possibly the least permanent. Price may be changed over-night, whereas other factors, such as the rate of technological advance, the efficiency of management, the rate of market growth, and some government policies, change only over years or decades. That is, of all the information that a potential entrant will amass concerning current conditions in an industry, that on current price is likely to amongst the least valuable.

What is important is what will happen to price after entry occurs, and since price is an exceptionally flexible variable, there need be no particular connection between the pre- and post-entry prices that would be set by the existing firms. These firms need only threaten to lower prices after entry, and thus eliminate monopoly profits, if they desire to prevent entry. If their cost competitiveness, and/or financial reserves, and/or control over marketing outlets, dominate those of the potential rival, the threat should be effective; if not, entry will occur, but in neither case is there any reason for the firms not to 'make hay while the sun shines', and charge what the market will bear in the short-run. Indeed, a price closer to the competitive level than could be sustained by market conditions might well be expected to encourage the ultimate form of entry - a takeover bid - since a firm charging such a price would be valued on the stock market lower than the earning power of its assets would justify. The only relevant empirical study that I

know of, by Zimmerman and Honeycutt, did indeed find a negative relationship between the number of entries and price-cost margins.

Spence has recently proposed a model in which excess capacity, not price, is the entry-limiting instrument. In fact, an excess capacity strategy dominates limit pricing as a barrier to entry, as Waterson has pointed out:

"For fixed costs are no higher than under a static limit-pricing policy, yet output is at a more profitable level" (p. 91).

This is because the limit-pricer must also carry the 'excess' capacity to meet the extra demand that its lower price generates, yet it never reaps the profits of a higher price enjoyed by the industry which uses excess capacity as a strategy.

Although the Spence model is undoubtedly an improvement on the price-limiting theory, we may ask, in the spirit of our objections to the latter, why should not the threat alone of adding to capacity be sufficient to deter entrants. Surely existing firms, with their greater experience, will be able to add new capacity at least as quickly as any newcomer could manage?

The entry-limiting models (including Spence's) share with oligopoly theory the same inherent weakness - an over-emphasis of the importance of price as a market-share controlling instrument. If the arguments made in the previous section are persuasive, then it must be inferred that 'entry', especially on a large scale, is not a very

sensible concept (except in the form of a takeover of existing assets), as it will just not usually be possible to enter a market suddenly by announcing the appropriate price - it takes time, resources and entrepreneurial flair to build up a market share.

How do entry models stand up to empirical testing? There are just a few relevant studies - it must be noted that in this field, the resources devoted to the production of theoretical models have been disproportionate to those committed to evaluating whether these theories have any base in reality. We have already noted the result of Zimmerman and Honeycutt, which certainly does not support any of the entry models. Orr found that past profit rates has no discernible influence on increases in the number of firms in Canadian manufacturing industries. Mueller, having divided 472 US firms into eight profitability-ranked groups, found that a significant proportion of the firms in the highest-profit group in 1949 were still there in 1972.

For the UK, my own study of 51 manufacturing industries included a search for evidence on the persistence of monopoly profits over a fifteen-year period. For a given set of market structure variables, did profits in an industry in 1968-1973 tend to be lower, the higher they had been in 1958-63? That is, did higher profits in the earlier period encourage new entry? In fact, I found (p. 170, Table III.5) that the sign on the 1958-63 profits coefficient was positive, not negative, and could not reject the hypothesis that the unexplained residual of profits from a structure-profitability regression for the first period (due probably to omitted factors and errors-in-variables) is fully carried through, industry by industry, to the 1968-73 equation.

This result seems to give no support at all to the small-scale or 'smooth' entry hypothesis of eventual complete competing-away of any outbreak of monopoly profits. Nor does the 'lumpy', or large-scale entry model appear to be confirmed, since although the set of market power variables which account for variations in profitability in my regression specification (on which more is said in the next section) includes some - average plant size and advertising intensity - which might be interpreted as entry barriers, its also contains others - buyer market structure variables - which cannot readily be so labelled.

IV. Towards a Realistic Model of Market Power

In the previous two sections it was argued that neither of the two currently dominant schools of industrial organisation theories of profitability survive testing of the accuracy of their predictions; their failure was traced, in both cases, to a view of markets which attributes far more than seems empirically reasonable to the concept of market price as a prime mover of sales and market shares.

As well, we may note that the existence to two sets of theories leads to unresolved inconsistencies - oligopoly models ignore potential competitors, whereas the entry barriers literature focuses on these while assuming away all problems of coordination between existing sellers (such models always assume a monopolist, or a 'dominant firm').

Now, it might be expected, given the degree of intricacy achieved by orthodox oligopoly and entry threat models even with their quite restrictive assumptions, that building a fully comprehensive model to take into account all of the above criticisms would be a hopelessly

difficult task.

So, no doubt, it would be, if we took over the traditional approach of formulating the problem in terms of resolving the interdependencies within a group of actual or potential competing sellers.

Perhaps, though, the reasons for the failure of oligopoly and entry models do themselves suggest that structure-performance modelling should proceed in a different direction, away from ever-more complicated horizontal co-ordination problems, and towards what turns out to be a much simpler framework for theorising. Consider the main objection raised in both sections II and III; that our present models make sales or market share a too-simple function of just price (along with, in more sophisticated variants, expenditure on advertising services), whereas firms themselves appear to find 'marketing' anything but trivial, in fact involving all sorts of thorny problems of product design, research and development, production engineering, inventory management, building up sales and distribution networks, public relations, obtaining and giving credit, and so on.

It is, I suggest, a short step from making lists of all the activities involved in selling goods, to recognising that they are not in perfectly elastic supply; that a firm cannot simply buy an increase in sales as assumed in traditional models, in which a reduction in price, or increase in sales as assumed in traditional models, in which a reduction in price, or increase in the advertising budget, is sufficient to generate the desired change in quantity sold. Rather, the ability to produce and market output - market power - should be seen as a property

right held by individual firms, in quantities varying according to the particular skills, luck, and histories of entrepreneurs and the organisations that they develop. That is, market power is basically a firm-, not an industry-specific attribute.

This concept is immediately attractive for its ability to confront the empirical realities invoked in the previous sections. The failure of industry-specific seller concentration variables to show much significance in profitability studies is no longer cause for concern. The durability of above-competitive profits is quite consistent with the idea of market power as a property right - as something owned and controlled in different quantities by different sellers. Furthermore, the persistent asymmetries and heterogeneities of observed industrial structures may fit better with a model in which the basic building blocks - firms - are expected to differ in significant respects, than with oligopoly and entry barrier models in which differences appear only at the industry level. It is surely more plausible to say, for example, that General Motors persistently has the highest share of the US car market because it is better than Ford and Chrysler at making and selling cars, than to suppose that GM just happens to purchase more market share-augmenting factors, year after year, than do its rivals, or that it happens to regularly be assigned the biggest market share in some explicit or implicit collusive agreement.

Elsewhere (1978) I have attempted to build a formal model of price setting on the foundation of a firm-specific concept of market power. There is space here only to sketch the outlines of this. Market power was defined thus:

"The market power of one party vis-a-vis another is the costs it can impose on the other party by not trading with it" (p. 67).

These costs depend on two things; the value of a firm's particular attributes to its clients, relative to their next-best alternatives, and the prices of these alternatives. We can formalise this with the concept of 'territory' in product-characteristic space - existing clients find themselves inside this territory, and must 'travel', at some cost, to its border in order to deal with other firms. The concept can be most concretely illustrated in spatial terms - a firm controlling all the sales outlets (or doing all the buying) over a particular area can force its clients to incur transportation costs if they wish to trade elsewhere - but the analogy carries over to other differentiable product characteristics (on which cf. Lancaster).

The 'size' of a firm's territory will depend on such factors as possession of patents and licences, proximity to sources of raw materials, its particular experience and skills, its control over sales outlets, the scale of its transactions, and others. Many of these factors may be correlated with the firm's size relative to other firms selling or buying products in neighbouring territories.

These components of market power determine the mark-up the firm can sustain over the price at the 'border' of its market territory. What determines this price? There exists in the economy a sector of numerous small ('fringe') firms, selling products which are in some degree substitutable for those offered by larger firms with substantial territorial market power. These fringe firms are too small to control

sufficient territory to justify, alone, a mark-up on costs that would keep them in business. Their prices are therefore set at levels which reflect the opportunity cost of self-employed entrepreneurs, and so are determined by such factors as the real wage, and attitudes to risk-taking, which are formed outside the market power system, and are thus exogenous to it.

These 'competitive' prices accordingly provide an ultimate constraint on the prices that can be charged by firms with significant market power, so that our model can easily be made determinate (whereas oligopoly models, in which all prices are endogenous, are more difficult to squeeze stable solutions from^{8/}).

In this model, the uncomfortable traditional distinction between rivalry removed in space (oligopoly) and in time (new entrants) disappears. To any firm, all other firms are only potential entrants, in the sense that none at present are making the trades that the given firm is making, and could not do so without taking away its territory by coming up with a more valuable set of product characteristics.

I attempted to test empirically some of the propositions of the model. Unfortunately, I used the official data from the Census of Production, which are at the industry level of aggregation, so that firm-specific factors such as market share could not be tested. The loss in explanatory power in working at the industry level could be considerable, and it would be worthwhile to devote resources to building up a base of data on individual firms or even product lines, perhaps by developing unofficial sources explored by Cowling and Kelly.

However, there are market power-related factors which might be expected to be common to most of the firms in what the Statistical Office defines as an 'industry', and some of these were included. Using data on fifty one UK industries at the Input-Output table level of aggregation, averaged (to reduce 'noise' from purely cyclical variations in profitability) over the five census years from 1954 to 1973, regressions were run which seem to give some support to the propositions put forward in this section (cf. Table III.3, p. 152).

First, the ratio of actual profits to an estimate of the 'normal' or competitive profits that could be earned by the factor inputs in each industry were they controlled by fringe firms, performed better as a profitability measure than the margin of profits on sales that is suggested (with some simplifying assumptions) by oligopoly theory, and which was used in all the previous UK studies listed in the Appendix.

Second, and in line with the other studies, seller concentration never showed up strongly as a factor explaining profitability. Indeed, it lost all significance when included along with a variable measuring the average plant size in each industry.

Third, variables measuring differences in characteristics of the buyer side of markets, which are difficult to fit into oligopoly or entry barrier frameworks^{9/}, but which develop naturally from bargaining power considerations rising from the firm-specific approach, appear to be important determinants of profitability differences.

After a limited amount of experimenting with different

specifications^{10/}, the following regression was settled on (cf. Table III.3, row 12):

$$\begin{aligned}
 \text{AVSURP} = & 0.0167\text{NO/EST} + 0.179\text{ADVR} + 0.517\% \text{DGO} + 0.040\text{BCRINT} \\
 & (2.7) \qquad (7.1) \qquad (2.1) \qquad (5.6) \\
 & -0.0441(\text{BCRINT})^2 + 0.0136\text{BUYC} - 0.0058\text{BUYP} + 0.0013\text{BUYK} \\
 & (-3.0) \qquad (12.2) \qquad (-0.9) \qquad (0.4) \\
 & +0.0135\text{BUYE}, \qquad R^2 = 0.733, \bar{R}^2 = 0.679 \\
 & (3.8)
 \end{aligned}$$

In this equation, the ratio of actual to competitive profits (AVSURP) is positively related to the average size of plant in each industry (NO/EST), and to the ratio of advertising expenditure to sales (ADVR). Both of these variables can be interpreted as 'barriers to entry', but they may plausibly also be seen within the concept of a firm's market territory developed above. Industries in which the growth rate of the value of shipments (%DGO) was relatively high showed a modest tendency to be more profitable. The proportion of an industry's output that is sold to other industries as intermediate products weighted by these industries' seller concentration ratios (BCRINT), is also positively related to profits, implying a 'piggyback' effect^{11/} (as opposed to the countervailing power notion) whereby firms making monopoly profits pass some of these back to their suppliers. It is clearly more profitable to sell to private consumers (BUYC = proportion of output sold to consumers), and in export markets (BUYE), than to the public sector (BUYP) or to capital goods buyers (BUYK).

The overall explanatory power of the regression is noticeably higher than in any of the earlier studies surveyed in the Appendix. This seems to be due (1) to the use of averaged data which reduce cyclical

'noise', and (2) the extensive use of buyer market structure variables.

The results are particularly encouraging given that we had to do without the relative firm size variable which the theory suggests might be an important determinant of the size of a firm's market territory. In a study of 245 large US corporations, Shepherd found market share to be a strongly significant variable in a regression explaining the rate of return on equity, and that when market share and industry seller concentration were both included as regressors, concentration was quite insignificant, even though it did show apparent significance when included by itself without market share.^{12/}

V. Summary and Conclusion

In this paper I have tried to argue two propositions : first, that there is something in the industrial economy we can call 'market power' - a force responsible for persistent differences in profitability - and, second, that this market power is best, in general, seen as a firm- not an industry-specific phenomenon.

I have criticised both of what I discern to be the main traditional sets of models. Neither seems to provide a plausible rationale for a durable market power-profitability relationship. In oligopoly theory, the reason given for prices not to tend to be set by the group of interdependent sellers at the joint-profit maximising (monopoly) level - namely, limited ability to coordinate pricing - is unconvincing. On the other hand, in the entry threat literature, market price is supposed inexorably to be whittled down to the competitive level when small-scale entry is

possible, and to be set above the competitive price to the extent that economies of scale permit, when these are present, but not additionally to be affected by other market structure factors.

Furthermore, the two bodies of theories cannot consistently be considered together - oligopoly models consider only problems of coordination between existing sellers (that is, a group facing a fixed demand curve), whereas the entry literature brings in potential competitors, but assumes away all coordination problems by working with a 'dominant firm' or monopolist.

In both cases, the difficulties appear to be due to the assumption of homogeneity in the 'market' or industry, so that, with other attributes equal, market shares become very responsive to price. This leads to instability, with existing sellers being tempted to cheat each other by shading price, and new sellers always being on hand to enter a market and erode any monopoly profits.

I have suggested, in contrast, that the relevant number of characteristics of goods is typically rather large, and differs from seller to seller (and buyer to buyer) to the extent that it is hardly reasonable to suppose that such characteristics are in elastic supply. Rather, each firm's product characteristics are determined by its particular experience and skills, and can be thought of as a property right yielding profits, and not subject to arbitrary elimination by the actions of present or potential competitors, unless these can come up with a more valuable set of characteristics.

In support of these propositions, I reviewed the empirical studies on market structure and profitability in UK manufacturing industry, and introduced some results of my own. More work is needed, both in the development of the theory of firm-specific market power, and in testing it on a base of data compiled at the level of individual firms or product lines. The model should also provide a useful framework for case-studies of particular firms or industries, and for interpreting existing studies, such as those prepared by the UK Price Commission.

As for policy, the main implication, of course, is that this should focus on firm rather than industry factors such as concentration ratios. Policy-makers are in fact ahead of academic economists on this, at least in the UK, when they make use of the criterion of the market share of a particular firm as an indicator of monopoly power (e.g. the Monopolies Commission). No simple index can be useful, though, since 'market power' as I have defined it can be due to a superior product as well as to, say, the monopolisation of sales outlets.

Footnotes

- 1/ Examples of vague appeals to the 'theory' are to be found in all of the first five studies surveyed in the Appendix (cf. Hazledine, 1978, p. 173). The 'Warwick' studies of Cowling and Waterson, are notable exceptions to this methodology.
- 2/ Although this index is usually named after Herfindahl, it seems that Hirschman thought of it first. Cf. A.O. Hirschman, 'The Paternity of an Index', American Economic Review, September 1964.
- 3/ The particular form of concentration index used may not make much difference. Vanlommel et al. found, for Belgium, that the four-firm concentration ratio seems 'to convey the same informational content' as both the Hirschman Index and an Entropy measure. Hall and Tideman found a correlation of 0.976 between the concentration ratio and the Hirschman Index for the US. Herfindahl Indices for sales (though not for employment - as used by Cowling and Waterson, Waterson, and Lyons) are not available for the UK.
- 4/ The recent study by Hitiris is not included in this survey, since the significance he finds for 'concentration' depends both on the inclusion of one outlying industry (Cement) and an incorrect method of calculating weighted concentration ratios. Cf. Lyons and Kitchin.
- 5/ Cowling and Waterson do include two additional regressors, but both are insignificant. Waterson has one other regressor in his equation.
- 6/ This opinion is not without precedent. Cf. Chamberlin, for example.
- 7/ The scope of 'optimisation' is rather restrictive, as Dixit points out, since it is not always profitable to absolutely exclude new entrants.
- 8/ I argue that where the border of one firm with market power abuts on the territory of another, the two will be able to be able to solve this limited duopoly problem to jointly maximise profits, so that the ultimate constraint on both of them is the eventual border where they meet fringe firms. Cf. Hazledine, pp. 75-6.
- 9/ Waterson has developed an ingenious model attempting to integrate buyer structure into the Oligopoly framework. The difficulties he encounters perhaps exemplify the basic awkwardness of the oligopoly modelling approach. For an appraisal of his work, cf. Hazledine pp. 188-91.
- 10/ Experimenting involved trying out the seller concentration ratio, and dropping three industries (Sugar, Mineral Oil Refining, Iron and Steel) for which there was extraneous evidence of unusual profitability experience due to non-market factors.
- 11/ The idea of the 'piggy-back' was introduced to me by Waterson.
- 12/ An association between concentration and market share for a particular sample could explain the significance of the former variable in Cowling and Kellys' study.

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APPENDIX: UK STRUCTURE-PROFITABILITY STUDIES: TABULATION OF RESULTS

	Shepherd	Phillips	Holtermann	Khalilzadeh-Shirazi	Hart and Morgan	Cowling and Kelly	Cowling and Waterson	Waterson	Lyons
Coverage	3-digit small industries excluded)	71 3-digit (availability of CRs limits coverage)	113 MLH industries	60 MLH industries ^{1/}	113 MLH industries	88 food companies	94 MLHs (changes in MLH descriptions limits coverage	51 input-output level industries ^{2/}	118 MLH industries
Dependent variable	gross price cost margin 1958-63 average	gross margin 1951 (on gross output)	gross margin 1963 (on sales)	gross margin 1963 (on sales)	net margin 1968 (on net output)	gross margin (on sales) year average 1964-69	ratio 1973-5 68 gross margins (on sales)	as for Cowling and Waterson 1968	gross margin 1968 (on sales)
Concentration	SCR5, 1958-1963 average, adjusted for imports	SCR3, 1951	SCR5, 1963	SCR5, 1963	- (dropped as insignificant)	SCR4, 1963 (cf fn 4)	ratio 1963-1958 employment Herfindahls	ratio 1968-63 employment Herfindahls	employment Herfindahl (1.9)
Entry Barriers	sales, average 1958-63	average employment size of plant 1951	average employment size of largest plant	median plant net output/industry net output	median employment size	net assets, average 1965-69	-	-	-
Sales Growth	% change in sales, 1958-63 current prices	% change in gross output 1948-54	% change in sales, 1958-63 current prices	% change in sales, 1958-63 current prices	% change in sales, 1963-68 current prices	(+0.1)	-	-	-
	(+2)	(+2.2)	(-1.0)	(+3.9)	(-1.5)	(+0.1)	-	-	-
	(+1.6)	(+2.2)	(-1.1)	(+0.3)	-	(+0.9)	(+2.9)	(+3.4)	(1.9)
	(+2.0)	(-1.5)	(+3.6)	(+1.5)	(+0.9)	-	-	-	-

	Shepherd	Phillips	Holtermann	Khalilzadeh Shirazi	Hart and Morgan	Cowling and Kelly	Cowling and Waterson	Waterson	Lyons
Advertising	-	advertising/ sales, 1948	advertising/ sales, 1963	advertising dummy 3/	advertising/ sales, 1968	advertising/ sales, average 1965-69	-	-	advertising/ sales
	-	(+2.8)	(+5.9)	(+3.0)	(+4.1)	(+3.1)	-	-	(4.6)
Buyer Power	-	-	-	exports/ total output 1963	-	-	-	ratio 1968-73 constructed by Herfindahl	proportion of output exported
	-	-	-	(+2.1)	-	-	-	(+2.5)	(3.7)
Capital Intensity	average 1958-63	-	asset value/ gross output	average 1969-70 net assets/sales	capital expenditure/ employment 1968	-	-	-	-
	capital expenditure/ output (-0.5)	-	(+2.1)	(+2.3)	(+6.0)	-	-	-	-
		average 1958-63	capital expenditure/ output 1963 (+4.1)						
Other variables	-	SCR* advertising/ sales	-	imports/total output 1963	domestic sales 1968	additional advertising variables: total adv. exp. 1965-69 (t=+2.5)	additional durable advertising good dummy	-	proportion of domestic sales not imported (3.7)
	-	(+1.5)	-	(-1.3)	(+0.2)	and the square of this (t=-1.8)	(+0.6)	-	index of intra-industry trade (3.0)
		'effective price fixing dummy'				ratio 1968-73 prop'n union membership (+1.5)			
		(+1.3)							
		Producer goods dummy (+1.0)							
\bar{R}^2 (R ²)	(0.114)	0.260	0.454	0.544	(0.462)	0.342	(0.096)	(0.267)	(0.312)

Footnotes to Table

(Numbers in brackets are the t-ratios of the estimated coefficients)

1. Excluded from the 119 industry MLH sample
 - (a) milk, sugar (non-comparable price-cost margins)
 - (b) industries with concentration ratios published for less than 80 per cent of their principal products
 - (c) industries with specialization index less than 80 per cent
 - (d) margarine and compound fats (an 'outlier')

2.
 - (a) includes mining, construction
 - (b) excludes seven industries (MLHs 211, 331, 390, 334, 338, 342 and 349, 362) with 'out of line' specialization and exclusiveness ratios. When not excluded 'results remain significant in many cases but the explanatory power is lower' (1975, p. 13).

3. Advertising dummy = 1 when advertising is one per cent or more of sales, zero otherwise.

4. Concentration included quadratically. Linear and squared coefficients had t-ratios of +3.1 and -2.8, respectively.