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ARTICLE 86 EEC: ECONOMIC ANALYSIS OF THE EXISTENCE OF A DOMINANT POSITION

By

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Article 86 EEC: Economic Analysis of the Existence of a Dominant Position

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Introduction

In three recent judgments, namely those of *United Brands—Bananas (UBC)*,[1] *Hoffmann-La Roche—Vitamins (Roche)*,[2] and *Hugin*,[3] the European Court has ruled that a company has held a dominant position in the EEC for the purposes of Article 86. Economists who have studied monopoly would not agree with all the elements of the Court's reasoning. In this paper I shall examine the methodology used by the Court, explain the methodology that would be used by economists, and point out how the two differ; for at times economists and the Court seem to be in agreement, and at times not. Economists are said to seldom agree amongst themselves, but on the subject of how to recognise monopoly (*i.e.* dominance), mainstream economists disagree far less than may be commonly supposed.[4] In contrast, they disagree vigorously as to what public policies, if any, should be followed to eliminate monopoly.

The Court's methodology

Definition of dominance

Dominance means economic power over a customer (or supplier), or a group of customers (or group of suppliers).[5] This idea seems simple to comprehend. In one respect, however, it is not commonly understood: dominance is economic power over a period of time, and not transient power. Let me explain by example. Consider a London neighbourhood where

[1] Case 27/76, *United Brands* v. *Commission* [1978] E.C.R. 207; [1978] 1 C.M.L.R. 429, hereafter referred to as *UBC*.
[2] Case 85/76, *Hoffmann-La Roche* v. *Commission* [1979] E.C.R. 461; [1979] 3 C.M.L.R. 211; hereafter referred to as Roche.
[3] Case 22/78, *Hugin Kassaregister and Hugin Cash Register Ltd.* v. *Commission* [1978] 3 C.M.L.R. 45 hereafter referred to as Hugin.
[4] The economists referred to are those who call themselves neo-classical economists. They model their theories on foundations laid out first by Adam Smith. For a history of the development of their theories of the firm, see: Philip L. Williams, *The Emergence of the Theory of the Firm* (Macmillan, 1978).
[5] Classical economists referred to any holder of scarce resources, such as a landowner, as a monopolist, but such persons cannot expand output, even if they would wish to—and the price they receive can be governed by the market. The neo-classical definition is given later.

only one shop opens on Sunday. Next Sunday, if it were to double its prices without warning, it would not lose many customers initially. Is this store dominant? The answer must be "No," since in London there are many entrepreneurs who would open their shops on Sunday if they discovered that the existing firm had raised its prices in this way. The new competition would quickly drive prices down, and the existing shop might suffer badly, especially if its customers were to cease to patronise it even when its prices were lowered to meet the new competition. There is hardly a firm that does not have such transient power to raise prices for some of its customers, but, as many have discovered by experience, the use of such power may bring disaster upon the firm. In contrast, a shop located in an isolated community such as a Scottish island, may have real economic power. Its community may be so small that it cannot support more than one such shop. Of course, its potential monopoly may be very small, as its community may be few and poor. Nor will such a store necessarily charge very high prices because the costs of loss of custom may outweigh the extra margin earned on its sales. Nonetheless, such a store enjoys a position which is almost unassailable, and the prices it charges may be higher than if competition were to prevail.

In *UBC* the European Court defined dominance for the purpose of Article 86 as follows:

> "The dominant position referred to in this article relates to a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market by giving it the power to behave to an appreciable extent independently of its competitors, customers and ultimately of its consumers." [6]

It reiterated the definition in *Roche*,[7] and went on to say that dominance does not exclude the existence of certain competition,[8] but that a dominant firm can decide or at least influence the conditions under which competition will develop, and that a dominant firm can behave in its market without needing to take account of the competition and without suffering damage as a result.[9]

Economists would agree with the Court in so far as a firm does not need to supply all the market to be dominant. (More will be said on this.) Economists, however, would like the Court to make it quite clear that dominance is a concept related to time. They would take issue with the Court's stress on fear of competition. Many firms have acted not fearing competition, and yet competition has materialised. Dominance is a position of power over time.

The Court, in trying to decide if a firm is dominant, should not place

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[6] Para. 65 of the Judgment. *Cf.* the definition given by the Commission in its *Continental Can* Decision, J. 1972, L7/25; [1972] C.M.L.R. D11. In that definition the Commission also referred to power over suppliers. Economists call dominance over suppliers "monopsony."

[7] Para. 38 of the Judgment.

[8] The words "certain competition" may mean oligopoly. It also says that dominance does not exclude lively competition, which may also mean oligopoly.

[9] *Roche*, para. 39. In *UBC* (para. 113) similar ideas are expressed.

weight on the opinions of managers. For instance, in *Roche*, internal documents which asserted that the firm had power over prices were cited by the Court in its belief of Roche's dominance. Economists and business historians have noted that, frequently, managers like to believe they have power over their customers (or suppliers), whereas they rarely have such power. Moreover, lay persons may use the words monopoly and dominance casually, and not with the precise meaning of the Court.

The relevant market

The Court has said that it is necessary to define a market: economists would agree—for to point out dominance, one must say upon what market a firm is dominant. In *Roche* (para. 28) and *UBC* (para. 22), the Court defined the extent of a market by reference to the existence of substitutes on the demand side and in *Continental Can Company* to substitute on the supply side.[10] For example, in *Roche* the defendants disputed whether Vitamins C and E should each be considered as part of one market. According to the Court (paras. 28 and 29), Vitamins C and E had two usages, one as additives to foodstuffs (called the bio-nutritive use), and the other as anti-oxydants, fermentation agents and additives (called the technological usage); in their first usage, C and E performed different functions and in this usage neither could be substituted for the other, and there was no other product which could perform as substitutes for either; in their second usage, C and E were not only interchangeable with each other, but there was a variety of other products which could also be interchanged with them. The notable aspect of the case was that it was not always possible for Roche to distinguish between customers who wanted Vitamins C and E for the different uses, because some buyers who used C or E in foodstuffs also required anti-oxydants for which C and E could be used interchangeably. An economist would argue that there were three markets defined from the demand side: the two separate bio-nutritive usage markets of C and E, and the technological usage market which included C, E and other anti-oxydants. It is obvious that a change in price of (say) Vitamin C would have little effect on the quantity of E sold for its bio-nutritive use. Economists would say that there is a low cross elasticity between C and E, and that these products were not substitutes (*i.e.* they were in different markets). But a change in price of C would have a substantial effect on the quantity of E sold for its technological use, indicating a high cross elasticity, and that these products were substitutes (*i.e.* in the same market). The Court ruled that Vitamins C and E were separate markets stressing their bio-nutritive uses. Here economists would agree with the Court, but would note that any analysis of these markets must also consider the technological market for reasons which will be explored.

In *UBC*, the Court failed to note an important distinction in the market, because they ignored the time dimension. This is a different time dimension (*i.e.* seasonal) from that mentioned earlier (*viz.* long run versus short run).

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[10] Case 6/72 *Europemballage and Continental Can* v. *Commission* [1973] E.C.R. 215; [1973] C.M.L.R. 199, C.M.R. 918171.

In *UBC* (para. 12), the Court noted that for the banana to be regarded as forming part of a market which is sufficiently differentiated from other fruit markets, it must be possible for it to be singled out by such special features distinguishing it from other fruits that it is only to a limited extent interchangeable with them. Now, the Court noted that during the summer months, but not the winter months, the price of other fruits was competitive with bananas, in the sense that a change in their price influenced the quantities sold (and, hence, the price) of bananas. Because bananas cannot be stored, it seems obvious that there were two markets defined by the seasons. In winter, bananas had few substitutes, but in summer, had substitutes. In winter, the relevant market was bananas, in summer, surely it was bananas and other fruit: but the Court did not see this distinction, because it failed to grasp the importance of the time dimension.

In *UBC* (para. 31), the Court also noted that the banana has certain characteristics which enable it to satisfy the constant needs of the very young, the old and the sick; and that, for this group, bananas may not have any close substitutes. If this is so, then the Court could have defined the relevant market as being only those bananas sold to these groups of people. In this case, other fruits would not be substitutes, even in summer. Any definition of the market should not preclude a market analysis which extends beyond the relevant market.

In *Hugin* (para. 8), the Court defined the relevant market as Hugin spare parts required by independent undertakings. This definition of the market is conceptually different from that used in *Roche* and *UBC*.

First, the Court defined the relevant market with respect to a brand, not a product. This is a minor point. Economists would have noted that spare parts could be made by independent concerns to fit Hugin machines. The Court (para. 9) says that this was not the case, nor could ever be the case.

Second, the Court defined the relevant market without discussing the existence of possible substitutes on the demand side for independent undertakings. This is not a minor point. Consider those independent undertakings in the business of repairing, maintaining or refurbishing (but not renting or leasing) cash registers for independent customers. They often dealt in more than one brand of machine. Their engineers could, and did, repair more than one brand. In this respect, substitutes did exist on the demand side from the point of view of independent undertakings. The Court never discussed whether this substitution was easy, that is, whether the cross-elasticity was high or low. Hugin, in refusing to supply Liptons, apparently forced the latter to turn to servicing other machines. Liptons had said this shift was costly.[11] The Commision in its Decision (paras. 27 and 28) did not show a proper analysis of this cost.[12] Moreover, it did not even give figures on sales, costs or profits for Lipton's servicing business for outside customers separated from its other activities such as renting and leasing.

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[11] This information was given to me by Mr. Lipton of Liptons Cash Register and Business Equipment Ltd., the aggrieved party in the case.

[12] *Liptons Cash Registers and Business Equipment Ltd.* v. *Hugin Kassaregister AB., and Hugin Cash Register Ltd.*, O.J. [1978] L22/23; [1978] C.M.L.R. D19. From the facts given it would seem that servicing Hugin machines did not account for more than £20,000 turnover in either 1970–71 or 1971–72.

Without such an analysis it is not clear that the shift was so costly or difficult that it is reasonable to consider each brand of spare parts as forming a separate market. To me, the only sensible definitions of the relevant market are those which make specific reference to the owners of the machines. I believe the Court should have defined the market as: "Spare parts required by those who are owners of Hugin machines." One such owner would have been Liptons which owned machines as part of its business of renting and leasing and whose users were its customers. These spare parts could be obtained only from Hugin, directly or indirectly by means of maintenance contracts. A rise in the price of Hugin's spare parts and hence a concomitant rise in the price of the Hugin maintenance contracts (of which the costs of spare parts are but one component) does not lead to an easy substitution of any other spare parts for reasons noted. It is also unlikely to lead to a widescale scrapping of Hugin machines. (Incidentally, it is irrelevant but possible correct to argue that increasing the price of such spare parts is likely to have adverse effects on Hugin's sales of new machines and hence Hugin's overall profits.)

In *UBC* and *Roche*, the Court defined the geographical extent of the market. In this respect, it seems that the Court does not believe that the market could extend beyond the Community. But, from the point of view of analysis of competition, if a product is easily transportable and not subject to tariff or other legislative barriers, then factors outside the Community will affect the power of firms within it. In the case of Roche, vitamins are easily transportable and factors outside the Community did affect the power of Roche. Such factors were, and should be, taken into account in the analysis.

Test of dominance

In *Roche* (para. 41) the Court said:

> " Furthermore although the importance of the market shares may vary from one market to another the view may legitimately be taken that very large shares are in themselves, and save in exceptional circumstances, evidence of the existence of a dominant position." [13]

However, it is quite clear from the Court's pronouncements in *Roche* and *UBC* that it believes that the existence of large market shares cannot by itself prove dominance: to prove dominance there must be both large shares of the market and other factors which are called " indicators." In *Roche* and *UBC* the following factors have (among others) been considered to be indicators by either the Commission or the Court: large investment requirements; surplus capacity; profitability; production of a range of products; efficiency; and vertical integration.

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[13] [1979] 3 C.M.L.R. 211 at p. 257. The Court goes on to say: "An undertaking has a very large market share and holds it for some time, by means of the volume of production and the scale of the supply which it stands for—without those having much smaller market shares being able to meet rapidly the demand from those who would like to break away from the undertaking which has the largest market share—is by virtue of that share in a position of strength which makes it an unavoidable trading partner and which already because of this secures for it, at the very least during relatively long periods, that freedom of action which is the special feature of a dominant position."

Comment

The major disagreement between economists' methodology and that of the Court is in their attitude to the question of the relevant market. Contrary to what many people have suggested, the disagreement is not so much in the way the relevant market is defined but rather in the way in which the Court restricts the scope of its analysis to that market. As will be explained in the next section, dominance presupposes barriers to entry. Its proof requires an analysis of all the factors influencing the firm— for factors outside the relevant market can affect competition in that market. (Moreover, as I shall point out in the case of vertically integrated firms, abuse of a dominant position can extend to markets beyond the market where the firm is dominant).

How economists would identify dominance

There are potentially two methods of identifying dominance. The first is to examine whether a firm has monopoly power, that is, whether it has the power to raise prices without competition materialising (in a relatively short period of time). The second is to examine whether the firm is receiving the benefits of monopoly, one of which might be the earning of monopoly profits. Economists focus attention on the former.

Economists define dominance in a number of different ways. Perhaps the clearest definition is that dominance is the power of the firm to raise prices to above supply cost without existing rivals or new entrants taking away its customers in due time. This definition uses a concept of supply cost which may not be familiar. Supply cost can be conveniently seen as the minimum cost that an efficient firm would have to incur to produce the product in question.[14] Included in such costs are not only raw materials and labour, but also opportunity costs of using scarce resources such as management, and a normal rate of return to providers of capital funds. The importance of time has been mentioned already—for a firm can have the whole market and have only temporary power which is not dominance if, upon raising prices (above supply cost), a new firm would appear and undercut prices. In contrast, if there are "barriers to entry," then a firm can raise prices without rivals appearing.[15] Economists would describe all "barriers to entry" as "indicators," for a firm cannot exercise monopoly unless there are barriers to entry for new competitors.

By far the most obvious barriers to entry are those prescribed by law, such as patent rights or exclusive government licences. Moreover, from the earliest studies of economics, all have agreed that if economies of scale are such that the minimum efficient scale of operation is large in comparison to the market, then there can be a barrier to entry and, hence,

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[14] Supply cost is defined as the industry's marginal cost for an incremental unit of output.

[15] C. Stigler, *The Organisation of Industry* (R. D. Irwin, 1968), p. 67 defines a barrier to entry as "a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry."

monopoly.[16] Many economists believe that these are the only sources of monopoly power. Therefore, it is pertinent to discuss in some detail why and when economies of scale can give rise to dominance.

Dominance as a consequence of economies of scale

"Economies of scale" is a phrase describing the changes in unit costs that result from operating a process at differing outputs.[17] The term does not describe the actual cost differences in operating a given plant at different outputs, nor the benefits of vertical integration. The process under consideration can be a production operation, or a distribution system, or a research laboratory or even a whole firm.[18] It is also assumed that the process adopted uses the best available techniques. There are two dimensions usually discussed, the minimum efficient scale (MES) and the slope of the scale curve. MES is defined intuitively as the smallest sized plant which achieves the lowest unit cost, and the slope of the curve can be approximated by the amount by which costs rise when a plant of half MES is used. Recapitulating, dominance means the power to raise price above minimum costs, which are the costs incurred at MES.[19]

In any market the relationship between price and output is represented by the demand curve. Demand is said to be elastic if a large contraction in output would require prices to be raised by only a small amount, and it is said to be inelastic when the opposite holds true.[20]

In the first example, the competitive case, it is assumed that the MES is small in comparison to the size of the market. For this reason, in Figure 1, the scale curve reaches its lowest point at an output which is well to the left of the demand curve. It is also assumed that the market demand

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[16] Particularly good expositions of these points are: J. Bain, *New Barriers to Competition* (Harvard, 1956); F. Modigliani, "New Developments on the Oligopoly Front" *Journal of Political Economy*, June 1958, pp. 215–232; F. M. Scherer, *Industrial Market Structure and Economic Performance* (Rand McNally, 1970) provides a good summary of the literature and arguments.
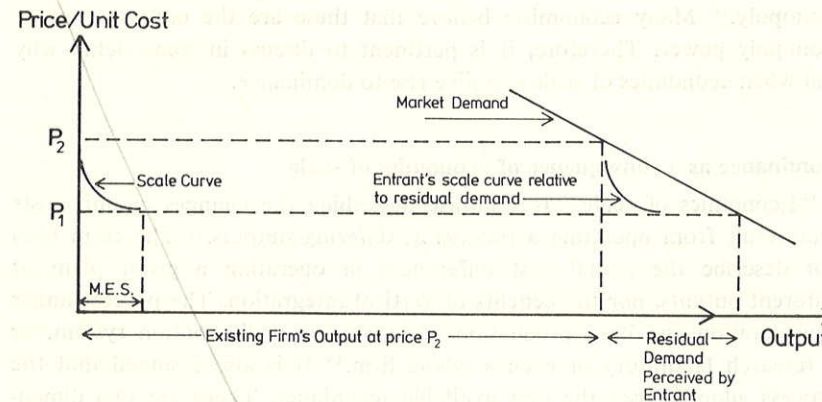
[17] For an excellent discussion of the nature of economies of scale, see J. Hirshleifer, "The Firm's Cost Function: A Successful Reconstruction," *The Journal of Business*, XXXV, No. 3 (July 1962), pp. 235–255.

[18] Economies of scale relate to activities at levels of production or distribution. Most work on economies of scale has focused on production, but economists have also measured economies of scale in transportation, warehousing, retailing and marketing (*i.e.* brand names).

[19] Economists have for a long time observed that costs fall over time owing to experience and that, therefore, another dimension of economies of scale is cumulative output—which is often called the learning effect. If the benefits of learning are available to new firms as well as existing ones, then new firms are at no disadvantage in this respect to existing firms. If, however, the benefits are unavailable to new firms, then the existing firm may have some absolute cost advantage over the new firms. The latter case is discussed under the heading "The concept of efficiency."

[20] Elasticity $= (dQ/dP) \cdot (P/Q)$ where Q is quantity sold in units and P is price. Demand is elastic when the elasticity is less than -1 and inelastic when the elasticity is greater than -1.

Price/Unit Cost

— Figure 1 —

is elastic. For this reason, the demand curve looks flat in Figure 1. The lowest price a firm could charge which would cover its costs (including a normal return on capital) is the unit cost for a firm operating an efficient plant at MES. This price is P_1. In the figure, P_1 corresponds to the lowest point on the scale curve. In normal market conditions,[21] P_1 is the competitive price. Were the existing firm to have 100 per cent. of the market, it would not be dominant. Suppose it raised its prices to P_2, above P_1. To do this, it must contract output significantly, because demand is elastic. But this large contraction allows scope for a new firm to enter the market and capture a small market share. Because the MES is small, it need only capture a small market share to utilise an efficient-sized plant, and not be at a cost disadvantage to the large firm. Moreover, the new firm's additional supplies to the market will not depress the price so much as to make the investment unprofitable.
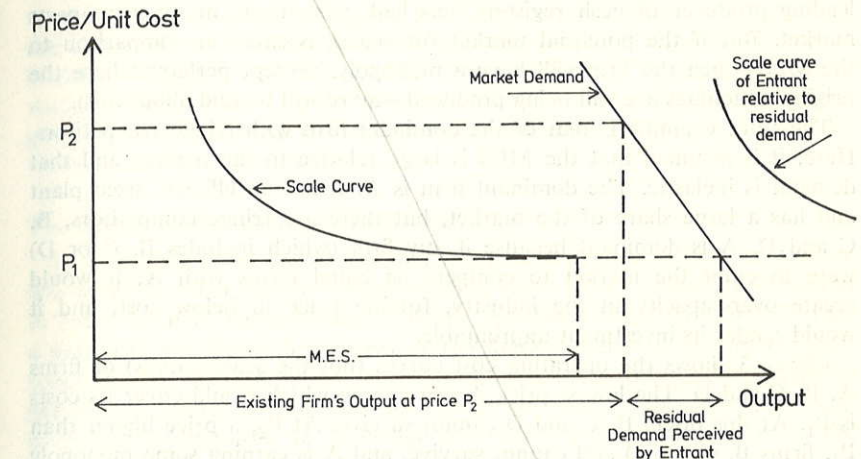
Figuratively, the new firm perceives a residual demand curve which shows the relationship between the output supplied and the price received by both firms for their products. The scale curve for the new entrant lies below the residual demand curve in the figure, which reflects the fact that the new firm can enter profitably.

This formulation assumes that the new firm does not think that the existing firm will change its output plans if entry takes place. Clearly, this is simplistic. On the one hand, the existing firm may contract output upon entry, keeping prices up and making entry more profitable; on the other hand, it may expand output, driving prices down, trying to dislodge the entrant. Note that in the latter case, for the existing firm to force the new firm to make losses it, too, must bear losses, as it has no cost advantage.[22] More will be said later.

[21] Normal market conditions occur when the industry does not suffer from idle capacity or too little capacity.
[22] For better discussion, see F. Modigliani or F. M. Scherer, *op. cit.* note 16.

In the second example, the monopoly case, it is assumed that the MES is large in comparison to the size of the market. For this reason, in Figure 2, the scale curve reaches its lowest point at an output which is only slightly to the left of the demand curve. It is also assumed that market demand is inelastic. The lowest price an efficient firm could charge to cover its costs is the unit cost at MES. Again, this is depicted by P_1, which in the figure again corresponds to the lowest point on the scale curve. Were the existing

Price/Unit Cost

— Figure 2 —

firm to have 100 per cent. of the market, it would be dominant. It could raise prices considerably to P_2 (say), by contracting output by a small amount. In this case there is no scope for a new firm to enter and make profits. As is shown in the figure, the scale curve of the new entrant lies everywhere above the residual demand curve. This reflects the fact that at any output the potential entrant perceives that prices will fall so fast that its costs will always be greater than its revenues.

Before discussing the third example, let me relate the *Hugin* case to the foregoing points. It is alleged by the Court (para. 9) that, for commercial reasons, any competing production of spare parts which could be used in Hugin cash registers is not conceivable in practice. An economist would assert that the competing production of spare parts is not conceivable in practice only if there is some barrier to entry for a new producer. The two most important potential barriers would exist either because of some legal restraint acting against the new firm, or because the MES of production of spare parts is large in comparison to the market.[23]
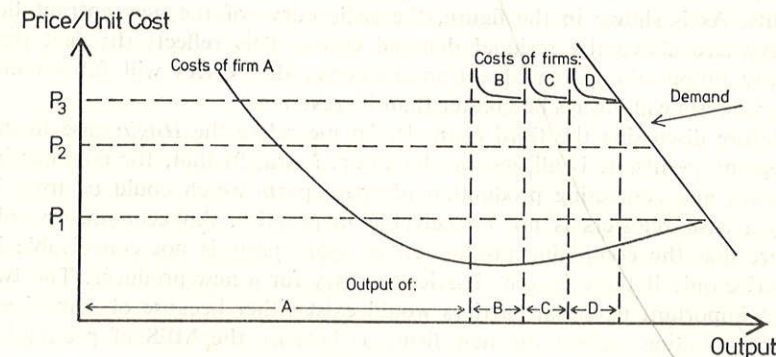
[23] According to the Commission (para. 55), Liptons alleged that it would not be economical to have such parts specially manufactured. However, an independent firm might find it worthwhile to produce spare parts if it could gain orders from many users such as Liptons.

Although the Commission claimed before the Court that the United Kingdom Design Copyright Act (1968) could allow Hugin to forbid the production of spare parts by an independent firm,[24] I am informed that Hugin did not contemplate using this Act to prevent independent firms from producing spare parts for its machines. If the potential market for spares is large in comparison to the MES, perhaps because the brand has large sales, then entry may take place. As leading automobile producers have discovered, independent firms can, and do, set up in the business of producing spares. It is also said by trade experts that N.C.R., the world's leading producer of cash registers, has had competitors in its spare parts market. But if the potential market for spares is small in comparison to the MES—then the firm will have a monopoly, (except perhaps where the original machines are still being produced—more will be said about this).

The third example is that of the dominant firm with fringe competitors. Here, it is assumed that the MES is large relative to the market and that demand is inelastic. The dominant firm is A; it has an efficient-sized plant and has a large share of the market, but there are fringe competitors, B, C and D. A is dominant because if any firm (which includes B, C or D) were to enter the market to compete on equal terms with A, it would create over-capacity in the industry, forcing price to below cost, and it would render its investment unprofitable.

Figure 3 shows the operating cost curves (not the scale curves) of firms A, B, C and D. The lowest price A can charge which would cover its costs is P_1. At this price, B, C and D cannot survive. At P_2, a price higher than P_1, firms B, C and D still cannot survive, and A is earning some monopoly profits. P_3, a still higher price, may be most profitable for A, even though at P_3 firms B, C and D can survive and can supply part of the market. (This is because, in economists' language, the long-run marginal cost curve of A may intersect the industry marginal revenue curve at an output where the price is no less than P_3).[25]

Price/Unit Cost

P_3 ——— Costs of firm A ——— Costs of firms: B C D ——— Demand

P_2

P_1

Output of: |←—— A ——→|←B→|←C→|←D→|

Output

— Figure 3 —

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[24] See pages 23 and 25 of the transcript of arguments before the Court, in Case 22/78, *Hugin.*
[25] This is explained in greater detail in F. Modigliani, *op. cit.* note 16.

If A wishes to price higher than P_3, its efforts may be frustrated. To raise prices, A must contract output. But, as prices rise above P_3, firms B, C and D find it profitable to expand—and so prices fall back to P_3. In conclusion, A can be dominant although it has competitors. A has power to vary prices within a narrow range whose lower bound is set by its own costs and whose upper bound is set by the competitive fringe.[26]

When the Court talks of economies of scale conferring monopoly power, and the existence of lively competitors not being the same as competition, it may be referring to situations similar to those described above. If so, then it would obviously be best if the Court would describe the nature of the economies of scale (in particular the MES and the slope of the curve) in defending their argument. The EEC has published a number of industry studies which include such estimates, and a recent United Kingdom government publication has also documented estimates for a number of United Kingdom industries.[27]

The critical market share to prove dominance

It is obvious from the above that economists do not believe that there is a magic number for the critical market share which a firm must possess in order for it to be dominant. It would, however, seem very unlikely that a firm with less than 50 per cent of the market could be dominant. (For, supposing the existing firm to be efficient, then MES would be less than 50 per cent of the market and any attempt by the firm at raising prices would encourage competitors to challenge the firm's position. Likewise, if the firm were inefficient in the sense that the MES was larger than the firm's market share, then a new entrant would most probably arrive and be able to undercut the existing firm's prices—which is what we want).

The Court, like economists, does not believe that there is any magic number for market share. However, in *UBC* (para. 109) and *Roche* (paras. 50, 51), it has ruled that (together with other indicators) market shares of around 45 per cent are sufficient. Again, in *UBC* (para. 111) and *Roche* (paras. 51 and 58), it has also used the criterion of whether the shares of the firm's next two largest competitors combined exceed the firm's share. In the proceedings against *Roche* (paras. 54–56), where the question arose whether market share should be measured by sales value, quantities sold or productive capacity, the Court used several of these tests. Economists prefer quantities sold, because economies of scale (the source of monopoly power) is an engineering concept which relates to output in units and not values.

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[26] If the MES is exactly one-half of the market, and if A, using the best technology, has 70 per cent and B, C, D have 10 per cent each, then a new entry may not be profitable. From society's viewpoint, it would have been better if two plants had been built, each at MES, and it may be optional (if administratively feasible) given the present situation to pay a new firm to enter and subsidise the losses caused by the excess capacity, rather than allow the current situation to continue unchecked.
[27] A useful catalogue of MES for a variety of production processes in the U.K. is given in Annex C of *A Review of Monopolies and Mergers Policy*, U.K. (Cmnd. 7198), May 1978.

The necessity for a full market analysis

It is obvious from the preceding analysis that if the MES is small in relation to the market, then it would be impossible for a firm to be dominant unless there were some additional entry barriers. But it might seem that if the MES is large in relation to the "relevant market," then a firm with a large market share would be dominant; this latter presumption should be restated, for there are four cases where MES may be very large and yet a firm is not dominant, even if it supplies all the "relevant market."

The first case is fairly obvious. It is where the slope of the scale curve is very flat. In this case, although the MES is very large relative to the market the disadvantages of operating at a small scale may be slight.

The second case is where the "relevant market" as defined from the point of view of the Court, is in a sense too small. To take a topical example, if the relevant market were silicon chips in the EEC, and if the MES were 100 per cent of this market, then in the absence of a high tariff or a quota, a firm having 100 per cent of the European market is unlikely to be dominant because silicon chips are easily transported. From the point of view of EEC buyers, suppliers outside the EEC are potentially excellent alternatives to the existing firm. Because the Court is concerned only with the EEC, it is understandable (but possibly misleading) that it does not define the relevant market as broadly as the economic market.

The third case is where the market is correctly defined from the demand side, but the existence of alternative uses for the product causes the significance of MES to be overstated. For example, consider a chemical compound which has two uses, X and Y. (The product could be vitamins, X the bio-nutritive use, and Y the technological use, or else X, bananas for the old and sick, and Y all other bananas). Suppose that in its X use, the product has no substitutes, but in the Y use it competes with many other products. If the "relevant market" is defined as use X and not uses X + Y, and if the MES of production is as large as the size of the X market, then a firm may command the whole of the X market and yet not be dominant. To see this, suppose that the firm were to raise prices to its X customers, then a new firm may be able to set up production, devoting most of its output to the Y market (where the influence, even of a plant of MES, on price may be very small due to Y being a much larger market), and devote a small part of its output to the X market in competition with the existing firm. If prices fall in the X market, the new firm may still be able to survive by devoting its output to the Y market.

It might be thought from these examples that a better definition of the relevant market, in particular a recognition of substitutes in supply, would allow one to show a clear connection between dominance and MES, size of the market and market share. This is not so, for, as I shall show in the fourth example, it is the existence of common costs that makes this tinkering with definitions such an unsatisfactory alternative to a proper analysis.

For the fourth example, consider the market for wool. Let us suppose (hypothetically) that technology were to advance so that sheep-rearing were

to exhibit economies of scale, and that as a result there were only one farmer in the market rearing sheep. (Let us further assume that tariff barriers were to prevent import competition and that there were no alternative uses for wool beyond its present uses.) Would this farmer be dominant? The answer is no, not necessarily. Suppose that the farmer were to raise the price of wool. Now, the raising of sheep yields two outputs: fleeces and meat. If (as is probable) mutton competes on reasonable terms with other meat, in particular beef, and if the price of meat were sufficiently high, then a new farmer could enter into sheep production at a level where all economies of scale would be exhausted and just cover the costs by the sale of mutton. Wool fleeces would be a by-product of this process, and so this new farmer could compete with the existing farmer, driving down the price of fleeces and, hence, would eliminate the first farmer's dominance over wool. From this example, it can most clearly be seen that the price of beef would affect the ability of the sheep farmer to monopolise the market for wool and yet, by no stretch of the imagination, could beef and wool be considered as part of the same market, as they are not substitutes in either demand or supply.

It might be thought that the assumptions are particular, or that the existence of such joint outputs are uncommon. Neither objection is true. Economists have known for some years that the existence of joint outputs to common inputs can, in a variety of circumstances, lead to the conclusion that a large MES relative to an output market is not a sufficient demonstration of dominance. Baumol has produced a brilliant, and erudite synthesis of this knowledge.[28] The existence of common costs is far more prevalent than may be realised.[29] For instance, in the case of UBC, bananas in summer and bananas in winter are joint outputs from the production and shipping of bananas from the plantations to Europe. A rise in the price of other fruits in the one season could make it profitable for a new firm to enter the banana market and cover some, if not all, of its costs through selling in that season. It would also be able to supply bananas in the other season, thereby lowering prices. The fact that these latter sales might seem uneconomically small would be irrelevant. For the entering firm

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[28] W. J. Baumol, "On the Proper Cost Tests for Natural Monopoly in a Multiproduct Industry," *The American Economic Review*, 67 (5) December 1977, pp. 809–822. The true test of natural monopoly is the existence of global subadditivity—when firms produce one output from common inputs, then this reduces to the concept of economies of scale, where there are joint outputs the concept becomes more complex.

[29] The joint output problem also arises when a firm seemingly only produces one product. Baumol has given this example. Suppose that the plant required to produce a product is long-lived, then the market can be divided into (at least) two parts—the near future and the distant future. If (as in the case for vitamins), the market is growing fast, then the optimum capacity to satisfy the distant future is larger than the near future. Even if economies of scale are unbounded (that is, bigger plants bring lower unit costs), it may not be possible to earn monopoly profits in both the near and distant future markets. Building a small plant for the near future market will, with certainty, render that plant obsolete for the distant future, and put the firm in danger of new competition; building a large plant for the distant future market will force the firm to incur losses in the near future market.

it is not the contribution to profit from each season taken separately that matters, but rather the combined contribution of both seasons.

Another example is the production of parts: spare part production is usually a joint output from the production of parts for original equipment. A rise in the price of spare parts, not accompanied by a fall in the price of parts for original equipment, may encourage a new firm to enter, on the one hand supplying spares, and on the other hand supplying parts for original equipment. Where spare parts are specific to one brand or model, the entering firm may not be able to make its output acceptable to users without obtaining permission from design, copyright or patent holders; in contrast, where spare parts are of a common nature to several brands of equipment, as is the case with tyres and light bulbs for cars, or paper tape and key tops for cash registers, no permission need be obtained.

The corollary to this is also true: the absence of both common costs in supply and substitutes in demand allows seemingly complex situations to be reduced to a series of simple ones. For example, in *Roche* (para. 47) the question was raised whether the production of a wide range of products could be an indicator of dominance. The Court rejected this argument, but for the wrong reasons! It argued that because the products constituted separate markets, the matter could not be relevant and, moreover, Roche was not the only firm producing a wide range of products—many others produce a wide range of albeit different products. It should be clear to the reader that the benefits of producing a wide range of products could accrue to a firm if there were cost advantages in multi-product production. Roche did produce a wide range of products—but each product required different and separate equipment, so there were apparently no common production costs. Moreover, rivals in some markets fared well producing perhaps one or two lines. The reason why Roche's production of a wide range gave no advantage was, therefore, not only the separability of demand, but also the absence of common costs.[30]

In short, the proof of dominance lies not in the definition of the " relevant market " but, rather, in a full analysis of all the factors which influence the power of a firm.

The relevance of time

In several places I have alluded to the importance of time. Economists have noted that few monopolies other than those prescribed by law have lasted more than a decade or two, as, even without anti-monopoly laws, the process of competition is very powerful. But those applying the EEC Treaty may have (rightly or wrongly) shorter time horizons. Marshall [31]

[30] Similar arguments can be used with respect to the Commission's claims of Roche marketing a wide range of products or of Roche's overall size. Mainstream economists have for years argued that overall size is not an indicator of dominance.

[31] A. Marshall's treatment of time, *e.g.* that in *Principles of Economics* (Macmillan 1930), and his distinction between the short run and the long run, is considered to be pathbreaking by economists— most economic treatises and textbooks acknowledge this debt.

distinguished the short time period from the long period. In the short period, productive capacity is fixed—in the long period it is variable. As was said earlier, firms may have some power in the very short run—but such power does not define monopoly. Monopoly is the power to raise prices without entry taking place in time. Relevant indicators which might be useful in defining the time period are the time required to build, and the life of, a new plant of minimum efficient scale, the rate of technical change in the industry, and ease with which customers can switch from one supplier to another. Clearly, when time required to build a plant is long, as with, say, aluminium smelting, then competition is a slower process than when the time period is short, as with, say, garment fabrication.

The concept of efficiency

In *Roche* (para. 48) the Court alleged that Roche's technological lead and highly developed marketing facility was an indicator of its dominance. (The technological lead was not protected by patents—see *Roche*, para 42). It is not quite clear what is the cause of such superiority. If it is better management, better labour relations and a harder working labour force, but not economies of scale—then such superiority is a trait which competition law is seeking to foster. It is hardly a barrier to entry—if an entrant were equally efficient, then it could compete on equal terms. It is here that the question of time is most important, for if a firm commands a large market share because of superior efficiency, then such a command will be temporary unless it continually augments its position by increasing its efficiency faster than its competitors. Careful consideration makes me feel that the Court may not have meant that this superiority was the consequence of effort only, but rather that it meant that the existing firm has lower costs than any new firms by the very fact that it was the largest in its market and had been there for a long time. This popular view, that existing firms have some absolute cost advantage, can only be explained if there are benefits of learning by doing or, in other words, that costs of production not only depend on the rate of output but also on cumulative output, and that new firms do *not* have access to this " experience." The evidence of the Boston Consulting Group is usually cited in support of such a view.[32] (However, most of their evidence on this point is spurious as it relates industry prices to cumulative industry output, rather than the relative costs of the leading firm, as compared with other firms, to relative cumulative outputs.) The possibilities of lowering costs as a consequence of " learning by doing," *i.e.* experience, are well recognised but many economists, and managers point out that such " experience " effects unless

[32] "*Perspectives on Experience*" Boston Consulting Group (1968), some of which is reprinted in Exhibits 1–10 of Annex C of "*A Review of Monopolies and Mergers Policy*," *op cit.* note 19.

patented can be copied by new firms, and so the advantage does not create a barrier to competitors.[33]

Indicators other than economies of scale

In *UBC* (para. 122) the Court said that the need for new firms to enter with large investments was an indicator (barrier to entry). If this means that MES is large relative to the market, then the question has already been discussed at length. If, however, the Court means only that a new firm needs substantial capital funds to enter, then this is not a barrier to entry. Most economists believe that capital markets are fairly efficient and, even if they are not, there are many firms in the world who have access to very large amounts of capital.[34]

A number of economists believe that the existence of cost advantages conferred through economies of scale is the only barrier to entry aside, of course, from legal barriers such as licensing or patents; and they believe that the discussion of whether large promotion expenditures or product differentiation can be a barrier to entry, can usually be considered as a discussion as to whether there are economies of scale in brand names or in research and development.[35] In contrast, some economists would include under-utilised capacity as a barrier to entry (I shall discuss this later), and others would argue that other factors such as brand loyalty, predatory pricing, tying, can act as a barrier to entry, for reasons besides economies of scale in promotion—these I shall not discuss.

Earlier, I said that potentially there is another method of identifying monopoly, and that is to examine whether a firm is receiving monopoly profits. These monopoly profits may be given to the firm's owners in the form of increased dividends or retained earnings, or may be captured by the workers and managers in the form of higher wages, or better work conditions, or else consumed in organisational slack. Because accounting records register disbursements and receipts and do not record opportunity costs, economists universally recognise that accounting records are at best a poor guide, and more likely to be quite wrong in showing whether a firm is making monopoly profits. High accounting profitability is compatible with competition, for instance, if a firm buys some valuable vineyard cheaply, its profits from the sale of wine will seem very high in relation to

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[33] See for instance, M. E. Porter, " How Competitive Forces Shape Strategy " *Harvard Business Review*, March–April 1979, p. 137 and William J. Abernathy and Kenneth Wayne, " *The Limits to the Learning Curve* " *ibid.* Sept.–Oct. 1974, p. 107.
[34] J. Bain found evidence that capital requirements were a barrier to entry, but C. Stigler, *op. cit.* note 15, p. 68, has subsequently argued that " capital requirements " as Bain measured them either proxied for MES, or are irrelevant.
[35] R. Schmalensee, " Entry Deterrence in the Ready-to-Eat Breakfast Cereal Industry," *Bell Journal of Economics* (Autumn 1978), 9 (2), pp. 437–456, has a good discussion of how economies of scale, coupled with product differentiation, can form barriers to entry. F. M. Scherer (*op. cit.* note 16) writes cogently on the evidence of the existence of economies of scale in research and development. This author has made an (unpublished) study of the evidence on the existence of economies of scale in marketing a branded line of goods in the domestic electrical appliance industry.

its investment. Accounting losses are compatible with monopoly: for instance, a firm may buy a dominant position (*e.g.* a patent) at a price which is greater than the value of the future stream of profits. In *UBC* (para. 126) the Court rightly rejected the Commission's arguments that UBC's high accounting profitability was an indicator.

In *Roche* (paras. 48, 49, 54 and 55) the Court cited the large amounts of unused capacity held by Roche as an indicator of dominance. Economists draw an important distinction between " idle " capacity and " excess " capacity. " Idle " capacity is capacity whose incremental cost[36] of usage is greater than the ruling market price. " Excess " capacity is the opposite: the existence of excess capacity for a long period of time is clear evidence of monopoly power being exercised.[37] " Idle " capacity, in contrast, is observed in both competitive and uncompetitive industries. " Idle " capacity is usually a symptom of an unforeseen contraction in demand, or the advent of new firms or new technologies to an industry. " Idle " capacity is also observed in industries whose demand is cyclical. Distinguishing between " idle " capacity and " excess " capacity is almost impossible (because accounting data are inappropriate for this purpose) and, for this reason, economists are very wary indeed of drawing any direct connection between the existence of unused capacity and monopoly. The Court should also be wary.

Some economists argue that capacity of either an " idle " or " excess " nature can be a barrier to entry. They would argue that the existence of unused capacity could deter entry, as the entrant fears a price war rendering its investment unprofitable. If we look back to Case one, it can be seen that such a price war would be threatening if the entrant decided to enter with a plant whose size is less than the MES. But would it be threatening if the entrant came in with a plant of MES or larger? Probably not, for the argument tends to overlook the costs to the existing firm of conducting a price war. Because the entrant's costs are as low as those of the existing firm, it may be impossible for the existing firm to drive the entrant out. (If the existing firm uses operationally expensive idle capacity to flood the market with goods, then its costs may be greater than those of the entrant, who does not have to increase supply). For these reasons, most economists believe that only " excess " as opposed to " idle " capacity can act as a deterrent to entry. Some others hold a more extreme view, which is that entrants ignore unused capacity and enter in belief that the existing firm will not start a price war, but rather contract output to accommodate the entrant.[38] Therefore, in deciding whether unused capacity acts as a barrier to entry, the Court should proceed with great caution and, where possible, look at the facts: *a priori* reasoning is dangerous.[39]

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[36] Defined as additional costs of usage which include any additional opportunity costs of management time.
[37] The test for monopoly is that prices are greater than incremental costs and it is *not* that prices are greater than average, *i.e.* unit cost.
[38] See, for instance, F. Modigliani and F. M. Scherer (*op. cit.* note 16)
[39] J. S. McGee, " Predatory Price Cutting," *Journal of Law and Economics*,

Vertical integration: an indicator or an abuse?

In *UBC* (para. 122) the Commission alleged that vertical integration (including vertical contracts) was an indicator of UBC's dominance. The Court neither agreed nor disagreed with the Commission, but drew attention to the marked degree of ownership or control over the banana plantations, the packing stations, the transportation system (railways and ships), as well as a marketing network which included the advertised brand name "Chiquita." Economists usually argue that vertical integration does not increase existing barriers to entry.[40] For example, if I were to hold a patent for a wooden mousetrap, I could prevent anyone using such a mousetrap. Now, if I were to integrate vertically backwards into timber, could I increase the barriers to entry? The answer is clearly, no, unless there are barriers to entry to the timber trade. Economists usually argue that by integrating vertically, the barriers to entry are only added up and not multiplied.

Vertical integration nearly always accompanies monopoly, not because it raises barriers to entry, but because it gives the monopolist greater power to extract more favourable prices from its customers. A monopolist usually wishes to charge higher prices to those customers for whom its product has fewer substitutes. It cannot do this if its customers inter-trade. Vertical integration takes place to prevent inter-trading. For example, electricity generating companies own their own distribution systems (among other reasons) so that they can practice price discrimination between residential and commercial customers. When, in an early paragraph I stated that abuse can extend beyond the relevant market, I was referring to such a situation. It will not be long before the Court realises that vertical integration is not a method by which monopoly power is created, but rather a method by which monopoly profits can be extracted.[41] But, vertical integration although it accompanies monopoly, is not an indicator of monopoly. Many firms operating in competitive industries are vertically integrated because such actions bring greater control over quality of inputs or outputs, and because of other cost savings.[42]

Conclusions

In applying Article 86 EEC, the European Court has said on several occasions that it is necessary to examine the economic power of the undertaking concerned. For more than two hundred years, economists have been concerned with this difficult question. Their deliberations have revealed several points. *First*, dominance is only possible when there are barriers to

Vol. 1 (1958) discusses this whole issue very well in the context of predatory pricing and the Standard Oil Company.

[40] For instance, Stigler, Teece and Yamey. But A. Marshall (*op. cit* note 31), Book V xiv 9, suggested that vertical integration could retard the rate of entry.

[41] There is a huge literature on this subject. For a good compendium, see B. S. Yamey (ed.), *Economies of Industrial Structure* (Penguin, 1973).

[42] Vertical integration is often observed in competitive markets—it is often a means of exerting greater quality control over suppliers. Vertical integration can be a method of by-passing monopoly. See, for instance, Stigler *op. cit.* note 15. UBC may have vertically integrated so as to avoid the shipping conference cartels.

entry into the industry, and that the chief barrier is where the minimum efficient scale of operation is large compared to the market. *Secondly*, proof of dominance requires an analysis of all factors influencing the firm, and not just of the relevant market—because factors outside the relevant market may be very important. *Thirdly*, dominance is a concept which is related to time. It is not the power that a firm has in a short period (for most firms, large and small, have power in the short term) but the power that the firm has over a longer period. That power is the power to raise prices above supply costs without competition materialising. The longer time period should be defined as that period in which one would expect competition to materialise if it were not hindered or fettered either by actions of the existing firm, or by the nature and technology of the market.