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THE DEGREE OF MONOPOLY AND  
TRANSNATIONAL CORPORATIONS: SOME  
THEORETICAL AND EMPIRICAL ISSUES

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DECLARATION

No part of this thesis has previously been submitted to this or any other university for any degree.

Paper One is published in the International Journal of Industrial Organization, 1983. Papers Two and Four are Warwick Economic Research Papers, Numbers 233 and 238 respectively.

Paper Four was written jointly with Christos N. Pitelis, and is thus to be considered as 50% my own work.



## SUMMARY

The thesis presents four papers that begin to analyse transnational monopoly capitalism:

- (1) Paper One attempts to fill a gap in the literature by examining the impact of intra-firm imports (and exports) on the theoretical specification of the degree of monopoly. It shows that an industry's degree of monopoly need not fall when import penetration rises. United Kingdom car industry data is used to examine the bias in estimating the degree of monopoly when ignoring intra-firm imports.
- (2) Paper Two explores the conjectural variation model underlying such a theoretical specification. In particular, it criticises the model for saying little about the determinants of industry equilibrium. It suggests collusion amongst firms focusing on the possibility of joint profit maximisation be given the centre stage, and that equilibrium be analysed in terms of its deviation from the joint maximum, the deviation depending upon firms' retaliatory power, cost functions, and demand functions.
- (3) Paper Three considers another question arising in (1): why are there transnational corporations? It pursues a Marglinian analysis. A general theoretical framework based upon product market domination is developed, and one aspect of this - labour market domination - is taken up in theoretical and empirical detail. Particular emphasis is given to distributional as against efficiency considerations. Throughout, the analysis is compared to other approaches - for instance, internalisation.
- (4) Paper Four pursues the theory of the firm by taking up the fundamental issue of who controls firms. In contrast to existing literature, it criticises ex post analysis of share distributions, and uses a dynamic, historical framework in concluding that owners control firms. This is supported by examining recently reported empirical evidence. Consideration of the M-form organisation, and savings behaviour is used to further discriminate the analysis from managerialism and neoclassicism respectively.

PART ONE

INTRODUCTION: AIM AND FORMAT OF THE THESIS

Although there is a vast literature on transnational corporations - i.e. firms with production facilities in more than one country - their presence has not been analysed in any detail in the monopoly capitalism framework studied, for example, by Kalecki (1939), Baran and Sweezy (1966), and Cowling (1982a).

The aim of the work contained in this thesis is to begin the analysis of monopoly capitalism in a world where transnational corporations exist; i.e. to begin the analysis of transnational monopoly capitalism.

This beginning is contained in the four papers written, at least in their earlier versions, in the period October 1981 to September 1983, the period during which the author received an SSRC Ph.D. studentship. In Parts Two and Three, these papers are reproduced without alteration in their most recent versions, save for changes in references and layout, now the same throughout the thesis. They are its essence. Each is a distinct paper, and should be read as such. Their relationship is simply that they are all part of the general aim to analyse transnational monopoly capitalism. Most importantly, there is no attempt to explore the implications of one paper for another, other than in brief introductory comments to Parts Two and Three, and other than in the extent to which the papers

actually refer to each other. Any further analysis must await a subsequent treatment in future papers, or even in books - i.e. in forms readily accessible to interested persons. This represents the best use of scarce research time. The underlying philosophy is that if a point is worth making, it should be made in a form easily obtained by researchers and others.

The presentation of the papers in two parts of the thesis reflects the fact that two of the papers are primarily concerned with the specification of the degree of monopoly - albeit Paper Two is written in more general terms - whilst the remaining papers recognise the need for a detailed analysis of the theory of the firm if transnational monopoly capitalism is to be fully understood. Parts Two and Three both contain introductory comments summarising the papers and briefly stating why the analysis in question was undertaken.

PART TWO

THE SPECIFICATION OF THE DEGREE OF MONOPOLY

An obvious starting point for the analysis of transnational monopoly capitalism is to fill a clear gap in the existing literature. This is the concern of Paper One.

Kalecki (1939) shows that the functional distribution of income is a function of (among other things) the degree of monopoly. Moreover, recent literature has emphasised the formal derivation of a theoretical specification for the degree of monopoly. In a model of the closed economy, Cowling (1976) and Cowling and Waterson (1976) relate an industry's degree of monopoly to its Herfindahl index of concentration, degree of apparent collusion, and price elasticity of demand. International trade is introduced to the model by Lyons (1981a), allowing for imports from overseas corporations - i.e. firms which do not produce in the domestic market. However, as Cowling (1982a) has pointed out, this ignores the possibility of a transnational corporation engaging in domestic production and importing from its overseas affiliates.

The aim of Paper One is, using a simple model of production, and focusing on the functional distribution of income, to rectify this omission. A theoretical specification for the degree of monopoly allowing for intra-firm imports is formulated. Comparing the analysis with recent literature, it is shown that a rise in an industry's import penetration need not imply a fall in the degree of monopoly. Moreover, data for the United Kingdom new

motor car industry is used to assess the bias that results from ignoring intra-firm imports when estimating the degree of monopoly. It is also pointed out that an identical framework can be employed to analyse intra-firm exports.

In examining the formal derivation of a theoretical specification for the degree of monopoly, a crucial question arises, namely: what does the specification really mean? Concern with this question underlines Paper Two. The formal derivation uses a conjectural variation model to analyse industry equilibrium. Paper Two considers difficulties with such an analysis, and suggests an alternative.

In particular, the paper criticises the conjectural variation model for saying little about the determinants of industry equilibrium. It therefore examines more closely the behaviour underlying firms' actions. Collusion amongst firms focusing on the possibility of joint profit maximisation is brought to the centre of the stage. It is suggested that industry equilibrium be analysed in terms of its deviation from the joint profit maximum, the deviation depending upon firms' retaliatory power, cost functions, and demand functions. This is illustrated by examining the formal specification of a firm's price-cost margin.

None of this means to say that Paper One is worthless; it at least continues to fill a gap in the existing literature.



PAPER ONE

THE DEGREE OF MONOPOLY, INTERNATIONAL TRADE, AND  
TRANSNATIONAL CORPORATIONS.\*

\* Published in the International Journal of Industrial  
Organization, 1983.

An earlier version of this paper was presented at the  
ninth annual conference of the European Association for  
Research in Industrial Economics (EARIE), Leuven,  
September, 1982.

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## 1. INTRODUCTION

Kalecki (1939) shows that the share of national income accruing to the wage earning sector of the subordinate classes<sup>1)</sup> is a function of (among other things) the degree of monopoly (defined as the price-cost margin). Drawing upon a considerable body of literature, this approach has been extended in Cowling (1981) and (1982a).

Particularly important has been the formal derivation of a theoretical specification for the degree of monopoly. Cowling (1976), and Cowling and Waterson (1976) consider a closed economy and relate an industry's degree of monopoly to its Herfindahl index of concentration, degree of apparent collusion, and price elasticity of demand. Lyons (1981a) brings international trade into the model, allowing for imports from overseas corporations - i.e. firms which do not produce in the domestic market. However, as Cowling (1982a) indicates, this ignores the possibility of a transnational corporation, a firm which produces in more than one country, engaging in domestic production and importing from its overseas affiliates.

The importance of such trade is difficult to quantify, due to lack of data. Nevertheless, Panić and Joyce (1980) assert that the proportion of U.K. imports of manufactured goods coming from "related enterprises" may be similar to that estimated for the U.S.A., namely 50%.<sup>2)</sup> Detailed information is available for the U.K. new motor car industry; Table 1 shows, for example, that intra-firm trade by

TABLE 1. IMPORTS BY DOMESTICALLY PRODUCING TNC'S AS A PERCENTAGE OF TOTAL IMPORTED NEW REGISTRATIONS OF NEW CARS IN THE U.K., 1975-1978\*.

1975	1976	1977	1978
7.1	20.0	26.7	29.2

\* The category denoted "others" in the data are assumed to be imports by overseas corporations. The percentages reported are thus lower bounds.

Source: compiled from Tables 23 and 24 of SMMT (1979).

transnational corporations (TNC's) producing in the domestic (i.e. U.K.) market accounted for nearly 30% of U.K. imports in 1978. Clearly, the phenomenon is a significant characteristic of international trade.

Thus, ignoring intra-firm imports in the theoretical specification of the degree of monopoly is potentially a grave omission from the Kaleckian analysis. The aim of this paper is, in the context of a simple model, to rectify this omission and consider some implications for the analysis. The framework developed can also be used to analyse the phenomenon of intra-firm exports.

The structure of the paper is as follows. Section 2 outlines a model of production in an industry of profit maximising firms producing a homogeneous good. This is used in Section 3 to derive an expression for the degree of monopoly - the mathematical detail being relegated to an appendix - and hence for the functional distribution of income. Sections 4 and 5 highlight important aspects of the analysis by comparing it with previous work. Some conclusions are drawn in Section 6.

## 2. A MODEL OF PRODUCTION

Consider an industry characterised by four fundamental assumptions:

(1) each firm in the industry produces exactly the same product. Although product differentiation is often emphasised as an important characteristic of TNC's - see, for example, Caves (1971) - the homogeneity assumption is not altogether unrealistic, as illustrated in Table 2. For instance, in 1978 Ford imported 31.2% of its Fiesta and 22.4% of its Cortina ranges, while Leyland imported 16.7% of its Allegro model. Moreover, the cross elasticities of demand for separate models are likely to be significantly positive, making the homogeneity assumption a reasonable simplification at least for the motor car industry.

(2) each firm producing in the domestic market maximises its profit. This assumption is typically made throughout the Kaleckian analysis; it is justified in, for example, Cowling (1982a). The familiar condition for profit maximisation is that a firm equates its marginal costs of supply to a market with its perceived marginal revenue. I.e. firm  $r$  maximises profits in the domestic market when

$$C_r = f(Q) + Q_r \cdot \frac{df(Q)}{dQ} \cdot \frac{dQ}{dQ_r} \quad (1)$$

where:

TABLE 2. IMPORTS AS A PERCENTAGE OF TOTAL NEW REGISTRATIONS OF NEW CARS IN THE U.K., BY MODEL LINE, 1975-1978.

MODEL	1975	1976	1977	1978
MINI	0	0	0	7.4
ALLEGRO	0	0	4.6	16.7
HUNTER	0	0	50.0	98.0
ALPINE	100	81.0	9.1	0.3
FIESTA	-*	-*	0.3	31.2
ESCORT	0	7.3	9.0	13.8
CORTINA	0	0	1.6	22.4
CAPRI	0	20.9	100	100
GRANADA	0	40.1	100	100
CAVALIER	100	100	97.1	63.5

\* Fiesta not produced at all in these years.

Source: compiled from Tables 23 and 24 of SMMT (1979).

$C_r$   $\equiv$  firm  $r$ 's marginal cost of supplying the domestic market.

$Q_r$   $\equiv$  firm  $r$ 's total sales in the domestic market.<sup>3)</sup>

$Q$   $\equiv$  total industry sales in the domestic market.

$f(Q)$   $\equiv$  the inverse demand function in the domestic market.

The concept of perceived marginal revenue arises from the fact that  $dQ/dQ_r$  is firm  $r$ 's conjecture regarding the change in total domestic sales resulting from a marginal change in  $Q_r$ .

(3) the industry comprises four types of firm:

(a) importing TNC's - firms which produce by domestic and overseas production, and whose only involvement in international trade is to import into the domestic market.

(b) non-importing TNC's - firms which produce by domestic and overseas production, but which have no involvement in international trade, neither exporting from nor importing into the domestic market.

(c) domestic corporations - firms which only produce in the domestic market, and which have no involvement in international trade.

(d) overseas corporations - firms which only produce overseas, and which import into the domestic market.

(4) imports from overseas corporations are not controlled by domestic producers. As Cowling (1982a) points out, in reality domestic producers can control imports either by producing the imports themselves, or by having agency agreements with overseas corporations, but the latter possibility is not considered in this analysis. The purpose of this and the previous assumption is to focus attention on intra-firm imports. This should not be taken to imply that, for example, agency agreements are unimportant.

The remainder of this section considers in more detail production by domestic producers, namely: importing TNC's, non-importing TNC's, and domestic corporations.<sup>4)</sup> First of all, it is worthwhile specifying some notation. For the  $n$ th domestic producer, define:

$D_n$   $\equiv$  total domestic production

$M_n$   $\equiv$  overseas production for domestic sale.

The essence of an importing TNC is that it supplies the domestic market from plants located in the domestic and the overseas sectors. A firm supplying a market from several plants maximises profits when the marginal supply costs from each plant are identical, and equal to perceived marginal revenue. In terms of equation (1) (and denoting the typical importing TNC by an  $i$  subscript)  $C_i$  is the common value of the marginal costs of supplying the domestic market from domestic or overseas production. Moreover,  $Q_i$  comprises both the importing TNC's total domestic production,  $D_i$ , and its imports,  $M_i$ .



It is useful to consider a particular model of intra-firm trade. To simplify the analysis, without undermining any conclusions that will be drawn, assume:

(i) firm  $i$  has one plant in the domestic market and one plant overseas.

(ii) marginal production costs in each plant are inverse L shaped. Whilst this simplifies the analysis, it is in any case unrealistic only insofar as marginal production costs tend to be constant until near capacity working, when they rise rapidly - see, for example, Scherer (1980).

(iii) marginal non-production costs associated with imports - for instance, tariff and transport costs - are constant.

(iv) the TNC satisfies its overseas demand with excess capacity remaining in its overseas production facilities. This will be given greater consideration in due course.

(v) the TNC faces a linear downward sloping marginal revenue curve in its overseas market. Locally at the point where overseas demand is satisfied, the downward slope is implied by profit maximisation: given assumptions (ii) and (iv), if the marginal revenue curve is upward sloping, profits could be increased by increasing overseas sales. The assumption of linearity is made merely for simplicity.

Two possibilities are of interest. The first is depicted

in Figure 1 where, for firm  $i$ :

$MC_D$  = the marginal cost of supplying the domestic market from domestic production.

$MC_M$  = the marginal cost of supplying the domestic market from overseas production.

$MC$  = the marginal cost of supplying the domestic market.

If, for example,  $i$ 's perceived marginal revenue is such that it sells  $OC$  in the domestic market, both domestic and overseas plants are operated at full capacity, producing  $OA$  and  $AC$  respectively for domestic sale. Sales exceeding  $OC$  are obtained at the expense of sales overseas. Beyond  $OC$  the marginal cost of supplying the domestic market is upward sloping because of assumption (v), which implies that the marginal revenue foregone in not making a sale overseas (i.e. the marginal cost of supplying the domestic market) is increasing. Total capacity of domestic and overseas plant is given by  $OJ$ .

Long run considerations suggest domestic sales will be less than  $OC$ . Firm  $i$  will be uneasy diverting sales from its overseas to its domestic market because rivals may construe this as a willingness by  $i$  to reduce its overseas market share, which may be detrimental to long run profit maximisation if  $i$ 's rivals consequently attempt to increase their overseas market share. In addition, arguments made in Cowling (1982a) regarding entry deterrence and, following

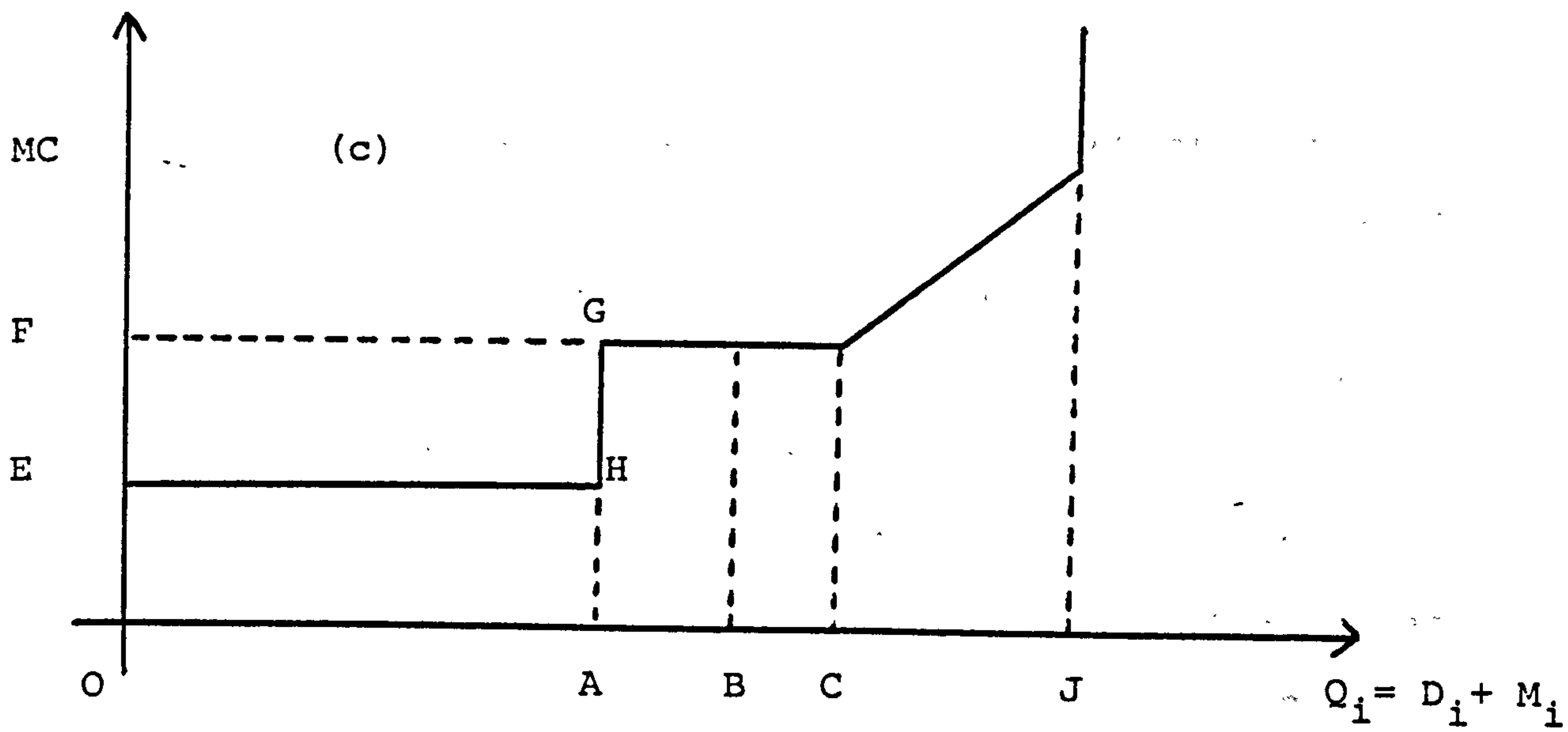
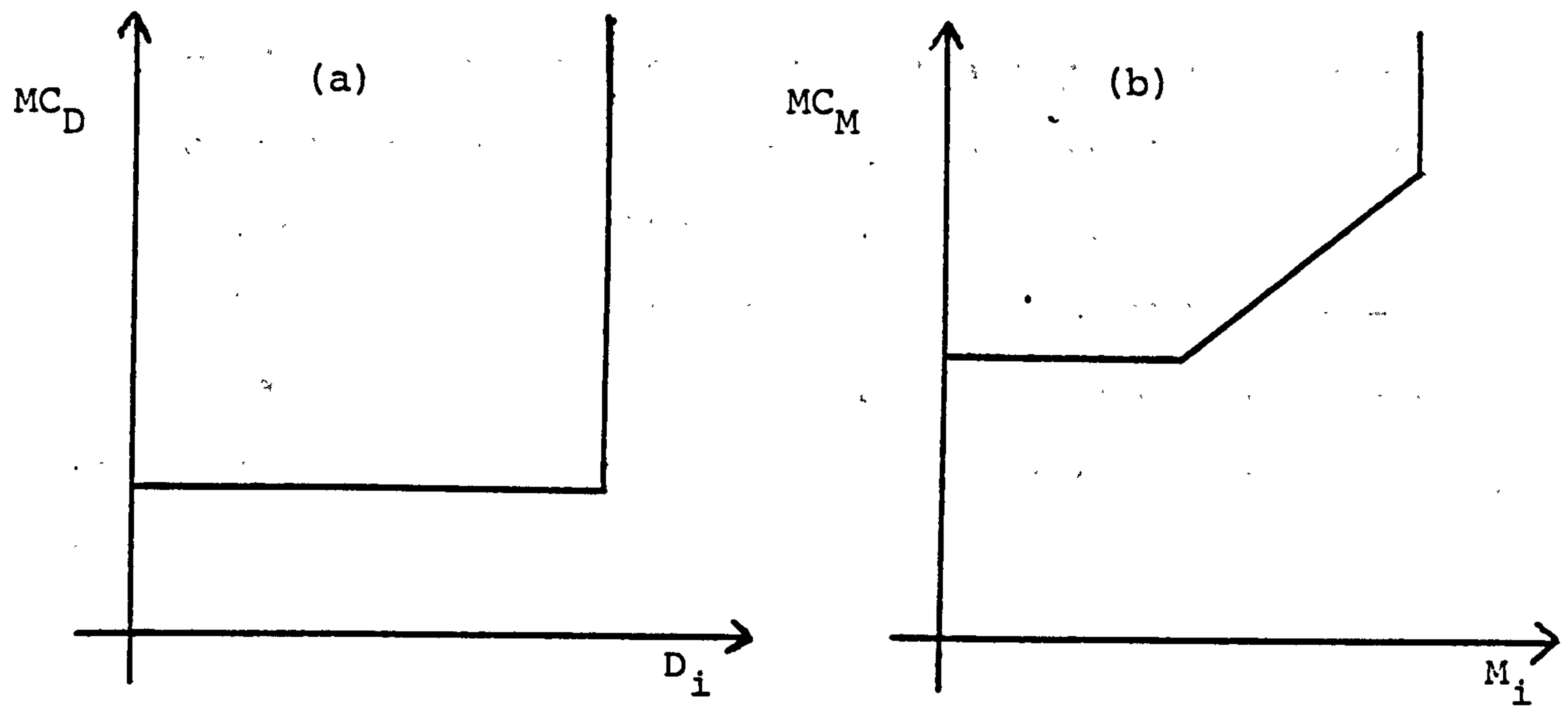


FIGURE 1: THE COST CONDITIONS FACING AN IMPORTING TNC :  
CASE I.

Chenery (1952), optimal investment strategy in a world of scale economies and growing demand, suggests that the TNC will desire excess capacity somewhere in its production empire. Given the definition of an importing TNC, a firm faced by a case I cost configuration will always hold this excess capacity overseas (thereby justifying assumption (iv), above).

Thus it is reasonable to expect  $i$ 's perceived marginal revenue in the domestic market to be such that, for example, total domestic sales are given by  $OB$ . Domestic plant will then operate at full capacity, supplying  $OA$  to the domestic market, whilst overseas plant will operate with excess capacity and supply  $AB$ .

The second possibility of interest is depicted in Figure 2, which should be interpreted similarly to Figure 1. At less than full capacity working in each plant, marginal supply cost from domestic production is now higher than that from overseas production, at least up to a certain level of imports. The arguments regarding entry deterrence, optimal investment strategy, and excess capacity suggest that sales can reasonably be expected to be, for example,  $OC$ . In this case, overseas plant operates at full capacity, supplying  $OB$  to the domestic market, whilst the excess capacity is in the domestic plant, used to supply  $BC$ . Of the quantity imported,  $AB$  is diverted from overseas sales. If long run considerations mean the firm is reluctant to divert sales from overseas,  $AB$  will tend to zero - i.e. the long run marginal opportunity cost of supplying the domestic market

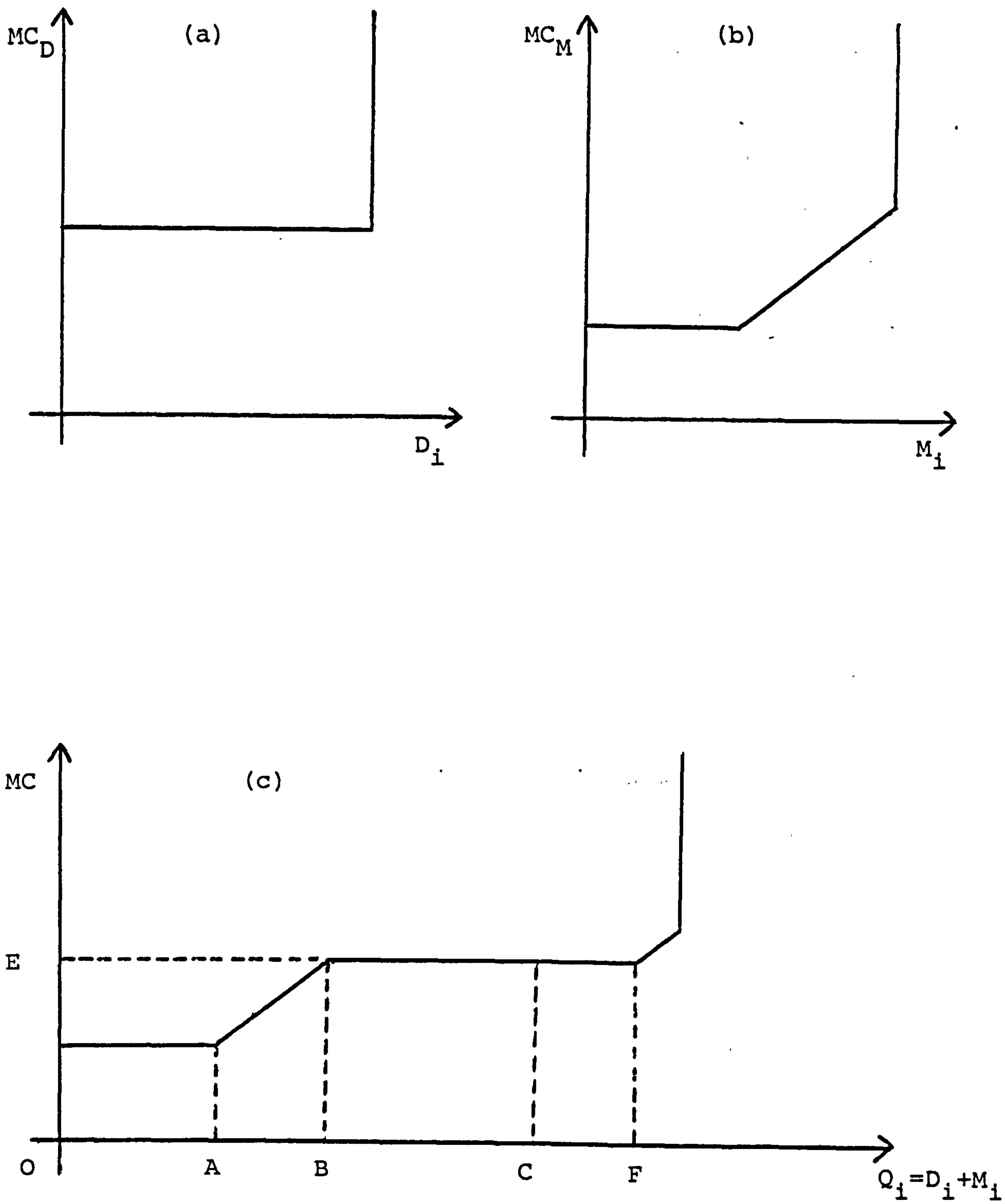


FIGURE 2: THE COST CONDITIONS FACING AN IMPORTING TNC:  
CASE II.

from overseas production tends to infinity once overseas production reaches full capacity. In this situation, the TNC will only import if it has satisfied overseas demand with excess capacity remaining in its overseas plant (thereby justifying assumption (iv), above). If, however, the firm is not reluctant to divert sales from overseas, importing does not require excess capacity in the overseas plant once overseas demand has been satisfied.

In reality, either of the cost situations depicted in these two cases might be observed. For instance, reserves of cheap labour in "less developed" countries suggests marginal production costs overseas will be less than in the U.K., but once marginal non-production costs associated with imports are taken into account, this need not be true of marginal supply costs to the U.K. - Chandler (1980), for example, suggests that, historically, transportation costs have been an important factor. Moreover, marginal production costs are determined by productivity as well as wage rates. The nationality of a TNC is particularly important in this respect; a firm will face higher marginal costs in an unfamiliar environment because, for example, it has no experience of the best way to control, supervise, and therefore exploit local labour - see, for instance, Aharoni (1966) and Hymer (1960). In addition, "developed" as compared to less developed countries can offer firms positive externalities arising from their superior infrastructure - for example, a good health service should enable firms to extract more work from their employees.

It is similarly impossible to determine, ex ante, which cost configuration is most likely when a TNC is producing in two developed countries. Relative labour costs, familiarity with environment, and externalities must again be weighed against each other.

In the long run, it could be argued that TNC's will supply the domestic market entirely from the area with the lowest supply cost, by increasing the latter's capacity. But this ignores the global character of TNC domination; marginal supply cost, for instance, may be lower for overseas (domestic) production precisely because there is also domestic (overseas) production. This is clearly seen in the way Ford have threatened to switch production overseas unless domestic productivity improves - see CIS (1978). There are also potentially grave risks in a TNC locating production entirely in one country - for instance, the imposition of import tariffs may leave it in a very vulnerable position compared to its rivals.

The second type of firm to consider is a non-importing TNC. In terms of equation (1) (and denoting the typical firm by a  $j$  subscript)  $C_j$  is the firm's marginal costs of domestic production, and  $Q_j$  simply the firm's total domestic production ( $D_j$ ). Assuming inverse L shaped marginal production costs,  $j$  can reasonably be expected to produce, for example, OA in Figure 3 (which should be interpreted similarly to Figures 1 and 2).

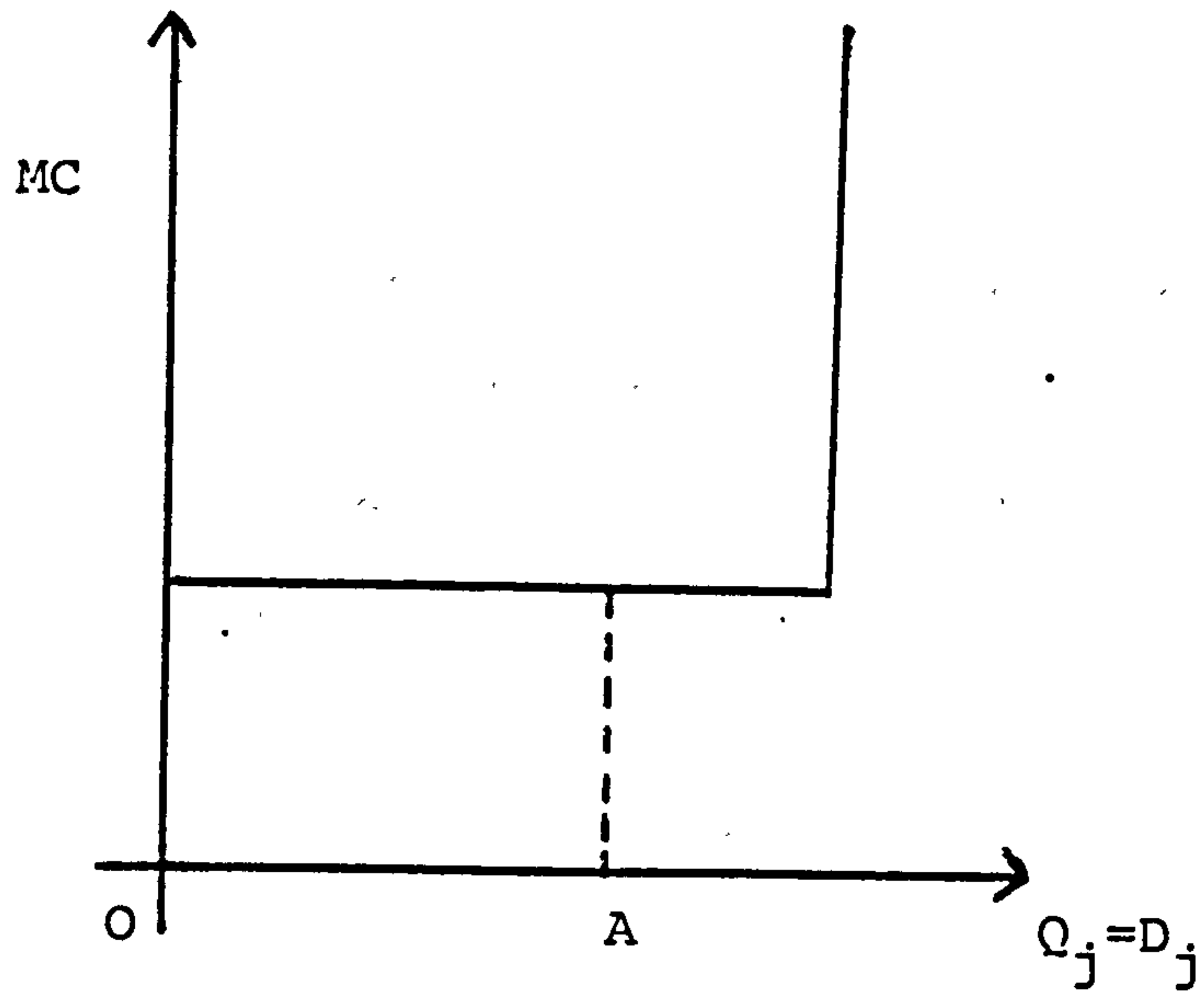


FIGURE 3: THE COST CONDITIONS FACED BY A NON-IMPORTING TNC.



The presence of excess capacity can be justified using the arguments put in Cowling (1982a). It should be noted that reliance on the Chenery (1952) analysis implicitly assumes a growing domestic demand to be satisfied from domestic production, which excludes, for example, a growing domestic demand which the firm intends to satisfy by becoming an importing TNC. As regards entry deterrence, all that is really necessary is that the TNC has spare capacity somewhere in its empire, and that its threat to use this to increase domestic market sales is credible. However, excess capacity in domestic production is, prima facie, a more credible deterrent than spare capacity overseas for a firm serving the domestic market entirely from domestic production.

What prevents non-importing TNC's from engaging in international trade? Importing TNC's trade because domestic capacity is insufficient to satisfy domestic demand, or because marginal supply costs from overseas are less than from domestic production. It is feasible that other TNC's face different conditions, for example: investment decisions may have differed across TNC's in the past, giving different capacity constraints, or it could be that marginal non-production import costs are much higher for some firms than for others, for instance because some have access to cheap shipping facilities.

Similarly, not all firms need be transnational. For example, it may not be worthwhile for a firm to produce overseas because it cannot get access to the cheap labour

used by rivals, perhaps due to government interference. Firm organisation and management capacity are particularly relevant; heterogeneous management quality may make overseas operations by some firms especially costly, for instance - see Aharoni (1966), and Hymer (1975).

Production by a non transnational firm, i.e. by a domestic corporation, can also be represented by Figure 3. In this case, entry deterrence and optimal investment strategy arguments provide clear justification for the holding of excess capacity. In terms of equation (1) (and denoting the typical domestic corporation by a  $k$  subscript)  $C_k$  is the firm's marginal production cost in the domestic market, and  $Q_k$  the firm's total domestic production (i.e.  $Q_k = D_k$ ).

3. THE DEGREE OF MONOPOLY AND THE FUNCTIONAL DISTRIBUTION OF INCOME

The task now is to use the model of production outlined in Section 2 to obtain a theoretical specification for the degree of monopoly, and to consider, in the light of the model, how this can be used to analyse the functional distribution of income.

Based upon equation (1), the following expression for the degree of monopoly is derived in the Appendix for an industry of N firms involved in domestic production:

$$\mu = \frac{\alpha}{\eta} + \frac{[1-\alpha]}{\eta} \cdot T \cdot \left[ \frac{D+M_{TNC}}{D+M} \right] \quad (2)$$

where:

$$\mu \equiv \frac{\sum_{n=1}^N [f(Q) - C_n] \cdot D_n}{f(Q) \cdot D} \equiv \text{the industry's (weighted average) degree of monopoly.}$$

$$T \equiv \sum_{n=1}^N \frac{D_n}{D} \cdot \left[ \frac{D_n + M_n}{D + M_{TNC}} \right]$$

$\alpha$   $\equiv$  the industry's (weighted average) conjectural elasticity

$\eta$   $\equiv$  the absolute value of the industry's domestic price elasticity of demand

D  $\equiv$  total domestic production in the industry

$$\equiv \sum_{n=1}^N D_n$$

$M_{TNC}$   $\equiv$  total imports by importing TNC's<sup>5)</sup>  $\equiv \sum_{n=1}^N M_n$

$M$   $\equiv$  total imports in the industry.

Equation (2) is discussed in greater depth in the following two sections. For the moment, simply consider the definition of  $\mu$ , the degree of monopoly. The denominator of  $\mu$  is the total revenue obtained by the industry from domestic production. As for the numerator, consider each type of domestic producer in turn:

(a) from Figure 3, for the  $j^{\text{th}}$  non-importing TNC,  $[f(Q) - C_j] \cdot D_j$  is the profit from and fixed costs of domestic production, because the firm produces where marginal cost equals average variable cost.

(b) for the  $k^{\text{th}}$  domestic producer,  $[f(Q) - C_k] \cdot D_k$  is similarly the profit from and fixed costs of domestic production.

(c) for importing TNC's, the position is more complicated. For a firm facing a case II cost configuration,  $[f(Q) - C_i] \cdot D_i$  is again the profit from and fixed costs of domestic production, but under a case I situation,  $[f(Q) - C_i] \cdot D_i$  understates these profits and fixed costs because marginal cost exceeds the average variable cost of domestic production.

Therefore,  $\mu$  is the lower bound on the share of profit ( $\Pi$ ) from and fixed costs ( $F$ ) of domestic production in the total revenue ( $R$ ) obtained from domestic production:

$$\mu \leq \frac{\Pi+F}{R} \quad (3)$$

Following Cowling and Molho (1982), define Y as the industry's value added in domestic production, and W as the industry's wage bill. Then, assuming marginal production costs comprise solely raw material and wage costs, (3) can be rearranged:

$$\mu \cdot \frac{R}{Y} \leq \frac{Y-W}{Y}$$

I.e.

$$\frac{W}{Y} \leq 1 - \mu \cdot \frac{R}{Y} \quad (4)$$

The share of value added generated by domestic production accruing to the wage earning sector is thus a function of  $\mu$  and  $R/Y$ .

4. A COMPARISON WITH PREVIOUS ANALYSES: I

In this and the following section, a comparison with previous work is used to highlight important aspects of the analysis presented in Section 3.

Cowling (1982a) considers the case in which there are no imports from overseas corporations. In such a situation, equation (2) can be rewritten:

$$\mu = \frac{\alpha}{\eta} + \frac{[1-\alpha]}{\eta} \cdot T \quad (5)$$

In contrast, Cowling (1982a) examines the result<sup>6)</sup>:

$$\mu' \equiv \sum_{n=1}^N \frac{[f(Q) - C_n] \cdot [D_n + M_n]}{f(Q) \cdot [D_n + M_n]} = \frac{\alpha'}{\eta} + \frac{[1-\alpha']}{\eta} \cdot H_{DM} \quad (6)$$

where

$$H_{DM} \equiv \sum_{n=1}^N \left[ \frac{D_n + M_n}{D + M} \right]^2 \equiv \text{the Herfindahl index of concentration defined over total industry sales.}$$

The essential difference between these results is that the Cowling (1982a) analysis refers to the degree of monopoly defined over domestic sales, whereas (5) refers to the degree of monopoly defined over domestic production. As is clear from Section 3, the output over which the degree of monopoly is defined determines the definition of "income" in an analysis of income distribution; equation (5) focuses upon

the income of a country, whereas (6) emphasises the income from a given product, no matter where it is produced. Although both are of interest, the emphasis of the Kaleckian analysis upon class struggle suggests that equation (5) has more use.

The practical difficulties facing subordinate classes attempting to confront their dominant counterparts on a world scale are immense. Of necessity, the class struggle is fought at the level of a particular country. This is not to say that the class struggle can be understood by ignoring occurrences elsewhere in the world. On the contrary, the domination of transnational capital is, in its very nature, global, and can only be understood as such. Imperialist domination of less developed countries, for example, can run hand in hand with the de-industrialisation of more "advanced" countries - see, for instance, Hymer (1975).

This suggests a need to define a relationship concerning the distribution of total domestic production, but with the relationship being understood and interpreted within a global framework.

Concern with a country's income, rather than the income from a given product, has two implications for the theoretical specification of a degree of monopoly. Firstly, the weights used in the industry's weighted average conjectural elasticity vary in the two situations; thus,  $\alpha$  differs from  $\alpha'$ . Nevertheless, both  $\alpha$  and  $\alpha'$  capture the conjectural elasticities, and can be interpreted as a degree of apparent

collusion - see Cowling (1981a), and Cubbin (1975). Secondly, the Herfindahl concentration index is replaced by the index  $T$  in the theoretical specification.  $T$  is also an index of sales concentration.

In general, very low values of  $T$  imply that

(a) every domestic producer has a very small share in domestic production for domestic sale, or

(b)  $M_{TNC}$  is very large compared to  $D$ , and those firms with a large share in domestic production for domestic sales have a very small share in imports by importing TNC's.

High values of  $T$  suggest

(a) each of (at most) a few importing TNC's have a very large share in both domestic production for domestic sale, and in imports by importing TNC's, or

(b)  $M_{TNC}$  is very small compared to  $D$ , and each of (at most) a few corporations dominate domestic production for domestic sale.

However, examination of the changes in  $T$  across and within industries is the only way of fully understanding the index - no attempt at such an examination has been made.



An analysis of the distribution of a country's income should also encompass export production, excluded from the model in Section 2 by assumption. The reason for this exclusion is because exports add no theoretical difficulties. Similarly to the way in which an expression for  $\mu$  was obtained, in a model containing exports, profit maximising conditions for the overseas market can be used to obtain a formulation for  $\rho$ , a weighted average of firms' price-cost margins in the overseas market, where the weights are each firm's export share. Following Lyons (1981a) and, for simplicity, assuming constant marginal costs of supply:

$$\frac{\Pi+F}{f(Q) \cdot D+r \cdot X} = \mu \cdot \left[ \frac{f(Q) \cdot D}{f(Q) \cdot D+r \cdot X} \right] + \rho \cdot \left[ \frac{r \cdot X}{f(Q) \cdot D+r \cdot X} \right] \quad (7)$$

where  $r$  is the equilibrium price in the overseas market, and  $X$  is total exports from the domestic market.

5. A COMPARISON WITH PREVIOUS ANALYSES: II

Consider now the analysis in Lyons (1981a), which concerns the derivation and empirical estimation of a theoretical specification for the degree of monopoly. The analysis assumes all imports are from overseas corporations, in which case equation (2) becomes:

$$\mu = \frac{\alpha}{\eta} + \frac{[1-\alpha]}{\eta} \cdot H \cdot \frac{D}{[D+M]} \quad (8)$$

Had Lyons (1981a) used conjectural elasticities rather than total conjectural variation parameters, the result would have been equation (8). Thus, as regards imports in a homogeneous good industry, the difference between the analysis of Section 3 and that of Lyons (1981a) is in the role played by intra-firm imports; no less should have been expected.

Nevertheless, there are important implications arising from the introduction of intra-firm imports. Consider first the consequences of an increased import penetration.

A conclusion drawn in Lyons (1981a) is that "a ceteris paribus increase in import penetration leads to an unambiguous decrease in potential profitability", i.e. to a fall in  $\mu$ . It does indeed follow from equation (2) that a ceteris paribus rise in imports by overseas corporations - the only type of imports examined by Lyons (1981a) - leads to an unambiguous fall in  $\mu$ <sup>7)</sup>. It must be explained however, that this only refers to ceteris paribus changes. In the model of production outlined in Section 2, an overseas corporation

is assumed to maximise profits. As shown in equation (1), for firm  $g$ , the typical overseas corporation, profit maximisation in the domestic market requires:

$$C_g = f(Q) + M_g \cdot \frac{df(Q)}{dQ} \cdot \frac{dQ}{dM_g} \quad (9)$$

where  $M_g$  is firm  $g$ 's imports into the domestic market. A change in  $M$  implies an alteration in the exogenous variables underlying equation (9), for example a change in  $g$ 's marginal supply costs. But to the extent that conjectural elasticities depend upon a rival's costs, this implies a change in the conjectural elasticities held by domestic producers, and hence possible changes in  $Q_n$ . Acute difficulties can arise in determining the new equilibrium resulting from such changes, difficulties which will not be confronted here; suffice it to point out that the conclusion reached in Lyons (1981a) does not claim that any increase in import penetration resulting from an increase in imports by overseas corporations will necessarily imply a fall in  $\mu$ .

Similar problems can arise when considering changes in  $M_{TNC}$ . The relationship given by equation (2) is derived from profit maximising conditions for domestic producers. These conditions also determine each firm's domestic production and imports, meaning that neither  $D$  nor  $M_{TNC}$  are exogenous variables in the model. Despite this, it can still be shown that a rise in import penetration may cause a rise in  $\mu$ .

Consider firm  $i$ , an importing TNC characterised by costs as depicted in case II, above. Suppose marginal supply costs to the domestic market are initially given by the unbroken line in Figure 4. If marginal supply costs from overseas production are now reduced, marginal supply costs to the domestic market are given by the curve EFDGHJ.

This cost change will not alter  $i$ 's perceived marginal revenue. Crucial to this outcome is the fact that  $C_i$  is unchanged; to the extent that  $i$ 's rivals hold conjectural elasticities determined by  $i$ 's costs,  $C_i$  is the important parameter because, in equilibrium, this is  $i$ 's marginal cost of supplying the market.

Although  $i$ 's total domestic sales are unchanged, imports rise at the expense of domestic production for domestic sale by the amount CD. Import penetration has increased. (This implies a willingness by  $i$  to divert sales from its overseas market, otherwise BC and FD would be vertical and CD zero. However, without such a willingness, marginal production costs which rise sharply but not vertically as overseas output reaches full capacity would still give rise to a non-zero CD.)

The consequent change in  $\mu$  is given:

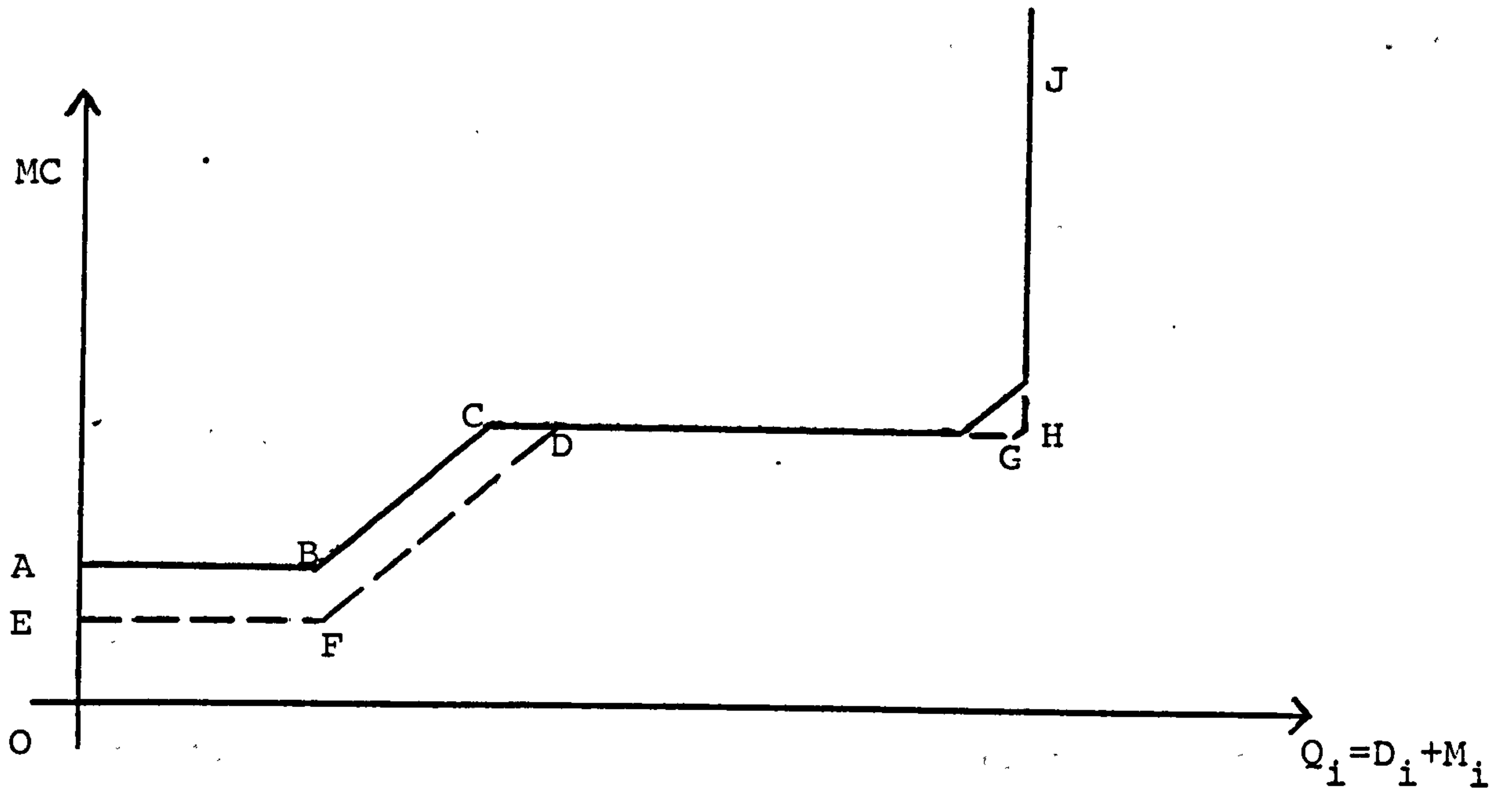


FIGURE 4: INCREASED IMPORT PENETRATION IN A CASE II COST SITUATION.

$$\begin{aligned}
 d\mu \cdot \begin{cases} \text{PRODUCT PRICE} \\ C_n \quad \forall n = 1, \dots, N \\ D_n \quad \forall n \neq i \end{cases} &= \frac{\partial \mu}{\partial D_i} \cdot dD_i \\
 &= - \left[ \frac{f(Q) \cdot D \cdot C_i - f(Q) \cdot \sum_{n=1}^N C_n \cdot D_n}{[f(Q) \cdot D]^2} \right] \cdot dD_i \\
 &= \left[ \frac{\sum_{n=1}^N C_n \cdot D_n - C_i \cdot D}{f(Q) \cdot D^2} \right] \cdot dD_i \quad (10)
 \end{aligned}$$

Given  $dD_i < 0$ , the condition for  $\mu$  to rise is:

$$\sum_{n=1}^N C_n \cdot D_n < C_i \cdot D \quad (11)$$

This requires that firm  $i$  has high marginal supply costs relative to its rivals. If, for example,  $i$  is a TNC with overseas nationality, this is quite possible.

Thus, a rise in import penetration in an industry can be accompanied by a rise in the degree of monopoly. It can at least be concluded that the picture presented in Lyons (1981a) is not complete.

Introducing intra-firm imports into the analysis also has important consequences as regards estimating the level of the degree of monopoly, as can be illustrated by examining the U.K. new motor car industry.

The first problem is to determine a measure of the bias in the Lyons (1981a) analysis. Consider the term  $\theta_n$ , defined:

$$\theta_n \equiv \frac{[f(Q) - C_n] \cdot D_n}{f(Q) \cdot D}$$

As  $\mu$  is the sum of  $\theta_n$  over all  $n$ , errors in estimating  $\theta_n$  imply errors in estimating  $\mu$ . It can be shown that use of the Lyons (1981a) analysis may imply significant underestimates in  $\theta_n$ .

From equation (1), the typical domestic producer in the model outlined in Section 2 profit maximises when

$$f(Q) - C_n = -Q_n \cdot \frac{df(Q)}{dQ} \cdot \frac{dQ}{dQ_n} \quad (12)$$

In the Lyons (1981a) analysis, the typical firm profit maximises when

$$f(Q) - C_n = -D_n \cdot \frac{df(Q)}{dQ} \cdot \frac{dQ}{dD_n} \quad (13)$$

The terms  $dQ/dQ_n$  and  $dQ/dD_n$  in equations (12) and (13) respectively are effectively identical, given the homogeneous good assumption (and can be denoted by  $\phi$ ); each represents firm  $n$ 's conjecture regarding the effect on total sales of a marginal change in firm  $n$ 's sales.

Define:

$\theta_n^S$   $\equiv$  the value of  $\theta_n$  calculated by using equation (12)

$\theta_n^L$   $\equiv$  the value of  $\theta_n$  calculated by using equation (13)

Then,

$$\theta_n^S = Q_n \cdot \left[ \frac{-D_n}{f(Q) \cdot D} \cdot \frac{df(Q)}{dQ} \cdot \phi \right] \quad (14)$$

and

$$\theta_n^L = D_n \cdot \left[ \frac{-D_n}{f(Q) \cdot D} \cdot \frac{df(Q)}{dQ} \cdot \phi \right] \quad (15)$$

The arguments put throughout this paper imply that (14) is an accurate measure of  $\theta_n$ ; i.e.  $\theta_n = \theta_n^S$ .

From (14) and (15), the proportionate error that results from calculating  $\theta_n$  by using the Lyons (1981a) analysis rather than (14) is given by  $\sigma_n$ , defined:

$$\sigma_n \equiv \frac{Q_n - D_n}{Q_n} = \frac{M_n}{D_n + M_n}$$

I.e. the Lyons (1981a) analysis underestimates  $\mu$  by  $\sigma_n \cdot 100\%$ ; for all except importing TNC's,  $M_n = \sigma_n = 0$ , but for importing TNC's,  $\sigma_n > 0$ .

The consequent error in calculating  $\mu$  is  $\epsilon \cdot 100\%$ , where

$$\epsilon \equiv \frac{\sum_{n=1}^N \sigma_n \cdot \theta_n}{\sum_{n=1}^N \theta_n}$$

In practice,  $\theta_n$  cannot be calculated from  $\theta_n^S$  because, for example,  $\phi$  is unknown. If reliable, alternative estimates of  $\theta_n$  are unavailable, it is useful to consider the range of values that  $\epsilon$  may take. Define:



$\sigma_{\text{MIN}}$   $\equiv$  the minimum value of  $\sigma_n$ , over all  $n=1,2,\dots,N$ .

$\sigma_{\text{MAX}}$   $\equiv$  the maximum value of  $\sigma_n$ , over all  $n=1,2,\dots,N$ .

Then,

$$\sigma_{\text{MIN}} \leq \varepsilon \leq \sigma_{\text{MAX}} \tag{16}$$

Table 3 reports values of  $\sigma_n \cdot 100$  for new registrations of new cars produced by the four major domestic manufacturers in the U.K. car industry.<sup>8)</sup> From (16), the Lyons (1981a) analysis would lead to an underestimate of  $\mu$  by 4-37% in 1978, 0-40% in 1977, 0-34% in 1976, and 0-17% in 1975. The lower bound in each year is due to the low level of Leyland's cars that are imported; apart from Ford in 1975, the percentage of total domestic sales imported by the remaining producers is consistently very high.

Care must be taken in attempting to be more specific than this because accurate calculation of  $\theta_n$  is impossible. The obvious candidate for consideration is the estimation of  $\theta_n$  by the ratio of firm  $n$ 's profit from and fixed costs of domestic production for domestic sale - see Section 3. However, this is impossible. Cars are not the only goods produced by firms involved in the car industry - in particular, commercial vehicles are important - yet published profit and turnover data refers to all activities by a company. Moreover, fixed costs of domestic production for domestic sale cannot be measured because each firm also has substantial exports - domestic production for overseas sale - and, indeed, company specific data on all fixed costs is unavailable.

TABLE 3:  $\sigma_n \cdot 100$  IN THE U.K. NEW CAR INDUSTRY, 1975-1978.

YEAR	CHRYSLER	FORD	GENERAL MOTORS	LEYLAND
1975	17.8	0.2	10.8	0
1976	28.7	8.9	34.8	0
1977	18.8	25.4	40.9	0.8
1978	11.7*	35.2	37.2	4.2

\* Where the production source is unspecified, it is assumed to be domestic. The only occasion on which this could be significant is for Chrysler in 1978. This figure is thus only a lower bound.

Source: compiled from data on new registrations of new cars in Tables 23 and 24 of SMMT (1979).

Nevertheless, ignoring these difficulties, it is worth examining the crude approximations to  $\theta_n$  - and hence  $\mu$  and  $\epsilon \cdot 100$  - reported in Table 4. The estimates were obtained from data relating to all activities of four companies:

- (a) BL LTD., the holding company ultimately responsible for the production and distribution of Leyland vehicles worldwide.
- (b) Chrysler United Kingdom Ltd., (during the period 1975-1978) a subsidiary of the U.S. based Chrysler Corporation, but with its own subsidiaries outside the U.K. in Eire. Responsible for the production and distribution of Chrysler vehicles in the U.K.
- (c) Ford Motor Co. Ltd., a subsidiary of the Ford Motor Co. of U.S.A., and also with its own subsidiaries in Eire. Responsible for the production and distribution of Ford vehicles in the U.K.
- (d) Vauxhall Motors Ltd., a subsidiary of the US based General Motors Corporation and responsible for the production and distribution of Vauxhall and Bedford vehicles in the U.K.

For each company, data was obtained from EXTEL regarding gross pretax profit, interest payments, turnover, and total employment. The latter statistic was used to

approximate the fixed costs of each company not covered by gross pretax profit and interest. These "other fixed costs" were estimated by the multiple of:

- (i) the ratio of company employees to total employees in the U.K. motor vehicle manufacturing industry, and
- (ii) total payments by the U.K. motor vehicle manufacturing industry for "non-industrial services" (including the rent on buildings, hire of plant, bank charges, and advertising costs), motor vehicle licensing, rates (but excluding water rates), and salaries (defined as the wages and salaries of administrative, clerical, and technical employees).

This method of calculating "other fixed costs" is based upon the view that fixed costs are proportional to a firm's total number of employees; it is clearly a very crude approximation.

The reported values of  $\theta_n$  in Table 4 are given by the ratio, for each company respectively, of gross pretax profit, interest payments, and "other fixed costs" to the total turnover of all four companies.

The evidence in Table 4 suggests that errors in estimating  $\theta_n$  for Leyland and Ford will be the most important determinant of errors in estimating  $\mu$  - for Chrysler and

TABLE 4. APPROXIMATIONS TO  $\theta_n$ ,  $\mu$ , AND  $\epsilon \cdot 100$  FOR THE U.K.  
NEW CAR INDUSTRY, 1975-1978.

YEAR	$\theta_n$				$\mu$	$\epsilon \cdot 100$
	CHRYSLER	FORD	GENERAL MOTORS	LEYLAND		
1975	0.005	0.044	0.014	0.072	0.135	1.84
1976	0.001	0.059	0.013	0.092	0.165	6.10
1977	0.006	0.073	0.011	0.077	0.167	14.84
1978	0.008	0.069	0.014	0.079	0.170	19.85

Source: compiled from EXTEL and Census of Production data

General Motors, the estimate of  $\theta_n$  is small throughout the period considered. Together with the information in Table 3, this implies that the Lyons (1981a) analysis would provide fairly accurate estimates of  $\mu$  in 1975, when  $\sigma_n \cdot 100$  is zero and 0.2 for Leyland and Ford respectively, but that the analysis would cause increasingly significant underestimation throughout the remaining years considered. Values of  $\sigma_n \cdot 100$  of 4.2 and 35.2 for Leyland and Ford respectively in 1978 suggest that the underestimation in that year could be very large.

This is as firm a conclusion as can confidently be reached using the available data, because estimates of any bias are themselves liable to significant error. Nevertheless, estimates of  $\epsilon \cdot 100$  calculated from the approximations to  $\theta_n$  are also given in Table 4, and reflect the conclusions drawn in the previous paragraph.

## 6. CONCLUSIONS

It is clear that the phenomenon of intra-firm imports is an important influence on the degree of monopoly in certain industries at certain times. This paper provides a framework for analysing the phenomenon. Moreover, as indicated in Section 4, an identical framework can be used to accommodate intra-firm exports.

A characteristic of the analysis highlighted earlier and requiring emphasis is that when imports by importing TNC's are insignificant, equation (2) effectively reduces to the relationship presented in Lyons (1981a). Given that the Lyons (1981a) analysis leads to considerable underestimates of  $\mu$  when imports by importing TNC's are significant, there is nothing to lose and much to gain from incorporating intra-firm imports into the model.

Equally as important is the demonstration in Section 5 that a rise in an industry's import penetration can be accompanied by a rise in its degree of monopoly.

This is not to claim that the model presented in this paper is an adequate framework for explaining the intra-firm trade phenomenon in all cases. In particular, further work is needed to understand long run conditions more fully, and an analysis of differentiated products may, in some instances, yield more fruitful conclusions and greater understanding. For example, in an industry of differentiated products, the requirement that full capacity working be

observed somewhere in the importing TNC's empire is unlikely to apply. Despite these qualifications, the model is a reasonable starting point.



APPENDIX

Suppose  $N$  firms are engaged in domestic production. The behaviour of the typical firm, firm  $n$ , is given by equation (1), which implies:

$$C_n = f(Q) + Q_n \cdot \frac{df(Q)}{dQ} \cdot \frac{dQ}{dQ_n} \quad (A1)$$

Following Cowling and Waterson (1976),

$$\frac{dQ}{dQ_n} = 1 + \sum_{q \neq n} \frac{dQ_q}{dQ_n} + \sum_{g=1}^G \frac{dM_g}{dQ_n} \quad (A2)$$

where  $M_g$  is the imports by the  $g^{\text{th}}$  overseas corporation,  $g = 1, 2, \dots, G$ .

Similarly to Clarke and Davies (1982) and Dixit and Stern (1982), define:

$\beta_{nq} \equiv \frac{dQ_q}{dQ_n} \cdot \frac{Q_n}{Q_q} \equiv$  the elasticity of domestic producer  $q$ 's total domestic sales with respect to a change in domestic producer  $n$ 's total domestic sales, as perceived by  $n$ .

$\gamma_{ng} \equiv \frac{dM_g}{dQ_n} \cdot \frac{Q_n}{M_g} \equiv$  the elasticity of overseas producer  $g$ 's total domestic sales with respect to a change in domestic producer  $n$ 's total domestic sales, as perceived by  $n$ .

$$\alpha_n \equiv \frac{\sum_{q \neq n} \beta_{nq} \cdot [Q_q / Q_n] + \sum_{g=1}^G \gamma_{ng} \cdot [M_g / Q_n]}{\sum_{q \neq n} Q_q / Q_n + \sum_{g=1}^G M_g / Q_n}$$

$\equiv$  firm n's (weighted average) conjectural elasticity.

Substituting  $\alpha_n$  in equation (A1) and rearranging yields an expression for firm n's price cost margin:

$$\frac{f(Q) - C_n}{f(Q)} = \frac{1}{\eta} \cdot [s_n + \alpha_n \cdot [1 - s_n]] \quad (A3)$$

where:

$\eta \equiv - \frac{dQ}{df(Q)} \cdot \frac{f(Q)}{Q} \equiv$  the absolute value of the industry's domestic price elasticity of demand.

$s_n \equiv \frac{Q_n}{Q} \equiv$  firm n's total share in total domestic sales.

Define:

$D \equiv$  total domestic sales from domestic production  $\equiv \sum_{n=1}^N D_n$

$d_n \equiv \frac{D_n}{D} \equiv$  firm n's share in domestic sales from domestic production.

Then, multiplying both sides of equation (A3) by  $d_n$  and rearranging, an expression for a weighted average price cost margin is obtained:

$$\mu \equiv \sum_{n=1}^N \left[ \frac{f(Q) - C_n}{f(Q)} \right] \cdot \frac{D_n}{D} = \frac{1}{\eta} \cdot \left[ \sum_{n=1}^N d_n \cdot s_n + \sum_{n=1}^N \alpha_n \cdot d_n \cdot [1 - s_n] \right] \quad (A4)$$

I.e.

$$\mu = \frac{\alpha}{\eta} + \frac{[1-\alpha]}{\eta} \cdot \sum_{n=1}^N d_n \cdot s_n \quad (A5)$$

where:

$$\alpha \equiv \frac{\sum_{n=1}^N d_n \cdot [1 - s_n] \cdot \alpha_n}{\sum_{n=1}^N d_n \cdot [1 - s_n]} \equiv \text{the industry's (weighted average) conjectural elasticity.}$$

From the definition of  $Q_n$  and  $Q$  given in Section 2,  $s_n$  can also be written:

$$s_n = \left[ \frac{D_n + M_n}{D + M_{TNC}} \right] \cdot \left[ \frac{D + M_{TNC}}{D + M} \right] \quad (A6)$$

where  $M_n$  is zero for all but importing TNC's, and where:

$$M_{TNC} \equiv \text{total imports by importing TNC's} \equiv \sum_{n=1}^N M_n$$

$M$   $\equiv$  total imports.

Thus, from (A5) and (A6),

$$\mu = \frac{\alpha}{\eta} + \frac{[1-\alpha]}{\eta} \cdot T \cdot \left[ \frac{D + M_{TNC}}{D + M} \right] \quad (A7)$$

where

$$T = \sum_{n=1}^N \frac{D_n}{D} \cdot \left[ \frac{D_n + M_n}{D + M_{TNC}} \right] \quad (A8)$$

NOTES

- 1) See, for example, Milliband (1969).
- 2) See Helleiner and Lavergne (1979).
- 3) It is assumed throughout the analysis that inventories are zero.
- 4) As will become clear, there is nothing to be gained, from the viewpoint of this paper, by examining the activities of overseas corporations in more detail.
- 5) In defining  $M_{TNC}$  as  $\sum_{n=1}^N M_n$ , note that  $M_n$  is zero for all but importing TNC's.
- 6) Cowling (1982a) in fact refers to total conjectural variations rather than conjectural elasticities when discussing international trade.
- 7) This conclusion requires  $\alpha < 1$ . Joint profit maximisation, which gives an upper bound to price-cost margins, requires  $\alpha_n = 1 \forall n$ , and thus  $\alpha = 1$ ; see Cowling (1982a). Thus, this conclusion is valid for all but the joint profit maximising solution, when changes in imports have no effect whatsoever, unless they cause a change in  $\eta$ .
- 8) Throughout this analysis, small domestic producers, such as Reliant, are ignored, but in 1978, for example, their combined share in domestic output for domestic sale was approximately 0.5%, and thus their omission will not cause a significant bias.

PAPER TWO

THE ANALYSIS OF INDUSTRY EQUILIBRIUM:

A THEORETICAL PERSPECTIVE\*

\*Warwick Economic Research Paper, Number 233, July 1983

## 1. INTRODUCTION

The aim of this paper is to consider the way in which industry equilibrium is analysed and, in particular, to explore the role of collusion. Its purpose is to establish a theoretical perspective for the analysis of industry equilibrium. It is assumed that, in equilibrium, firms maximise short run profits; short run implies that cost and demand functions, and the number of rivals, are given.

Section 2 uses a duopoly example to discuss the conjectural variation (cv) model of industry equilibrium. Three responses are considered to Fellner's (1960)<sup>1)</sup> criticism that the model does not allow firms to change their conjectures when they are clearly wrong. The conclusion reached is that a cv model can only be used to describe equilibrium, but that it says little about the determinants of equilibrium. The implication is a need to examine more closely the behaviour underlying firms' actions. This is the concern of Section 3. Collusion amongst firms focusing on the possibility of joint profit maximisation is brought to the centre of the analysis. It is suggested that industry equilibrium be analysed in terms of its deviation from the joint profit maximum, the deviation depending upon firms' retaliatory power, cost functions and demand functions. This is illustrated by considering the formal specification of a firm's price-cost margin. Finally, Section 4 concludes the paper.

## 2. CONJECTURAL VARIATION

A great deal of work has characterised industry equilibrium using the cv concept.<sup>2)</sup> The typical analysis can easily be illustrated by considering a duopoly which produces a homogeneous good. Define:  $Q_i$   $\equiv$  firm  $i$ 's sales;<sup>3)</sup>  $c_i$   $\equiv$  firm  $i$ 's (constant) marginal costs;  $F_i$   $\equiv$  firm  $i$ 's fixed costs. Suppose the industry faces a linear inverse market demand function:  $p = a - b(Q_1 + Q_2)$  where  $a, b > 0$ . Firm 1's profits are then given:

$$\pi_1 = [a - b(Q_1 + Q_2)]Q_1 - c_1Q_1 - F_1 \quad (1)$$

Given that firm 1 maximises its profit, it is argued that it produces where  $d\pi_1/dQ_1 = 0$ , i.e. where:

$$a - b(Q_1 + Q_2) + Q_1(-b)(1 + \lambda_1) - c_1 = 0 \quad (2)$$

$\lambda_1$  is firm 1's cv, the amount by which the firm conjectures its rival's output will alter in response to a marginal change in  $Q_1$ . That is,  $\lambda_1$  is firm 1's conjecture regarding the value of  $dQ_2/dQ_1$ .

This cv model can be interpreted by rearranging (2) to obtain firm 1's reaction function:

$$Q_1 = \frac{a - c_1}{b(2 + \lambda_1)} - \frac{Q_2}{(2 + \lambda_1)} \quad (3)$$



Thus, given  $a$ ,  $b$ ,  $c_1$ , and  $\lambda_1$ , equation (3) plots firm 1's profit maximising output as a function of firm 2's output. In Figure 1, (3) is plotted as  $R_1$ . Similarly, a reaction function can be obtained for firm 2, and this is plotted as  $R_2$ .  $R_1$  and  $R_2$  describe the duopolists behaviour at all times. For example, if firm 1 produces OA, firm 2 will choose an output of AB. In reply, firm 1 cuts production to OC, precipitating a rise in  $Q_2$  to CE. This continues until the industry reaches equilibrium<sup>4)</sup> - point F in Figure 1. At F, neither firm, given its rival's sales, desires to change its output level.

Insofar as  $\lambda_i$  is firm  $i$ 's conjecture regarding the actual response of its rival, Fellner (1960) has made a valid and damning criticism of this analysis.<sup>5)</sup> Consider again the movement towards F. In response to firm 2 producing AB, firm 1, taking account of its rival's reaction, chooses to produce OC. But then firm 2 alters its output level and causes firm 1 to make further changes. This clearly indicates to firm 1 that its original cv is wrong and should be altered, yet the model does not allow this to happen.

There are at least three responses to such criticism. Each will be considered in turn.

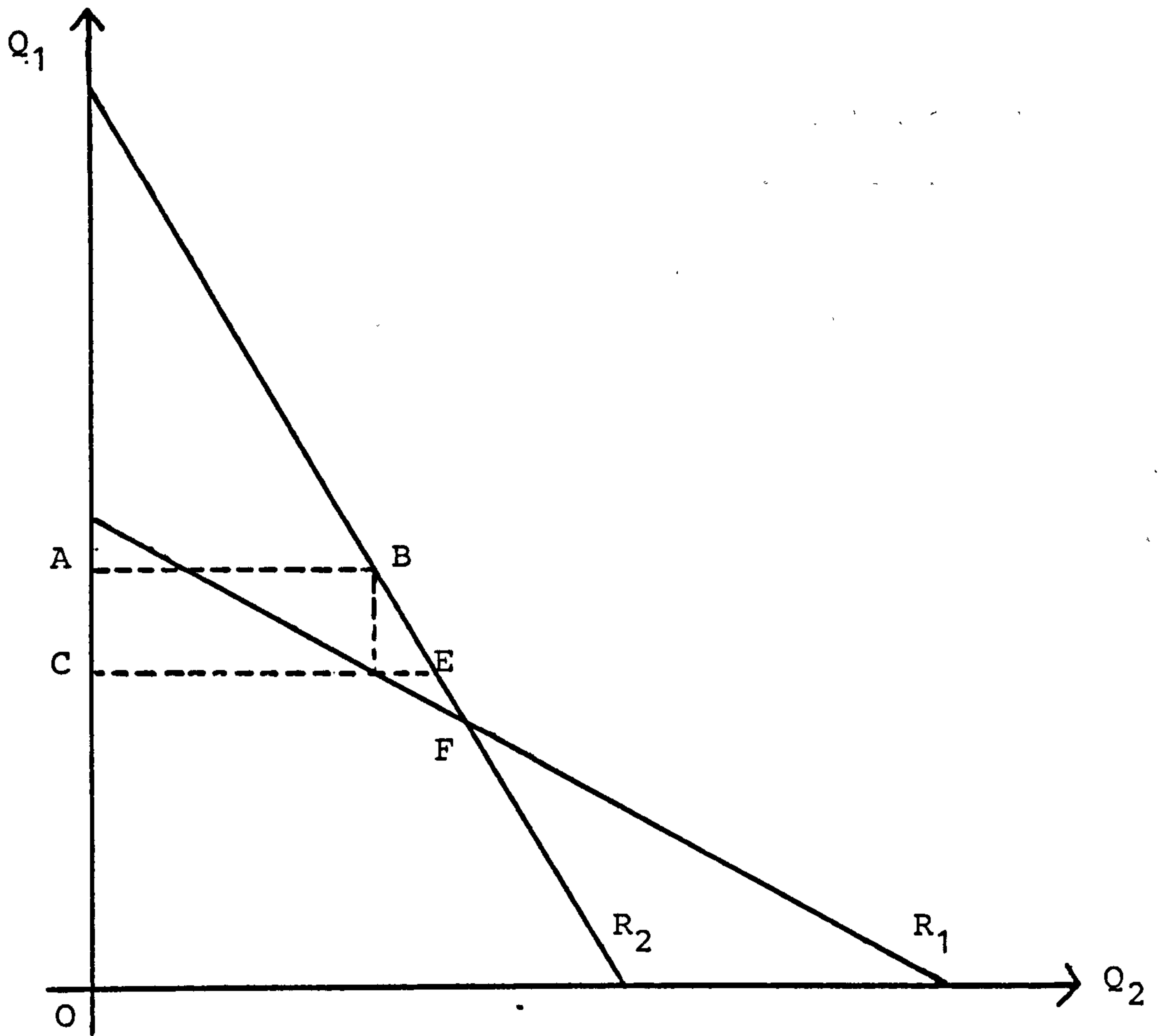


FIGURE 1. : REACTION FUNCTIONS IN A CV MODEL OF DUOPOLY

(i) The first is to require consistent conjectures. That is to require that, at least in the neighbourhood of equilibrium, firm  $i$ 's conjecture coincides with the way its rival in fact reacts; see Kamien and Schwartz (1983), Perry (1982), and Ulph (1983). Consider firm 2 in the duopoly example. Its rival's output is given by equation (3). Thus, its rival's reaction to a marginal change in  $Q_2$  is given by  $dQ_1/dQ_2$  calculated from equation (3), implying:

$$\lambda_2 = - \frac{1}{2+\lambda_1} \quad (4)$$

Similarly,

$$\lambda_1 = - \frac{1}{2+\lambda_2} \quad (5)$$

Kamien and Schwartz (1983) examine the case where  $\lambda \equiv \lambda_1 = \lambda_2$ . From (4) or (5), this requires:

$$- \frac{1}{2+\lambda} = \lambda \Rightarrow (\lambda+1)^2 = 0 \Rightarrow \lambda = -1$$

From equation (2),  $\lambda=-1$  means that price equals marginal cost,<sup>6)</sup> i.e. the firms behave as though they are in a perfectly competitive situation.

Whilst the consistent conjectures approach is initially appealing, Kamien and Schwartz's (1983) example shows its failure to correctly analyse industry equilibrium. Requiring symmetric duopolists facing a linear inverse

market demand function to price at marginal cost is wrong.<sup>7)</sup> For instance, ignoring legal constraints - reasonable in the context of these theoretical models - it is undoubtedly possible for the firms to formally agree to maximise joint profits and therefore price above marginal cost. The importance of this possibility will be pursued in more detail later; suffice it here to note that joint profit maximisation is a feasible equilibrium. Thus, the problem with an analysis based upon consistent conjectures is that other factors need to be analysed to discover whether or not its conclusions are valid.

(ii) The second possible response is to argue that equations like (2) hold only when the industry is in equilibrium. Equilibrium implies that no firm wishes to change its output, given the production of rivals, and thus, from the profit maximising assumption, that equation (2) holds. However, there is nothing to suggest that the same equation also holds in disequilibrium. Rearranging to give (3) does not yield a function which can be plotted in  $Q_1, Q_2$  space, and therefore does not produce a reaction function from which to calculate conjectural variations.

This is an improvement on the consistent conjectures response because it does not rule out feasible equilibria. But simply to argue that equation (2) is valid only in equilibrium is merely to describe equilibrium, and is to say little about why an actual equilibrium arises -

i.e. little about the factors which cause an equilibrium to arise, either in a dynamic or static context. Thus, whereas it is clear that it is not determined by a set of simple reaction functions, it is not clear what it is determined by.

(iii) The third response is illustrated by Clarke (1982). Consider again the symmetric firms example of Kamien and Schwartz (1983). Whilst it is true that  $\lambda > -1$  appears myopic - in disequilibrium, firm  $i$ 's conjecture will not equal its rival's actual response - this charge misses the point because it is in the combined interests of the firms to adopt these conjectures and thus increase joint profits. That is,  $\lambda_i$  is not firm  $i$ 's conjecture regarding the actual response in the sense discussed by Fellner (1960).

But the crucial question remains: why should firms seek to increase combined profits? Moreover, if combined profits are so vital, how can Clarke contemplate any outcome other than joint profit maximisation? In short, this response suffers from the same problem as (ii); it is not clear why an actual equilibrium arises.

The conclusion to be drawn from (i)-(iii) is: whereas a cv model can be used to describe equilibrium, it says little about the factors which determine equilibrium. This implies that an analysis of the determinants of equilibrium needs to examine more closely the behaviour underlying a firm's actions.

Where should this examination begin? Stigler (1968) suggests that a basic problem with cv models is that behaviour is postulated, rather than deduced from the profit maximisation assumption. That is, Stigler argues that

"profit maximising must imply the form of behaviour - economic behaviour is a means to achieve this end, not a separate part of man to be supplied by a psychiatrist or a sociologist." (p. 36)

Such reasoning underlies the criticism of consistent conjectures raised earlier in this Section - i.e. that they cannot accommodate equilibria which profit maximisation implies are feasible. Moreover, this suggests a starting point for an alternative analysis, namely: it is wrong to conclude that the only feasible equilibrium requires zero price-cost margins when there is a possibility of explicit collusion. It is to this analysis that the following Section turns.

### 3. COLLUSION

It was assumed at the outset of this paper that the driving force behind a firm's activities is the maximisation of its own profits. If a firm operates in a perfectly competitive product market, it receives normal profits. Clearly, pursuit of maximum profits implies that a firm will attempt to get away from a perfectly competitive environment and dominate its product market. The vital question is: can it?

A possibility<sup>8)</sup> is for firms to assume an attitude of live and let live towards each other, i.e. for firms to collude. For example, in an industry comprising two symmetric firms selling an identical product at constant marginal cost, rather than engaging in blind competition that pushes product price down to the perfectly competitive level, the firms are likely to realise that, if they tolerate each other's presence, both can obtain above normal profits.

Baran and Sweezy (1966) make this point:

"The typical giant corporation ... is one of several corporations producing commodities which are more or less substitutes for each other. When one of them varies its price, the effect will immediately be felt by the others.

If firm A lowers its price, some new demand will be tapped, but the main effect will be to attract customers away from firms B, C and D. The latter, not willing to give up their business to A, will retaliate by lowering their prices, perhaps even undercutting A. While A's original move was made in the expectation of increasing its profit, the net result may be to leave all the firms in a worse position.

.....

Unstable market situations of this sort were very common in the earlier phases of monopoly capitalism, and still occur from time to time, but they are not typical of present-day monopoly capitalism. And clearly they are anathema to the big corporations with their penchant for looking ahead, planning carefully, and betting only on the sure thing. To avoid such situations therefore becomes the first concern of corporate policy, the sine qua non of orderly and profitable business operation." (p. 67)

Recognition of their interdependence causes firms to collude, i.e. not to behave such that all firms in the industry become worse off.

Similarly, Scherer (1980) observes:

"When the number of sellers is small, each firm recognises that aggressive action such as price cutting will induce counteractions from rivals which, in the end, leave all members of the industry worse off. All may therefore exercise mutual restraint and prevent prices from falling to the competitive level." (p. 514)

Although Baran and Sweezy (1966) refer to giant corporations, and Scherer (1980) to industries with a small number of sellers, it is particularly important to note that recognition of interdependence, and thus the existence of collusion, is not confined simply to industries comprising a few firms. Indeed, Phillips (1962) points out: "Interdependence may involve but a few firms or it may include thousands" (p. 29). By definition, an industry comprises firms producing goods which are substitutes for each other. Interdependence therefore spreads throughout the industry.



There is no reason to expect firms to fail to recognise this fact.<sup>9)</sup>

What is the importance of collusion in establishing the set of feasible equilibria? As a starting point, it is at least possible to restrict the possibilities by considering four propositions:<sup>10)</sup>

(i) For profit maximisers, the polar extreme to a perfectly competitive industry is joint maximisation. This is true by definition of perfect competition and the joint maximum.

(ii) If all firms in an industry seek to do so, they will be able to maximise joint profits. The only real difficulty could be with firms communicating their views to each other; see, for example, Phillips (1962). However, there are a number of factors discussed by Scherer (1980)<sup>11)</sup> which facilitate communication, for instance:

- (a) in the absence of legal constraints, overt meetings between firms.
- (b) social gatherings amongst firms' representatives.
- (c) informal trade association meetings.
- (d) collusive price leadership, i.e. the "dominant" firm leads its "followers" towards the joint maximum.
- (e) centralised information gathering networks.

It is reasonable to conclude that if the firms wish to communicate, they will find the means to do so. Nevertheless, it could be argued that the costs of communication may be so exorbitant as to render it unprofitable. However, at least in many industries, this is unlikely. For instance, the cost of social gatherings is likely to be very small compared to the profits attainable at the joint maximum. Moreover, as a starting point, it is reasonable to ignore such costs. This does not deny that, in a more sophisticated analysis, the problem posed by communication deserves more detailed treatment. For example, the influence of the number of firms may prove important, and insights may be obtained from analysing a trade-off at the margin between the costs and benefits - in the form of increased profits - of communication. However, such considerations do not undermine the purpose of this paper.

(iii) A firm will seek joint profit maximisation when it believes it cannot obtain higher profits by some other means. This follows from the profit maximising assumption.

(iv) If a firm seeks joint profit maximisation, because its profits are less than at the joint maximum, it does not thereby run a risk that it can be made even worse off. In particular, a firm seeking joint maximisation does not provide rivals with information about its iso-profit map<sup>12)</sup> that can lead to its being made even worse off; the exact meaning of this statement should become clearer after the discussion of "response power", the issue involved, later

in this paper. However, as will also become clear, verifying the assumption's feasibility involves complex issues - in short, a more detailed analysis of collusion than has thus far been attempted - and it will not be pursued here. Nevertheless, the notion that a firm can simply tell its rivals that it would rather maximise joint profits, and not thereby suffer, does seem at least a not unreasonable starting point for an analysis.

Given (i) - (iv), then: if joint profits are not being maximised in an industry, it must be because at least one firm believes it is obtaining higher profits than it would receive at the joint maximum. That is, given the feasibility of joint maximisation, firms will collude to avoid situations in which they are all worse off than at the joint maximum. The implications of this conclusion can be illustrated using a duopoly example.

Suppose each firm produces a homogeneous good and faces identical variable cost functions. It seems reasonable to assume that each firm's assessment of the output levels maximising joint profits will coincide; this merely requires that each firm realises output is homogeneous and cost functions are identical. Then, the shaded area in Figure 2 depicts the set of feasible equilibria implied by (i) - (iv).  $J$  is the firms' assessment of the joint maximum, and  $\pi_h^J$  is firm  $h$ 's iso-profit contour for the level of profits it obtains at  $J$ : -  $h = 1, 2$ .  $J$  is on the  $45^\circ$  line because of the symmetric output and cost assumptions.

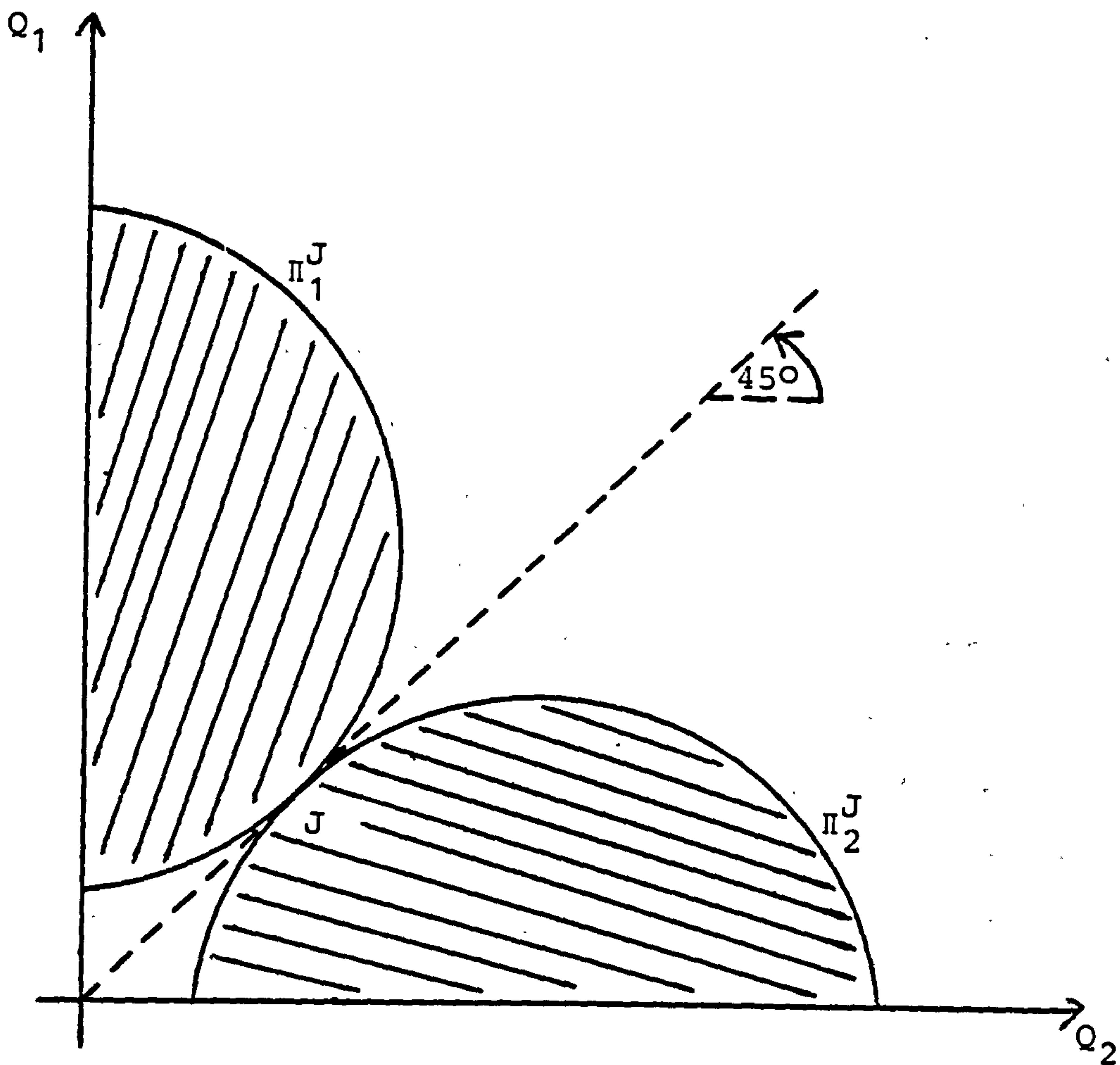


FIGURE 2: THE SET OF FEASIBLE EQUILIBRIA IN A SYMMETRIC DUOPOLY

At any point within  $\pi_h^J$ , firm h's profits are greater and firm k's profits less than those at J: -  $h \neq k$ .

This is in stark contrast to the consistent conjectures example in Kamien and Schwartz (1983). No matter where industry equilibrium is within the shaded area, at least one firm is obtaining at least the profits it would receive at the joint maximum. If marginal costs are constant - as Kamien and Schwartz assume - price must be higher than marginal cost. Moreover, Figure 2 shows that the only feasible equilibrium in which  $Q_1 = Q_2$  is J. This rules out, for instance, the possibility of a Cournot equilibrium. . . Such an outcome is not obvious in a bald cv model.

So much for the set of feasible equilibria. How can the actual equilibrium be analysed? The vital factor is the existence of collusion amongst firms recognising the possibility of joint profit maximisation. Consider, for example,<sup>13)</sup> the analysis of feasible equilibria based on propositions (i) - (iv). In particular, consider the case where an industry is in an equilibrium which is not the joint profit maximum. Define  $\pi_i^E$  as firm i's profits at the equilibrium, and  $\pi_i^J$  as the profits i believes it would get at the joint maximum. For at least one firm, for example, firm h,  $\pi_h^E > \pi_h^J$ . This follows from the fact that all industries collude at least to the extent that no industry will be in equilibrium at a point where all firms believe they would be better off maximising joint profits. However, it is also generally<sup>14)</sup> true that for at least

one firm, for example firm  $k$ ,  $\pi_k^E < \pi_k^J$ . This follows from the definition of a joint maximum. The reason the industry is not maximising joint profits is that firm  $k$  does not possess the retaliatory power<sup>15)</sup> to force firm  $h$  into a position where it too would prefer joint maximisation. If firm  $k$  did possess the retaliatory power, the firms would collude to maximise joint profits; i.e. the firms would avoid any behaviour which moved the industry from the joint maximum because the outcome would leave all worse off.

This suggests that an actual equilibrium can be analysed in terms of its deviation from the joint maximum, the deviation depending upon the retaliatory power of firms. The concept of retaliatory power is complex. However, its crucial importance makes it worthwhile examining some of its general characteristics.

There are two critical determinants of a firm's retaliatory power, namely the firm's ability to

- (i) detect activity by rivals which leads to the latter gaining at the firm's expense, and to
- (ii) respond to such activity by inflicting damage, in the form of decreased profits, on those rivals.

These can be referred to, respectively, as a firm's detection power and response power.

The importance of detection power is seen most clearly by considering an extreme case: if firm  $i$  cannot detect at all the activity by its rivals which leads the latter to gain at the firm's expense, the firm will not retaliate to the activity. No matter what a firm's response power, zero detection power implies zero retaliatory power. More generally, the lower is detection power the lower is retaliatory power.

A number of analyses have studied the determinants of detection power.<sup>16)</sup> Particularly influential has been Stigler's (1964) suggestion that it is an increasing function of an industry's Herfindahl index of sales concentration. However, it is necessary to emphasise that, collectively, firms can agree on measures which improve their detection powers. For example, firms could publish the prices at which they trade; or they could use more sophisticated devices, such as sales contract clauses which allow a seller the option of meeting any lower prices which a buyer may be offered. See Salop (1982). Thus, detection power is, at least to some extent, determined by firms' actions; it is not merely a function of market characteristics like concentration.

Why is this worth emphasising? It was argued earlier that, if an industry is not at the joint maximum, it is because at least one firm does not possess the retaliatory power to force its rivals to that point. Suppose an industry

is observed in which all firms, for instance, publish their trading prices. There is at least a suggestion that, if each firm has a significant response power, the industry is maximising joint profits. Certainly, those firms which would gain by being away from the joint maximum would not unnecessarily increase the losers' retaliatory power. Put another way, in such an industry the deviation of the equilibrium from the joint maximum is determined entirely by response power.

The importance of response power is shown in particular by Osborne (1976) and Holohan (1978). Consider, for example, the duopoly characterised in Figure 3, where J is the joint profit maximum. Assume the industry is initially at J but that firm 2 contemplates increasing its output to  $\hat{Q}_2$ . Suppose there are no detection problems for firm 1. If firm 1 would respond to  $Q_2 = \hat{Q}_2$  by increasing its output beyond  $\hat{Q}_1$ , firm 2 will not attempt to move to point A. The reason is that 2 would obtain greater profits by remaining at J. The crucial question is : would firm 1 respond in this way ? Clearly, if  $Q_1 > \hat{Q}_1$  implies firm 1's profits exceed those it would obtain at A, it is unlikely to remain at A. Problems arise when  $Q_1 > \hat{Q}_1$  implies less profits than at A.



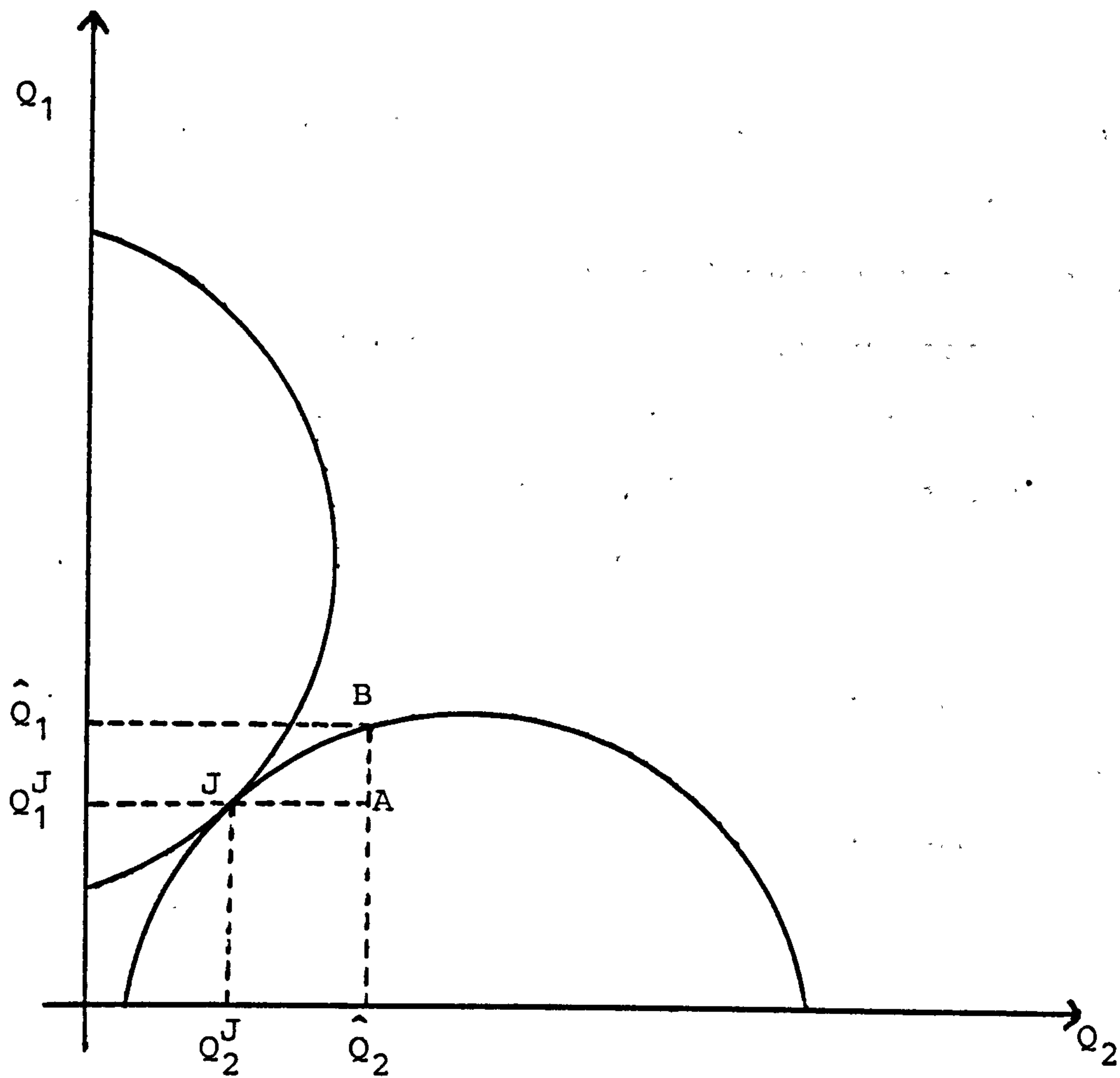


FIGURE 3 : THE IMPORTANCE OF RESPONSE POWER

In reality, firms will play a game of bluff and counter-bluff. Firm 2 will be uncertain<sup>17)</sup> whether or not its rival will obtain higher or lower profits when  $Q_1 > \hat{Q}_1$ . Thus, a threat by 1 to push the industry north of B may be credible even though in fact firm 1 would become worse off than at A. Indeed, firm 1 may actually increase its output beyond  $\hat{Q}_1$  even though it is worse off than at A, if it believes this will push its rival back to J sufficiently quickly. This illustrates the importance of getting away from the simple reaction function approach that characterises the consistent conjectures interpretation of a cv model.<sup>18)</sup>

Again, there are various studies of the determinants of response power.<sup>19)</sup> Especially important - as seen from Figure 3 - is that, for example, firm 1 has the plant capacity to increase output beyond  $\hat{Q}_1$ ; this is explored in, for instance, Cowling's (1982) analysis of excess capacity. However, it is essential to emphasise a point which is easily forgotten and often ignored, namely: in a world characterised by multimarket enterprises - i.e. firms that sell and/or produce in a number of markets - it is wrong to analyse individual markets in isolation. Edwards (1979) notes, as regards so-called "powerful enterprises":

"The chief danger to competition from such enterprises is still conceived as the danger that one of them will try to obtain, or succeed in obtaining, the power of a monopoly in some particular market, or that, in a particular market, a few of them may obtain oligopoly power. Although competition sometimes is impaired in

these ways, I think that the chief and growing danger is that competition will be eroded by uses of power that transcend particular markets." (p. 285, emphasis added.)

He goes on:

"When powerful enterprises have reiterated contacts that each considers important, each is likely to decide what it should do in such contacts by considering what would be best for the enterprise as a whole. Each is likely to modify conduct that would be its adjustment to the contact in a particular market after considering the effect of that conduct upon its relationships with the same enterprise in the other markets in which it encounters that enterprise." (p. 294)

Suppose, for example, that firms 1 and 2 sell their output in markets X and Y. If firm 1 contemplates any activity causing it to gain at 2's expense in market X, it will consider firm 2's response in markets X and Y. That is, firm 2's response power in each market is given by its ability to inflict damage on rivals in all markets in which they have contact. Moreover, even if the firms only sell their output in market X, if they have production facilities in various markets they can use output from any of these facilities to inflict damage on rivals.

However, retaliatory power is only part of the story that analyses actual industry equilibrium. Consider again firm h. The set of output combinations within the iso-profit contour  $\pi_h^J$  will be classified by h according to the profit they yield. If its rivals' retaliatory power leaves h any choice over its output, the choice will be made

using this classification, which is determined by h's cost and demand functions. For example, consider a duopoly in which firm 2's output is fixed at  $Q_2^E$ .<sup>20)</sup> Thus, firm 2 has no retaliatory power. Suppose joint profits are maximised when  $Q_1 = Q_1^J$ . This is depicted in Figure 4, where the vertical line through  $Q_2^E$  represents the set of feasible equilibria. Firm 1 can choose any point on this vertical line; no matter what output firm 1 chooses, firm 2 cannot retaliate to force 1 to  $J$  because it has no options available. What will firm 1 produce? Firm 1 will choose the output which, given  $Q_2 = Q_2^E$ , maximises its profit. For instance, in the duopoly illustration of Section 2, from equation 3, firm 1 chooses the output given by:

$$Q_1 = \frac{a - c_1}{2b} - \frac{Q_2^E}{2}$$

where:  $c_1$  is firm 1's marginal production costs, and  $a$  and  $b$  are the inverse market demand function parameters. In contrast<sup>21)</sup>,

$$Q_1^J = \frac{a - c_1}{2b} - Q_2^E$$

Thus, an actual equilibrium can be analysed in terms of its deviation from the joint profit maximum, the deviation depending upon the firms' retaliatory power, cost functions, and demand functions. Consider, for example,

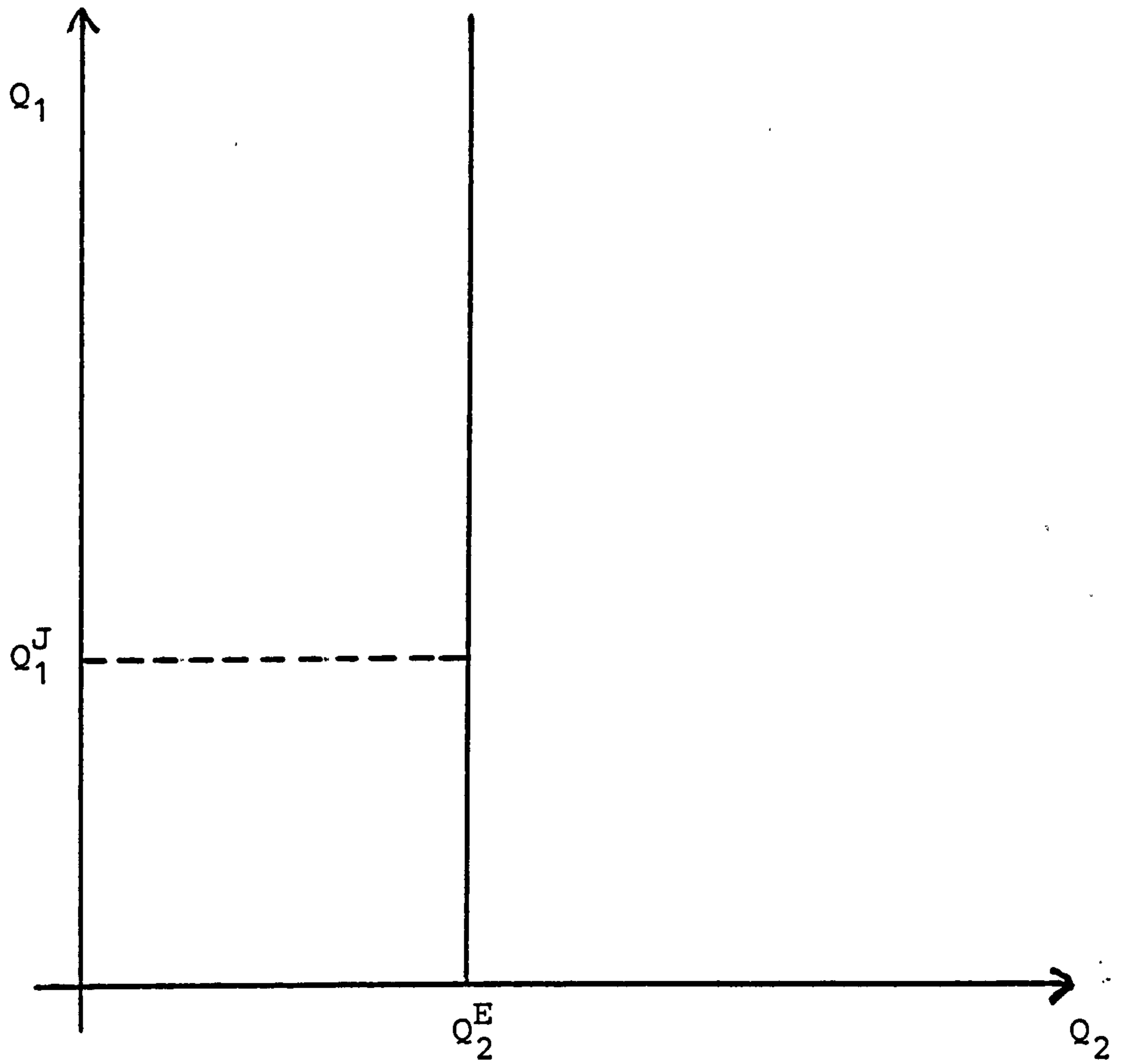


FIGURE 4 : THE INFLUENCE OF COST AND DEMAND FUNCTIONS

an industry of  $N$  firms producing a homogeneous good. Firm  $i$ 's price-cost margin at the joint maximum is

$$\frac{p - c_i(Q_i)}{p} = \frac{1}{\eta^*} ; \quad i = 1, 2, \dots, N \quad (6)$$

where:  $p$  is the product price,  $c_i(Q_i)$  firm  $i$ 's marginal cost function, and  $\eta^*$  the absolute value of the industry's elasticity of demand. More generally,  $i$ 's price-cost margin can be represented:<sup>22)</sup>

$$\frac{p - c_i(Q_i)}{p} = \beta \frac{1}{\eta^*} ; \quad i = 1, 2, \dots, N \quad (7)$$

where:

$\beta \equiv \beta(r_1, r_2, \dots, r_N; C_1, C_2, \dots, C_N; f(Q))$ .

$r_i \equiv$  the retaliatory power of firm  $i$ .

$C_i \equiv$  the total cost function of firm  $i$ .<sup>23)</sup>

$f(Q) \equiv$  the industry's inverse market demand function.

$Q \equiv Q_1 + Q_2 + \dots + Q_N$ .

It is revealing to compare (7) with the result given by a cv framework in the simplified case where the inverse market demand function has constant elasticity. (It was recognised in Section 2 that a cv model can reasonably be used to describe equilibrium.) Following Cowling and Waterson (1976),<sup>24)</sup> such a model yields an expression for firm  $i$ 's price-cost margin:

$$\frac{p - c_i(Q_i)}{p} = (1 + \lambda_i) \frac{Q_i}{Q} \frac{1}{\eta^*} \quad ; \quad i = 1, 2, \dots, N \quad (8)$$

Whereas equation (3) might be used to suggest that structure, in the form of market share, is a determinant per se of the equilibrium price-cost margin, it is clear from equation (7) that its only influence can be via the arguments of  $\beta(\cdot)$ . This underlines the view that, when used to describe equilibrium, the cv model is silent on the determinants of equilibrium.<sup>25)</sup> Similarly, it is clear from (7) that, given  $\eta^*$  is a function of  $f(Q)$ , market demand characteristics influence  $\eta^*$  and  $\beta(\cdot)$ . In contrast, it is not as obvious from equation (8) that the interrelationships between  $\eta^*$ ,  $Q_i/Q$ , and  $\lambda_i$  will be recognised. This is because, unlike equation (8), equation (7) focuses upon the determinants of equilibrium. Such considerations are amplified in the case where the inverse market demand function does not have constant elasticity, in which case  $\eta^*$  in equation (8) is simply the elasticity in equilibrium.

#### 4. CONCLUSION

It is clear from equation (7) that the analysis of industry equilibrium requires a detailed examination of functions like  $\beta(\cdot)$ . As it is, to state that equilibrium should be analysed in terms of its deviation from the joint profit maximum, the deviation depending upon  $\beta(\cdot)$ , is merely to state the problem. It remains to examine the problem in greater detail. For example, exactly what influence do  $r_i$ ,  $C_i$ , and  $f(Q)$  have within  $\beta(\cdot)$ ? What are the determinants of  $r_i$ ? How important are fixed costs? What are the critical demand function parameters?

However, this involves many complex issues. These will not be pursued here - important though they undoubtedly are - because enough has already been commented upon to serve this paper's purpose.

Thus, the crucial argument is that collusion amongst firms focusing upon the possibility of joint profit maximisation is given the centre stage. As a result, the determinants of equilibrium are brought to the fore and, for example, it is possible to analyse the determinants of a firm's price-cost margin. This is a considerable improvement on the cv model, which, in its consistent conjectures form, for example, suggests conclusions that an appreciation of the possibilities for collusion show to be erroneous.

Nevertheless, further development of this theoretical perspective must await subsequent study.



NOTES

- 1) The influence of Fellner (1960) can be seen throughout this paper.
- 2) See, for example, Sawyer (1979).
- 3) Inventories are ignored throughout the analysis.
- 4) Although Figure 1 depicts a stable equilibrium, Fellner (1960) points out that the position of the reaction functions need not give this result.
- 5) Stigler (1968) also notes this criticism.
- 6) This implies  $c \equiv c_1 = c_2$ .
- 7) Moreover, the case cited in the text is only an illustration. Kamien and Schwartz (1983) show that in a symmetric duopoly - i.e. both firms have identical costs, conjectures, and output levels - where profit maximising first order conditions are used to model firm behaviour, consistent conjectures yields positive price - cost margins only with a limited set of inverse market demand functions.
- 8) Other possibilities are the search for differentiated products, and for advantageous cost functions. All of these issues are inextricably bound up with entry barrier problems. In this paper, however, market demand functions, cost functions, and the number of firms are all taken as given. More generally, see Paper Three.
- 9) Scherer (1980) disagrees with this view, but does not give a reason.
- 10) The idea here is that, beginning with all possible output combinations across firms as the set of feasible equilibria, consideration of four propositions leads to a restriction of this set. This is not to deny that the set of feasible equilibria may be restricted by other means in a more detailed analysis.
- 11) Scherer (1980), chapter 6.
- 12) See, for example, Dixit (1979) for an examination of iso-profit contours.
- 13) The analysis that follows relies essentially upon collusion, not simply collusion as depicted using propositions (i) - (iv). That is, if a more detailed study leads to the set of feasible equilibria being restricted by other means, it would not undermine

the analysis that follows. Moreover, the latter raises issues - e.g. retaliatory power - which, examined in detail, may lead to the set of feasible equilibria being restricted other than by using propositions (i) - (iv).

- 14) It could be that firms disagree over their assessment of the joint maximum and all see themselves as better off in the actual equilibrium.
- 15) Consider again the views of Baran and Sweezy (1966), quoted earlier in the paper.
- 16) See Scherer (1980), chapters 6 and 7, for a review.
- 17) Uncertainty is also important vis-à-vis detection power. See Cubbin (1983).
- 18) It also illustrates the way in which proposition (iv) in the earlier discussion of the set of feasible equilibria is essentially a problem of response power.
- 19) See Scherer (1980), chapter 7, for a review.
- 20) Whilst this is clearly unrealistic, it nevertheless illustrates the point in issue.
- 21) Thus, joint profits  $\pi$ , are given:

$$\pi = [a - b(Q_1 + Q_2^E)](Q_1 + Q_2^E) - c_1 Q_1 - c_2 Q_2^E - F_1 - F_2$$

Maximising with respect to  $Q_1$  requires:

$$a - b(Q_1 + Q_2^E) + (Q_1 + Q_2^E)(-b) - c_1 = 0$$

Thus,

$$Q_1 = \frac{a - c_1}{2b} - Q_2^E$$

- 22) Note that, insofar as industry elasticity is a meaningful concept in such a case, equation (7) is also valid for a differentiated goods industry.
- 23) The potential importance of fixed costs is implied by Dixit (1979).
- 24) See also Paper One.
- 25) See also Clarke and Davies (1982).

PART THREE

THE THEORY OF THE FIRM

It is especially clear from Paper One that an analysis of transnational monopoly capitalism requires a detailed examination of the theory of the firm.

For example, the model of production outlined in Section 2 of Paper One noted that not all firms need be transnational corporations perhaps because all do not have access to cheap labour, or because of government interference, or because of heterogeneous management quality. The question being raised here is: why are there transnational corporations?

Answering this question is the concern of Paper Three. Having noted that the question "why transnational corporations?" needs to be considered within the more general context of the question "why firms?", two approaches to the latter are contrasted, namely: internalisation analysis, emphasising efficiency, and Marglin's study of the rise of the factory, emphasising distribution. The paper then pursues a Marglinian analysis. It develops a general theoretical framework based upon product market domination - drawing the analysis to the discussion of Paper Two - and takes up one aspect of this - labour market domination - in theoretical and empirical detail. Throughout, liberal use is made of footnotes to compare the analysis with others.

In an earlier version of Paper Three, the analysis was based upon profit maximising managers controlling the firm. This was changed in the light of Paper Four, which examines the issue of owner versus manager control, and suggests that there has been no managerial revolution.

Thus, Paper Four argues that the largely static, ahistorical existing literature on the theory of the firm is inadequate in its treatment of the control issue. It tends to classify firms as either owner or manager controlled using an ex post analysis of share distribution. In contrast, this paper reverses the direction of causality, explaining the control of firms in a dynamic, historical framework. It concludes that the observed distribution of shares will suffice to give a subset of owners control. The arguments are illustrated by a series of diagrams, and supported by an examination of recently reported empirical evidence. Consideration of the M-form organisation and savings behaviour are used to further discriminate the analysis from managerialism and neoclassicism respectively.

PAPER THREE

WHY TRANSNATIONAL CORPORATIONS?\*

\*An earlier version of this paper appeared as Warwick Economic Research Paper, Number 222, February 1983, and was presented at the tenth annual conference of the European Association for Research in Industrial Economics (EARIE), Bergen, August 1983. Another earlier version was presented at the Annual Conference of the Academy of International Business, Bardford, April 1984. Final version of this paper completed July, 1984.

## 1. INTRODUCTION

Consider a firm with production facilities in various countries - a transnational corporation (TNC). Why are there TNC's? That is, supposing firm A initially produces in country X, why should it acquire production facilities in country Y, either where it initially produces only in X or where it initially produces in X and Y?<sup>1)</sup> This paper discusses various aspects of the latter problem.

Briefly, the plan of the paper is as follows. Section 2 contrasts two approaches to the question "why firms?" namely: internalisation analysis, emphasising efficiency, and Marglin's study of the rise of the factory, emphasising distribution. Subsequent sections pursue a Marglinian analysis. Section 3 develops a general theoretical framework based upon product market domination, and Section 4 takes up one aspect of this - labour market domination - in theoretical and empirical detail. Finally, Section 5 concludes the paper with a short summary. Throughout, liberal use is made of footnotes to compare the analysis with others.<sup>2)</sup>

The paper's originality is principally to formulate (at least the beginnings of) a Marglinian approach to "why TNC's?" This, for instance, is in stark contrast to the internalisation analysis dominating much contemporary thinking. In addition, and within this, two other aspects deserve emphasis. Firstly, whilst the paper draws upon a considerable body of existing literature, this is placed

within a product market domination framework absent elsewhere. Secondly, the detailed concern with labour market domination is new as regards the "why TNC's?" problem. The paper does not identify and give a priority ordering to all possible reasons for the existence of TNC's. Rather, it identifies sets of reasons to explain why there are TNC's, and pursues one reason in detail.

## 2. "WHY FIRMS?" AS A FOUNDATION FOR "WHY TNC'S?"

Because it begins at the beginning, a reasonable starting point in answering the question "why TNC's?" is to consider the question "why firms?"; after all, a TNC is merely a specific breed of firm. This is the approach in Buckley and Casson (1976).<sup>3)</sup> It is worth outlining what they actually argue.

Firms are seen as a means for coordinating "interdependent activities linked by flows of intermediate products" (p. 36). The issue "why firms?" really asks: why should interdependent activities be coordinated "internally" by a firm rather than by the alternative, namely "externally" by market forces? The answer is that internal coordination is used because of the incentives to bypass imperfect external markets, i.e.:

"It is well known to economists that under certain conditions...the coordination of interdependent activities by a complete set of perfectly competitive markets cannot be improved upon. An important corollary of this is that there is no advantage in replacing a perfect system of markets by a centrally administered control system. Thus the incentive for internal coordination of activities by a firm does not



rest on the advantages of centralisation per se ..... In fact, it is a consequence of the result above that a necessary condition for an internal market to be more efficient than an external one is that the external market is imperfect.

The benefits of internalisation stem from the avoidance of imperfections in the external market, but there are also certain costs of internalisation which may affect the potential benefits. The optimal scale of the firm is set at the margin where costs and benefits of further internalisation are equalised." (p. 36-37)

Why, then, are there TNC's? A TNC "is created whenever markets are internalised across national boundaries" (p. 45). Exactly when this is likely is explored in more detail by Buckley and Casson.<sup>4)</sup> However, this part of their analysis will not be examined here, because the concept of internalisation can be contrasted directly with an alternative, preferable foundation.

Insofar as it goes, it is not wrong to view a firm as a means for coordinating interdependent activities linked by flows of intermediate products. Similarly, insofar as it goes, it is not wrong to argue that the raison d'etre of a firm is the net benefits arising from its existence. But such general statements do not go very far. They immediately suggest an important question: from whose viewpoint are the net benefits defined? The emphasis of the internalisation analysis is efficiency. An understanding of this concept gives an answer to the question.

A situation in which no-one can be made better off without making someone else worse off is said to be "efficient". It is in this sense that a complete set of per-

fectly competitive markets cannot be improved upon. A situation is said to be "more efficient" than an alternative if no individual is worse off and at least one is better off than in the alternative. Thus, the consequence that an internal market is only more efficient than an external one if the latter is imperfect is undoubtedly correct. But why is this important? The implication is that an internal market is in fact more efficient than an external market. Otherwise, it would not exist.

This implication is crucial. The underlying reasoning can be shown by a simple example. Suppose individuals A and B are engaged in interdependent activities within a firm. The argument typically runs: the fact that a firm exists implies that A and B are better off - or at least, neither is worse off - using a firm organisation rather than an external market, otherwise they would have chosen to use the external market. That is, all participants in a firm receive non-negative benefits from internalisation.<sup>5)</sup>

However, this argument assumes that the option of using the external market is available, and it says nothing about any other options. More generally, a second important question must be asked: what is the set of options over which a choice is made? The importance of this question is shown by Marglin's (1974)<sup>6)</sup> discussion of the rise of the factory in the English textile industry, 1750-1850.

Prior to the factory, production was organised by the "putting-out" system: a capitalist divided production into separate tasks, each being carried out by a worker in his own home at the pace he dictated. Under the factory system, the division of labour remained, but workers were brought under one roof and the capitalist dictated when and how much work was done. This control of the work process was the critical reason for the introduction of factories: as a result, capitalists could increase their profits by decreasing workers' utility. Efficiency was not in issue. By working in a factory, a worker revealed no preference for the factory system:

"The question is not so much whether or not factory employment was better for workers than starving - let us grant that it was - but whether or not it was better than alternative forces of productive organisation that would have allowed the worker a measure of control of product and process, even at the cost of a lower level of output and earnings. But to grow and develop in nineteenth century Britain ..... such alternatives would have had to have been profitable for the organiser of production. Since worker control of product and process ultimately leaves no place for the capitalist, it is hardly surprising that the development of capitalism .... did not create a long list of employment opportunities in which workers displaced from the traditional occupation of their parents could control product and process." (p. 37).

That is, Marglin sees control of the firm as exercised in the interests of capitalists - who benefited from the factory - rather than the workers - whose utility fell with the introduction of the factory. Moreover, whereas the worker's option was whether or not to work at all, the capitalist's was which form of organising production - be this use of the price mechanism (i.e. external organisation) or

one of the many possibilities for internal organisation - would benefit him the most.

The concern of this paper is not the English textile industry, 1750-1850. However, Marglin's work has interesting implications for analysing TNC's. Particularly important is the need to focus in detail on the characteristics of a firm's activities. Put another way, real insight is obtained by focusing in detail on the characteristics of a transaction (involving an intermediate product) executed within a firm. For example, why this transaction rather than another, internal or external? Moreover, as a result of this focus, Marglin (1974) emphasises distributional considerations, in direct contrast with the efficiency emphasis of internalisation; in short, the factory arose because it allowed capitalists to gain at workers' expense. This contrast is vital from a welfare standpoint.

The remainder of this paper examines "why TNC's?" within this Marglinian framework, focusing in detail on the characteristics of a firm's activities, and emphasising distributional considerations. Firstly, a general analysis is presented.

### 3. A GENERAL THEORETICAL FRAMEWORK

If a firm operates in a perfectly competitive product market, it receives normal profits. Thus, assuming a firm seeks maximum profits, it will attempt to get away from a

perfectly competitive environment and obtain above normal profits. That is, it will try to dominate its product market and, in the limit, obtain monopoly profits. The crucial issue is: can it? If so, does this explain why some firms produce in various countries? In fact, it can, and this does have implications for the existence of TNC's.

Particularly vital in this respect is the possibility of firms colluding,<sup>7)</sup> a concept discussed as regards pricing by Baran and Sweezy (1966):

"The typical giant corporation ... is one of several corporations producing commodities which are more or less adequate substitutes for each other. When one of them varies its price, the effect will be felt by the others. If firm A lowers its price, some new demand will be tapped, but the main effect will be to attract customers away from firms B, C and D. The latter, not willing to give up their business to A, will retaliate by lowering their prices, perhaps even undercutting A. While A's original move was made in the expectation of increasing its profit, the net result may be to leave all the firms in a worse position....."

Unstable market situations of this sort .... are anathema to the big corporations .... To avoid such situations therefore becomes the first concern of corporate policy ...." (p.67).

Thus, collusion derives from recognition of rival producers' "retaliatory power": a firm accommodates its rivals' presence because it cannot drive them from the industry. If circumstances arise in which rivals can be driven out, a firm will not hesitate to become a pure monopolist. Likewise, a firm will appreciate that rivals tolerate its presence because they believe they cannot drive it from the industry.

Bearing in mind this conceptualisation of a firm's environment - namely: collusive behaviour existing alongside and deriving from a ready willingness by each firm to drive rivals from the market; i.e. the coexistence of rivalry and collusion<sup>8)</sup> - the literature on oligopolistic reaction and TNC's is of interest. Consider, for instance, Knickerbocker (1973).<sup>9)</sup> Suppose, for example, that rivals A and B initially supply country X from production facilities outside X, but that A then produces in X.<sup>10)</sup> B could see A's move as posing important risks. For example, production in X may expose A to new technologies, giving it an advantage over B. With such risks, Knickerbocker suggests:

"prudence argued for the adoption of a risk-minimising strategy of industry rivals matching each other's moves. To illustrate, if firm B matched, move for move, the acts of its rival ..... B's gains, either in terms of earnings or in terms of new capabilities, would parallel those of A. And if some of firm A's moves turned out to be failures, B's losses would be in the range of those of A." (p. 24-25).

The qualification Knickerbocker attaches to this is that when collusion is "very strong" firms may divide markets among themselves, e.g. A and B agree to be monopolists in X and Y respectively. There is then no possibility of matching.

Buckley and Casson (1976) criticise Knickerbocker (1973) on the fundamental grounds that the objectives of firms are never clearly stated. This is correct. It is not certain from Knickerbocker (1973) why firms pursue a risk-minimising strategy. Moreover, whilst firms will not

undertake unnecessary risks, the risk-minimisation hypothesis goes too far. It implies that if a risk can be avoided, it will not be taken, no matter what the potential rewards. In reality, even though a firm may be risk averse<sup>11)</sup> it seems likely that it will take some risks.

Nevertheless, the analysis in Knickerbocker (1973) has relevance. In a world characterised by the coexistence of rivalry and collusion - and accepting Knickerbocker's qualification regarding the division of markets when collusion is very strong - the risks taken by B in not matching firm A ultimately reduce to one thing, namely: firm A may be able to drive B out of the market, or at least force a new equilibrium in which B obtains reduced profits. Even if B does not mind taking risks, i.e. is risk neutral, this threat may induce B to acquire production facilities in X.

A more specific example may clarify the argument. Assume the initial position, in which both firms supply X from elsewhere, leaves B with profits of  $\pi_b^*$  from that market. Suppose now that firm A acquires production facilities in country X. B has two choices. It either (i) matches A, or (ii) continues to supply X from elsewhere. For simplicity, assume that if (i) is chosen, B obtains profits of  $\pi_b^+$ , and if (ii), it will get zero profits with probability  $p$  and  $\pi_b^*$  with probability  $(1-p)$ , where  $p$  is the probability B attaches to being driven from market X if it does not acquire production facilities in X. If (i) is chosen, B's profits are  $\pi_b^+$ . If (ii), B's expected profits

are  $(1-p)\pi_b^*$ . Then, even if B is a risk neutral profit maximiser, it will acquire production facilities in X if  $(1-p)\pi_b^* < \pi_b^+$ . The higher is p, the more likely is B to acquire facilities abroad. If, for example, B is convinced that A will gain no advantage from producing in X,  $p \rightarrow 0$  and B is unlikely to follow suit. Similarly, the higher is  $\pi_b^+/\pi_b^*$  the more likely is B to match A's move.

Thus, firm B may acquire production facilities in various countries because of the risk in not matching A - in short, because B defends its position. Consider further this risk. It refers to any factor influencing A's ability to drive B from the market, or to force a new equilibrium where B obtains reduced profits. Any determinant of production cost<sup>12)</sup> is therefore vital, because lower costs may enable A to undercut rivals. Significant costs are emphasised in the existing literature - albeit not within the general framework being presented here. For instance, production in various countries may reduce: raw material costs - see, for example, Hilferding (1981), Knickerbocker (1973), and Brewer (1980); costs of transporting goods from and between factories - see, for example, Hilferding (1981) and Vernon (1974); taxes, e.g. import tariffs, investment subsidies and profits tax (bearing in mind the possibility of avoiding these by transfer pricing) - see, for example, Frank (1970), Caves (1971), MacEwan (1972), and Hood and Young (1979). It should also be remembered that governments determine taxes, and that firms are not passive in



their relationships with governments. As Cowling (1982a) recognises.<sup>13)</sup>

"the rate of profits tax can be bid down by threatening to export investment, and similarly the rate of subsidy for investment can be bid up. Such threats will stimulate competitive profits tax cutting and competitive subsidisation of investment by national governments, with each government seeking to maximise the rate of investment in its own country" (p. 146-147).

In addition, the determinants of demand are vital. Particular emphasis has been given in the literature to product differentiation. Where do TNC's fit here? Caves (1971) provides an answer, namely:<sup>14)</sup> if firms actually produce a good where it is marketed, they are in a better position to adapt it to local tastes. Consider the following scenario. Firm A produces good G in country X and supplies to countries X and Y. The fact that A is located in X suggests it can more readily observe the consumers in X, and thus model G accordingly. However, if it observed consumers in Y more closely, A might be able to take account of their characteristics and modify its product to increase profits.

Similarly to this matching analysis, consider three further aspects of defensive action leading to TNC's. The first is pursued in particular by Graham (1978). Suppose firms A and B produce and sell all of their output in country X and, with no other rivals, collude to maximise joint profits. However, firm C, producing a similar good in country Y, begins to produce and sell in X. Graham hypothesises that C's entry

"is likely to disrupt established patterns of conduct within that market, since the foreign subsidiary engages in pricing and product strategies designed to capture some of the market share from local firms." (p. 88).

To preempt C becoming too disruptive, A and B could acquire production facilities in Y. This would be "a purely retaliatory defensive move" - if A and B can threaten C in Y, C may be less disruptive to the equilibrium in X.

Secondly, firms require entry barriers in their industries to prevent new rivals undermining their position - existing firms in an industry cannot obtain above normal profits if there are potential entrants ready and willing to drive profits down.<sup>15)</sup> Thus, they will defend their market dominance against potential rivals by seeking entry barriers. This can explain the existence of TNC's. Two possibilities are:

- (i) developing a differentiated product - e.g. associating a brand name with a specific style. As already indicated, this is facilitated by producing where the good is marketed.
- (ii) securing access to raw materials, thereby preventing potential rivals from obtaining vital ingredients to the production process.

A third aspect of defensive action concerns Knickerbocker's (1973) view that matching does not explain why a firm makes the initial move in producing in various

countries; it only explains the activity of firms that follow. However, whilst this is correct, Yamin (1980) notes that the initial move may be a defence against rivals' threatened moves. As such, it is closely related to matching behaviour.

Moreover, and following on from this, Yamin (1980) also recognises the crucial point that the initial move may be an attack on rivals.<sup>16)</sup> That is, an attempt to obtain advantages enabling gain at rivals' expense. The source of these advantages is again cost and demand factors. In other words, the factors underlying the fears that lead a rival to match an initial move also underlie that move; the coexistence of rivalry and collusion implies that firms defend and attack, that firms look to maintain and improve their market dominance. But remember: firms will not attack if they believe rivals' response will leave them worse off - they will collude to avoid such outcomes.<sup>17)</sup>

Thus, TNC's may arise because a firm defends itself against rivals, fearing the latter will undermine its market position, or because it seeks its own cost or demand advantages that will undermine rivals' market positions. The key to this argument is the coexistence of rivalry and collusion.

The third and remaining set of explanations for the existence of TNC's has the same key. The concept of attack - and, indeed, defence - considers firms attempting to gain

at their rivals' expense. However, it could be that a firm becomes a TNC because it believes it can increase its profits by cost decreases and/or demand changes, but without affecting its rivals' positions. For example, suppose firm A initially produces only in country X, and sells in X and Y. It then acquires production facilities in Y to avoid import tariffs and thus increase its profits. As for rivals, A may have decided that it cannot push them from the market, or alter their position in the market, and thus does not attempt to do so, either before or after it becomes a TNC. The coexistence of rivalry and collusion is vital here because A will not wish rivals to see its production in Y as an attack when it is not an attack. Otherwise, rivals will retaliate and A will be worse off. This is explored further in Cowling and Sugden (1984), focusing on the possibility of rivals viewing a non-attacking price cut as an attack, but presenting a general framework applicable to any form of inter-firm rivalry. The crucial point is this: in all of its activities, A's behaviour is conditioned by its environment - namely: the coexistence of rivalry and collusion.

This concern with the coexistence of rivalry and collusion gives this general theoretical framework its focus on the characteristics of a firm's activities. Thus, rather than examining internal coordination of activities versus the alternative, external coordination by market forces, the analysis takes a wider perspective. For instance, in discussing Graham's (1978) analysis of defens-

ive behaviour, it was supposed that firms A and B initially supply country X from production outside X, that C then produces inside X, and that A and B therefore must decide whether or not to acquire production facilities in Y, where C also produces; i.e. A and B must decide whether to produce in one or two countries. These options are both means of internally coordinating activities, simply being a choice of where to locate production facilities, given the rivalry and collusion environment. Neither contemplates the possibility of external coordination by market forces.

Furthermore, this focus on the characteristics of a firm's activities has distributional implications, in direct contrast to internalisation analysis. Suppose, for instance, that firms A and B initially supply country X from production in Y, where B employs individual I. When A begins production in X, B's choice is match or not match. If it matches, suppose B reduces its operation in Y and no longer employs I. The vital point is that I's welfare may decline as a result of B's relocation; then, the TNC is not an efficient outcome in the sense implied by internalisation analysis. Why? As argued by others, in a world characterised by the coexistence of rivalry and collusion, there is a tendency towards unemployment - see, for example, Kalecki (1939), Baran and Sweezy (1966), and Cowling (1982a). Moreover, whilst B's decision may condemn I to unemployment, evidence suggests that workers would rather be employed than unemployed. Consider, for example, Payne's et al (1983) U.K. survey of approximately 400

unemployed males, over 90% of whom agreed with the statements "having a job is very important to me" and "I hate being on the dole". Also suggestive is Field (1979), reporting that in 1977, 640,000 individuals in the U.K. lived in households receiving income below supplementary benefit level, despite the household having a wage from full-time work.

The crucial fact is that a firm matching rivals is concerned with its profits, and not with the possibility that its dismissed workers are unemployed. At most, workers can attempt to dissuade matching by, for example, accepting such low wages - and thereby cutting employers' costs - that not matching is found to be the most profitable choice. But it may simply be that no wage sufficient to live off is low enough to have an influence. Very importantly, it could also be that when negotiating a wage to prevent matching, workers do not believe a firm's threat to produce elsewhere unless lower wages are accepted. Yet if workers are wrong, firms will produce elsewhere. These arguments, concerning bargaining, involve issues taken up in Section 4.

There are also other vital distributional implications resulting from the focus on the characteristics of a firm's activities. Consider, for instance, consumers' utility. A hornets nest of controversy surrounds, for example, the consequences for consumer utility of product differentiation. Space constraints alone prevent these issues from

being explored here. However, one example illustrates the view that TNC's may arise to the detriment of consumer utility. Thus, consider the case of a firm acquiring production facilities in various countries to prevent potential rivals from entering its industry - e.g. the firm secures vital raw material supplies. The entry barriers (at least could)<sup>18)</sup> imply a higher product price than would otherwise be the case. Assuming their money incomes are unchanged, consumers of the firm's product are therefore worse off. In addition, as yet another example of the importance of distribution, consider a firm bargaining with governments over its tax bill. The critical point about bargaining is its distributional consequences.

Thus, this section presents a general theoretical framework providing three sets of reasons for the existence of TNC's, namely: defending against rivals; attacking rivals; and increasing profits when rivals may see a non-attacking move as an attack. The key to this is the coexistence of rivalry and collusion, giving the framework its focus on the characteristics of a firm's activities. The emphasis is on distributional factors. However, it is only a general theoretical framework. Within it, specific reasons for TNC's arising could be pursued in more detail. Indeed, one such reason is the concern of the following section.

#### 4. LABOUR MARKET DOMINATION

The purpose here is to pursue the Marglinian framework of the previous section in greater depth, and to examine an issue that is new vis-a-vis the "why TNC's?" question. The section has two parts. The first considers a theoretical analysis and the second some empirical evidence. As a final introductory comment, note that the aim is to establish labour market domination as an at least contributory reason for the existence of some TNC's; it is not to establish labour market domination as the reason for all TNC's. Underlying this is the view that in any one case, there is likely to be a number of reasons contributing to a firm's decision to become a TNC.

##### 4.1 THEORETICAL ANALYSIS

Consider individual I, a typical worker in country X employed by firm A. Define  $U_i$  as I's level of utility, where:  $U_i = f(\text{wages})$ .  $f(\cdot)$  is an increasing function of wages. As for firm A, assume it maximises its profits,  $\pi_a$ , where:<sup>19)</sup>  $\pi_a = g(\text{wages})$ . Ceteris paribus - bearing in mind the discussion of costs in considering rivalry and collusion in Section 3 - the less a worker costs the greater are profits, i.e.  $g(\cdot)$  is a decreasing function of wages. (Note a vital point: for ease of exposition,  $f(\cdot)$  and  $g(\cdot)$  have been simplified by omitting effort - i.e. the intensity of work. In fact,  $f(\cdot)$  is a decreasing and  $g(\cdot)$  an increasing function of effort. Therefore, any reference



below to a wage fall is equivalent to a wage fall and/or effort rise.)

A crucial implication of  $f(\cdot)$  and  $g(\cdot)$  is the existence of a conflict over wages: a firm will try to push wages down - it looks to dominate its labour market, in the limit paying subsistence wages - whereas workers look to increase their wages. The outcome of this conflict is determined by the bargaining power of workers and employers. Moreover, following Burkitt and Bowers (1979), for example, workers have a weaker bargaining position when they do not act<sup>20)</sup> collectively because, for instance:

- (i) the loss of potential utility to workers from failure to settle the conflict is more severe than for employers. A workers sole means of livelihood is the sale of his labour, a quick sale generally being essential because accumulated savings are small relative to expenditure commitments - see also Preiser (1971). In contrast, employers can often replace specific workers and/or rearrange the activities of remaining workers to offset the loss of profits.
- (ii) there is usually greater competition for jobs than for workers, and greater competition implies a weaker bargaining position.

(iii) individual workers are often ignorant of their value to particular employers, and less skillful at wage negotiation.

In contrast, collective worker action - e.g. via trade unions - does not suffer these disadvantages to the same extent.<sup>21)</sup>

Before continuing with the main analysis, it should be recognised that this entire discussion of bargaining power is based upon imperfect labour markets. One important aspect of this is that in a perfect labour market, any attempt by employers to depress wages and thereby obtain above normal profits would be met by other firms entering the market, paying higher wages, and obtaining normal profits. In such a case, bargaining power is not a useful concept. However, it is reasonable to rule out this situation as unrealistic. In practice, industry entry barriers limit the set of potential employers,<sup>22)</sup> who can also be expected to avoid competition for workers that pushes wages to the point where only normal profits are obtained. That is, employers can be expected to collude over wages.<sup>23)</sup> Furthermore, if there is an excess supply of workers, collusion is unnecessary; there will be plenty of workers for all - and as noted earlier, in a world characterised by attempts to dominate product markets, which Section 5 suggests is a realistic characterisation, there is a tendency towards unemployment.

However, returning to the main theme: against this background of worker/employer conflict, what is the importance of TNC's? Consider the case where firm A can choose between two methods of production: it can be a national corporation (NC), with production facilities only in country X, or a TNC, producing in X and Y. Define:  $w^T$  = the wage paid to I by firm A, if it is a TNC;  $w^N$  the wage paid to I by firm A if it is a NC. Because the choice of TNC versus NC affects the ability of workers to act collectively,  $w^T < w^N$ . That is, by being a TNC rather than a NC, firm A can increase profits by decreasing I's wages, and hence I's utility.<sup>24)</sup>

Thus, Lane (1982a), for example, discusses problems faced by British trade unionists in a multi-plant NC, let alone a TNC. Whereas workers could theoretically elect representatives to plan collective action across plants - i.e. they could form "combine committees" - Lane notes practical difficulties arising from inter-plant differences in union development, and the historical organisation of unions.

"From the trade unionist's point of view the multi-plant firm raises a host of not readily resolvable problems. The wide dispersion of plants over considerable distances, with location in areas differing in their labour movement traditions, means that within the divisional structure of any one firm uneven development of trade union practice as between plants is the norm. Attempts at forming combine committees always fall foul of this problem - and doubly so where combine committees organise on an inter-divisional or inter-company basis. If there are difficulties in involving activists in such schemes, imagine the problems of interesting rank and file."  
(p. 11).

Lane (1982a) continues:

"These circumstances are compounded by internal union organisation. Full time officers in most unions have, so to speak, a portfolio of companies within a given geographic area for which they are responsible. It follows that the employees of a multi-plant company operating in a number of regions must have contact with a number of full time officers. Constraints of time, resources and variation in outlook as between these officers ensures that they neither meet nor exchange information on a regular and systematic basis. The only point of convergence is through the national officer responsible for the company concerned - who suffers from precisely the same constraints." (p. 11).

When a number of plants are spread across various countries, these difficulties increase considerably. For instance,<sup>25)</sup> CIS (1978) points out with regard to Ford workers across Europe:

"It's difficult enough for Ford workers in one country, sharing a common language and separated by comparatively small distances, to organise effectively against the company on anything more than a local plant or shop level. Even here, major problems of communication, sectionalism, and cumbersome national union machinery arise. On a European scale the problems are multiplied many times. Workers in France, Germany, Belgium, Spain and the U.K. use six different languages plus those of the immigrants. It means much greater distances - over a thousand miles from Halewood to Valencia, with disproportionately large travel and telephone costs as a result. There are that many more unions - and another layer, the international union organisation, on top." (p. 30).

Furthermore, this analysis suggests a second, closely related explanation for the existence of TNC's. Suppose, for instance, firm A decides to erect production facilities to manufacture a particular good. Ceteris paribus, it will employ those workers accepting the lowest wages. This is again determined by bargaining. If all potential workers act collectively, employers will simply have to settle for the best they can negotiate with, for example, the trade

union. However, if workers do not act collectively, employers can play off one group against another - bearing in mind the factors weakening workers' position when they are separated - and therefore secure lower wages.<sup>26)</sup> For instance, having asked workers in country X their price, A can tell workers in Y that if they accept lower wages, they get the jobs. When workers in Y concede, firm A can return to workers in X and seek still more gains. On some occasions, A will be a NC because workers in one country always accept the lowest wages. But this will not always be so, in which case TNC's arise.

An appropriate description covering either of these bargaining situations is "separate and dominate"; by separating workers into country specific groups, employers improve their bargaining position, thereby gaining at the expense of workers.

A possible criticism of this is: "if a worker is better off when a firm produces in one country, why does he not offer his services more cheaply to the firm if it continues to produce solely in one country, and thereby prevent its acquiring production facilities elsewhere?"<sup>27)</sup> This criticism can be countered.

Consider first the case of bargaining when a firm erects new production facilities. The argument here recognised that a firm may in fact locate in one country, depending upon the credibility of threats to locate

elsewhere. The crucial requirement is a workforce separated into groups that can be played off against each other. This involves bluff and counter-bluff, threat and counter-threat; perhaps, for example, workers in country X simply do not believe that their failure to accept lower wages will lead to a firm producing elsewhere. As a result, TNC's may arise. The criticism is therefore not valid.

Whereas this aspect of separate and dominate concerns bargaining over new investments in, say, period  $t$ , the first case outlined earlier examines the wage conflict in periods  $t+1$ ,  $t+2$ , ..., albeit still referring to a decision to become a TNC in period  $t$ . Compare now two situations. In the first, firm A is a NC in country X, and facing workers acting collectively. In the second, A is a TNC producing in X and Y, and facing workers separated between these two countries. Considering again the three aforementioned factors illustrating the importance of collective action, if A chose the first situation rather than the second, it would face a workforce that:

(i) can inflict greater loss of profits on the firm if the wage conflict is not settled;

(ii) competes less - indeed, not at all - within itself for jobs;

(iii) has greater information on the value of particular workers to A.

Will A choose to be a NC because the workforce will restrain itself by not attempting to use factors like (i)-(iii)? If yes, workers must assess employers' beliefs regarding workers' increased bargaining power in a NC, and then convince employers they are not using this greater power. However, this is again a game of bluff, etc. Thus, TNC's will arise. The criticism is not valid.

Even more to the point, if yes, workers must restrain themselves in period  $t+1$ ,  $t+2$ ,... simply because the firm could have chosen to produce elsewhere in period  $t$ . If workers ignore future investments they will make full use of factors like (i)-(iii), simply because what happened in the past is in the past. If they do not ignore future investments, fear that the firm will subsequently become a TNC may temper their behaviour. But as this is again a game of bluff, etc., there will be times when employers believe that if they do not produce in various countries, workers may use their full collective strength, at least on some occasions. For example, workers may seek as much as possible immediately because they are unsure if A will make more new investments. Thus, whether or not workers ignore future investments, TNC's arise; a firm only secures improvements in its bargaining power by being a TNC. Again, this criticism is not valid. This can be simply illustrated. Define:  $\pi_a^T$  = firm A's profits if it produces in

countries X and Y;  $\pi_a^{N1}$  A's profits if it produces only in X, and workers use their full collective strength;  $\pi_a^{N2}$  A's profits if it produces only in X, and workers do not use their full collective strength;  $p$   $\equiv$  the probability employers attach to workers using their full collective strength when A produces only in X. (If workers ignore future investments,  $p=1$ ; if they may use their full collective strength,  $0 \leq p < 1$ .) Then, if A is a risk neutral profit maximiser,<sup>28)</sup> it will become a TNC if:  $\pi_a^T > p \pi_a^{N1} + (1-p) \pi_a^{N2}$ . If the only effect on A's costs from becoming a TNC is this wage affect,  $\pi_a^T = \pi_a^{N2} > \pi_a^{N1}$  and  $p > 0$  means A becomes a TNC.<sup>29)</sup>

The implication of this theoretical analysis is that, similarly to the way Marglin's (1974) detailed analysis of the capitalist/worker relationship led to explanations for the rise of the factory, firms' attempts to dominate labour markets leads to production in various countries. The issue is not internal coordination of activities versus external coordination by market forces. Rather, it is a comparison of alternative means of internally coordinating activities. Moreover, and also in sharp contrast to internalisation analysis, distribution and not efficiency is a resultant concern; i.e. TNC's may<sup>30)</sup> be formed to increase profits at the expense of workers' utility - this is undoubtedly not a more efficient outcome.<sup>31)</sup>

These are important implications. However, and not to undermine any of the theoretical analysis developed in this



paper, the value of further theoretical discussion is limited; no matter how detailed theoretical arguments become, without supporting empirical evidence they tend to be accepted at best with scepticism. The concern of the remainder of this paper is therefore to examine empirical evidence related to the separate and dominate concept.

#### 4.2 EMPIRICAL EVIDENCE

Is there evidence concerning the following separate and dominate hypothesis (SDH): an at least contributory reason for the existence of some TNC'S is the separation of workers into country specific groups enabling a firm to pay less wages when it is a TNC rather than a NC?

It is interesting to examine analyses of wage levels in different types of firm. In particular, consider Buckley and Enderwick (1983), typical<sup>32)</sup> of such studies.<sup>33)</sup> This examines, for a sample of British manufacturing plants in 1980, the average weekly gross pay of selected employee groups (namely: semi-skilled manual, skilled manual, and clerical workers, and middle management) as estimated by senior management. Having identified each plant as U.K. or non-U.K. owned, Buckley and Enderwick conclude that the data supports the view that, in general, non-U.K. owned plants offer comparable or higher wages than their indigenous rivals. For the whole sample, median wages are higher in non-U.K. plants amongst semi-skilled manual, skilled manual, and clerical workers, and virtually

identical for middle management. Broadly similar results are obtained when the sample is broken down by industry, although there are exceptions and the authors suggest "considerable caution", at least partly due to the small sample in some industries.

Are these results fatal to SDH?<sup>34)</sup> The answer is no, and for several reasons.

Accept, for the moment, that comparing average TNC and NC wages does test whether or not some firms pay less when they are TNC's rather than NC's. That is, accept that, for instance, if TNC's tend to pay more than NC's, no firm pays less wages when it is a TNC rather than NC. Then, even the whole sample result in Buckley and Enderwick (1983) is not fatal to SDH; on two counts, it still does not test the hypothesis. Firstly, it does not distinguish TNC's and NC's. Clearly, a U.K. owned plant could be part of a TNC. Then, if a U.K. owned TNC pays sufficiently low wages, non-U.K. plants can pay more than U.K. plants whilst TNC's pay less than NC's. Secondly, the data ignores effort. Yet in the discussion in Section 4.1, it was noted that reference to a wage fall is equivalent to a wage fall and/or effort rise. In short, even if TNC's pay higher wages than NC's, this may be more than offset by greater worker effort.<sup>35)</sup> Moreover, these two problems aside, and moving on to the industry level conclusion, Buckley and Enderwick (1983) do not actually contradict SDH. The hypothesis merely refers to an at least contributory reason

for the existence of some TNC's, whilst their results reveal exceptions to their general finding in some industries.

Furthermore, comparing average TNC and NC wages is not a good test of SDH. Again, there are two points. Firstly, a finding that TNC's tend to pay more than NC's does not undermine the possibility of some TNC's paying less than NC's. As already emphasised, SDH refers to an at least contributory reason for the existence of some TNC's. Secondly, even if all TNC's pay higher wages than all NC's, it is not fatal to SDH. Why? Where a TNC pays higher wages than a NC; its existence may nevertheless be explained by the separate and dominate concept.

Suppose firm A is a wage leader in country Y and that, separating workers into country specific groups to thereby pay less wages, it acquires production facilities in country X. In X, A can be a high payer - for example, because it feels this brings forth better workers, or because it faces workers well organised within X. Yet it can still pay less than if it produced entirely in Y facing a workforce acting collectively. For instance, A may use its X production to undermine a strike by workers in Y and thereby secure lower wages in Y; and/or, in making its initial investment in X, A may play off two separated yet individually well organised workforces to obtain lower wages. In addition, even though A uses its production base in X to undermine workers in Y, it can remain a wage leader

in Y - for example because it continues to face the best organised workers in Y, or because of historical inertia. In short, firm A can be a high payer in X and Y, even though separate and dominate is a reason for its producing in both countries. Parallel arguments also apply to firm B, a firm initially producing solely in country X but now producing in X and Y. That is, firm B can be a high payer in X and Y, even though separate and dominate is a reason for its producing in both countries.

Thus, observing that a TNC pays more than a NC is consistent with SDH. Equally and similarly, observing that a TNC pays less than a NC is consistent with SDH. The critical factor is simply that a firm's wages are less when it separates workers across countries than when it produces in only one country. Whether the firm is a high payer or low payer relative to rivals is not fatal to SDH.

This discussion leads to an important point, namely: studies analysing wage levels in various types of firm have not reached the heart of SDH. Moreover, they will not do so in the future; this is ensured by the fact that a TNC paying more or less than a NC does not undermine the hypothesis. In contrast, the heart of the matter is reached when examining the views of participants in the firm, and actual cases of firms separating workers into country specific groups.

As regards the former, ILO (1976a) is useful as it summarises some trade union views. It notes:

"union concerns that some multinational enterprises are adopting the policy of "dual" sourcing. Under such a policy a multinational enterprise would deliberately seek to have alternative sources of production for given products or components, and thereby reduce the impact of a strike in any one country." (p. 20, emphasis added).

This indicates a belief that firms become TNC's at least partly to separate their workers into country specific groups enabling them to pay less wages when they are TNC'S rather than NC's. More generally, ILO (1976a) also comments:

"One of the most serious charges which unions make, from time to time, vis-a-vis multinational companies is that the latter use their internationally-spread facilities as a threat to counter union demands and power. If the union will not yield, the company can or will threaten to transfer its production to another country, or the company may utilise already existing facilities in another country to penalise the "demanding" union, or the company may threaten to curtail its future investments in the country in which the union is making "unreasonable" (in the company's judgement) demands. All of these tactics are subsumed by the unions under the general head of threats to shift production as part of the labour tactics of multinational enterprises." (p. 19).

This is supported by "typical" comments from various European unions, for example:

"In many companies the existence of alternative sources of supply gives management scope to threaten to switch products to other locations. This can be a very effective bargaining counter." (p. 19).

"the numerous transfers to countries in which wage costs are lower weigh heavily on general wage levels and undermine the many social benefits which have often been acquired after many years of struggle by the workers." (p. 19).<sup>37)</sup>

"Multinational companies have wide opportunities of moving their capital from one country to another. This .... makes it more difficult for trade union organisations to pursue their demands for higher wages,

employment and workers' influence in the firm." (p. 19-20).<sup>38)</sup>

Insofar as these views are representative, they imply that firms separate workers into country specific groups that are played off against each other. They do not say firms consequently become TNC's, but they are strongly suggestive. That is, it seems especially unlikely that firms only ever threaten to invest elsewhere, never actually doing so; in practice, it is probable that the threats will sometimes be executed.

These conclusions are supported by Greer and Shearer (1981), reporting a survey of U.S. unions, 50 in all, 13 having experience with non-U.S. owned companies. The following table reproduces some results.

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Table: Number of unions reporting on use of multinational bargaining tactics by foreign-owned U.S. firms

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Company Tactic	Firms frequently use tactic	Firms seldom use tactic	Firms never use tactic
<hr/>			
Use of foreign production to undercut U.S. union's bargaining position			
Threatened use.....	0	1	7
Actually used.....	0	2	4
Use of foreign production to undercut U.S. union's position during a strike			
Threatened use.....	1	1	5
Actually used.....	1	1	4
Movement of U.S. production facilities abroad or new investments abroad to strengthen U.S. bargaining position			
Threatened to move, invest abroad.....	0	2	6
Actually moved, invested abroad.....	0	2	5

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Source: Greer and Shearer (1981)

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These again raise the dual sourcing issue, and the use of threats to shift production elsewhere. Moreover, that these are not entirely empty threats is revealed by the actual "use of foreign production to undercut U.S. union's bargaining position", and "to undercut U.S. union's position during a strike". This still does not establish conclusively that a reason for "foreign production" is to undercut U.S. unions, but it does add

to the suggestion. Note also the particularly interesting claim from 2 unions (out of 7) that firms do actually move their U.S. production facilities elsewhere or do actually make new investments abroad to strengthen their U.S. bargaining position. These survey results are clear evidence in favour of SDH.

In addition, Greer and Schearer (1981) reports a survey of 29 U.S. companies, each non-U.S. owned. 7 out of 26 firms agreed they would consider using production in various countries to discourage U.S. strikes, whilst 1 out of 28 agreed they had actually done so. Again, whilst this does not say firms become TNC's to improve their bargaining power, it is suggestive; if firms recognise a means by which they can benefit from being a TNC, this means is likely to be a contributory factor explaining their becoming TNC's. These results are also supported by ILO's (1976a) reference to the Chrysler Corporation Chairman extolling the benefits of dual sourcing vis-à-vis bargaining power. Thus, trade unionists are apparently not paranoid in their views of firms' activities - at least, not paranoid all of the time.

This is important. In general, a problem when examining any views - firms' or unions' - is the interference of political considerations. For example, the separation of workers into country specific groups to reduce worker bargaining power is not something firms



are likely to advertise.<sup>39)</sup> Yet the evidence of the previous paragraph - i.e. evidence based upon firms' own views - is, for instance, that at least some firms do separate workers to reduce worker bargaining power. Thus, from both unions and firms - i.e. from both parties to the wage conflict - there is evidence favouring SDH. Precisely because it comes from both parties, despite the political considerations problem, the evidence is strong. The fact that ILO (1976a), for instance, also refers to firms denying that they separate workers does not undermine this conclusion. The vital point is: it is not denied by all firms.

Nevertheless, when examining the views of participants in the firm the political consideration problem is acute. Always, the issue is: does this union/firm really mean what it is saying, or are its comments merely political rhetoric? Because of this, there are narrow limits to the value of accumulating view after view.

Accordingly, consider now actual cases of firms separating workers. In particular, consider evidence from the car industry - a comparatively well documented example. This supports the evidence of participants in the firm.

Thus, Steuer and Gennard (1971) report that in February 1970, Henry Ford was questioned by Hailwood

shop stewards about rumours of new investment going to Germany rather than the U.K., it being known that Detroit was unhappy with U.K. industrial relations. This is taken up by ILO (1976a). Referring, for example, to 1971 and the Ford strike in Britain:

"While this dispute was underway early that year, Henry Ford ..... was reported to have declared that parts of the Ford Escort and Cortina models .... would in the future no longer be made in the United Kingdom but would be manufactured in Asia ....

Mr. Ford came to London shortly thereafter, and in a meeting with (then) British Prime Minister Heath, he is reported to have let it be known, with regard to the company's labour difficulties, that if improvements were not forthcoming, the company would take its business elsewhere." (p. 21-22).

Moreover, the threats are seemingly not empty:

"In 1973 when the company decided to locate the bulk of its small car engine production in the United States (for the Pinto model, sold largely in the United States), the Financial Times (22 June) reported: "It is no secret that industrial disputes in Britain priced the United Kingdom out of the market...." The same paper, added, "There was, of course, no guarantee that Britain would ever have been selected for such a major development but the comments of Henry Ford ... (in) the early part of the year made it clear that the United Kingdom had dropped out of the running ...." The same report added, "the fear of similar labour unrest in Germany in the future may have entered into the company decision to locate the plant in the United States." (p. 22).

Nor is Ford the only company concerned:

"Difficult labour disputes at the Chrysler plants in the United Kingdom in 1973, provoked somewhat similar overtones or visions of production transfers out of the country, or future reductions of company investment in the country." (p. 22).

Thus:

"More seriously, the Financial Times also observed the labour disputes at Chrysler were currently leading company planners to consider switching substantial production to its French (Simca) plants, and/or to a partner operation in Japan." (p. 23).

Furthermore, the catalogue of Ford threats against workers in one country by comparison with workers elsewhere is again documented in CIS (1978).<sup>40)</sup> This also reports Ford's decision to deliberately dual source Fiesta components to reduce worker bargaining power. For instance, engines:

"in the event of a shutdown of the Dagenham Fiesta engine line, the company's aim would be to boost output of the Valencia engine line to supply extra units to the Dagenham and Saarlouis assembly lines. With a higher output of the Valencia engine cars from these two plants, stocks of the Dagenham engines could be stretched out to minimise interruptions in supply of any model. Similarly, if the Valencia engine plant were shut down ...." (p. 30).

Finally, and coming more up to date, reports from the Financial Times reveal that the threats at Ford continue:

"Mr. Paul Roots, Ford employee relations director, told the (U.K.) unions that the company was suffering from high labour costs because of overmanning, inefficient working practices and failure to achieve production targets.

'This year, to date, we have achieved only 62 to 64 per cent of capacity at Halewood and Dagenham against 100 per cent at Saarlouis in West Germany and 96 per cent at Valencia, Spain', he said.

'If we do not get our costs down we cannot compete and if we cannot compete we will not survive in Britain as a manufacturing company.'"<sup>41)</sup>

Also, referring to the Vice President for Manufacturing at Ford of Europe, Mr. Hayden, during a dispute with U.K. workers over investment plans:

"Although Mr. Hayden denied that Ford was running down its British plants, he gave a stiff warning that the consequences for future investment would be serious if the productivity gap with European plants was not closed."<sup>42)</sup>

Thus, whereas claims of dual sourcing and threats to shift production were examined earlier as evidence favouring SDH, the car industry gives actual examples regarding both and they are likewise evidence favouring SDH.<sup>43)</sup>

All in all, therefore, there is strong empirical justification for accepting SDH. In short, it is reasonable to claim: an at least contributory reason for the existence of some TNC's is the separation of workers into country specific groups enabling a firm to pay less wages when it is a TNC rather than a NC.

## 5. CONCLUSION

This paper has analysed various aspects of the "why TNC's?" question. Having contrasted Buckley and Casson's internalisation approach with Marglin's explanation for the factory, it pursues a Marglinian analysis. Firstly, a general theoretical framework is developed, the coexistence of rivalry and collusion giving the framework its focus on the characteristics of a firm's activities. Three sets of reasons for the existence of TNC's are provided: defending against rivals; attacking rivals; and increasing profits when rivals may see a non-attacking move as an attack. Critically, the emphasis is on distribution, in direct contrast to the internalisation analysis. Secondly, labour market domination as an explanation for TNC's is

pursued in detail. A theoretical analysis is developed - maintaining the Marglinian approach: focusing in detail on the characteristics of a firm's activities, and emphasising the distributional considerations - and empirical evidence examined. Thus, labour market domination is established as an at least contributory reason for the existence of some TNC's. The paper's originality is mainly to formulate (at least the start of) a Marglinian analysis of "why TNC's?" Within this, it places a considerable body of existing literature in a product market domination framework not existing elsewhere.<sup>44)</sup> In addition, its concern with labour market domination is new as regards the "why TNC's?" issue.

NOTES

- 1) The question is at least important because an analysis of the influence of TNC's can be better undertaken if it is known why TNC's arise. Moreover, as a minimum, the analyses "why TNC's?" and "what importance TNC's?" should be consistent.
- 2) The paper is not a literature survey, for which see Hood and Young (1979), Buckley (1981), or Caves (1982).
- 3) This work is based on Coase (1937). See also Caves (1982).
- 4) Dunning (1977, 1979, 1980, 1981) has proposed an "eclectic theory" which requires (among other things) that internalisation of activities is preferable to external coordination, and that a firm has a "monopolistic advantage" over rivals. This contrasts with the interpretation of the literature in this paper: internalisation, on its own, explains the existence of firms, including TNC's. Casson (1980) supports this view. The monopolistic advantage concept comes from the interpretation of Hymer (1960) by Kindleberger (1969), discussed in Note 17.
- 5) It is unclear if internalisation in Dunning's eclectic theory - see Note 4 - has efficiency implications. If it does not, the point is not pursued.
- 6) See also Marglin (1982).
- 7) See Paper Two for a more detailed discussion of the importance of price collusion, and its determinants.
- 8) See also Cowling (1982a).
- 9) See also Magdoff and Sweezy (1969) and Brewer (1980).
- 10) As Vernon (1972) notes, the analysis merely requires that firms are rivals, not that they both supply X initially. For example, they may both serve Y, and A's move into X may cause B to fear that A will supply Y more cheaply from X.
- 11) Rugman (1975, 1977) suggests firms are actually risk-averse profit maximisers, the reason for TNC's being that production in various countries reduces risk. See also Buckley (1981). Whether or not risk-aversion is realistic will not be pursued here. Suffice it to note that risk-aversion does not undermine the arguments in this paper, and that "aversion to risk" immediately prompts the question: risk of what? Then, the characteristics of a firm's activities discussed in this paper come to the fore.
- 12) Adjusting for input quality, of course.

- 13) See also Gennard (1972) and Fröbel et al (1980).
- 14) See also MacEwan (1972). Vernon (1966) makes a similar point regarding the introduction of new products.
- 15) For a general discussion of entry barriers, see for instance Encaoua et al (1982).
- 16) See also Hymer (1975).
- 17) Although Yamin (1980) presents a general framework based upon rivalry, collusion is ignored. A further fundamental difference from this paper is Yamin's acceptance of the view - based upon Kindleberger's (1969) interpretation of Hymer (1960) - that a "monopolistic advantage" is necessary for a firm to become a TNC. This is not required in the general framework of Section 3.

To illustrate the argument, consider firm A, with its administrative headquarters and only production facilities in the U.K. Suppose A contemplates acquiring production facilities in the U.S.A., over 3,000 miles away. Kindleberger notes:

"There are costs of operating at a distance, costs not only of travel, communication, and time lost in communicating information and decisions, but also costs of misunderstanding that leads to errors." (p. 12)

These costs would not be faced, for example, by firm B, with its administrative headquarters and only production facilities in the U.S.. Thus, with perfect international markets in technology, factor inputs, and products, B would always prevent A from acquiring U.S. production facilities. If firm A does acquire such facilities, there must be a market imperfection; put another way, A must have a "monopolistic advantage" over existing or potential U.S. firms.

Assuming firms do face costs of operating at a distance, Kindleberger's analysis is correct, by definition of perfect markets. However, it is undermined by an at least reasonable hypothesis contained in Buckley (1981), namely: established TNC's have developed techniques to counter distance costs, which they do not therefore incur. That is, a Hymer/Kindleberger approach cannot explain the activity of established TNC's.

This is not to claim that imperfect markets are unimportant. Indeed, the analysis favoured in this paper is similar to Kindleberger's (1969): it emphasises imperfect markets, and draws upon literature in the Kindleberger tradition. However, whereas Kindleberger begins with costs of operating at a distance and concludes that markets must be

- imperfect for there to be TNC's, the analysis presented here begins with imperfect markets and concludes with implications for "why TNC's?" The latter cannot be criticised on the grounds that established TNC's do not incur costs of operating at a distance, such costs not being a critical issue. Although the view contained in Buckley (1981) is at least a reasonable hypothesis, it remains true that established TNC's operate in a world of imperfect markets, and it is this that leads to the acquisition of production facilities in various countries.
- 18) As a counter-example, it could be that if entry did occur, the entrant has an identical cost function to existing firms and joint profits continue to be maximised. But in this case, the implication of the firm becoming a TNC is a redistribution of profit; i.e. the existing firm does not lose profit to the entrant. Again, this is not an efficient outcome.
  - 19) There are other arguments of the profits function, including effort, and as is clear from Section 3. For simplicity alone, they are omitted here.
  - 20) It is not simply collective bargaining that is in issue. For instance, contacts between workers to foster information sharing are important. See, for example, Enderwick (1983).
  - 21) For example:
    - (i) acting together increases the loss of utility to employers from failure to settle the conflict.
    - (ii) collective action prevents many sellers competing amongst themselves.
    - (iii) at relatively very little cost to each worker, trade unions, for instance, can acquire information about a firm's activities, and negotiating skill.
  - 22) See again Note 15.
  - 23) The existence of localised labour markets is likely to be important here insofar as collusion is, ceteris paribus, easier the fewer the firms that are colluding. See also the evidence of collusion over wages in Forsyth's (1972) survey of Scottish firms.
  - 24) In his eclectic theory, Dunning (1980) suggests that a TNC's monopolistic advantage may be its ability "to reduce the impact of strikes or industrial unrest in one country by operating parallel production capacity in another ...." (p. 10). Nevertheless, Dunning's theory is very different from the approach in this paper, as earlier footnotes indicate.
  - 25) See also Gennard (1972), Craypo (1975), Ullman



(1975), ILO (1976a), Northrup (1978), Kujawa (1979a, 1979b), and Helfgott (1983).

26) See also Fröbel et al (1980).

27) This would not increase the workers' utility, but would mean that separate and dominate does not answer "why TNC's?"

28) See again Note 11.

29) Observe how this analysis of bargaining in periods  $t+1$ ,  $t+2$ , ... is closely linked with bargaining over new investments. That is, when employers bargain with workers over new investment in period  $t$ , they will bear in mind how those workers have behaved in the past.

30) That is, separate and dominate provides at least contributory reasons for the existence of some TNC's; it is not the reason for all TNC's.

31) Cantwell (1984) criticises the concern with distribution in (an earlier version of and therefore) this paper, arguing that efficiency is likely to be the central issue in a dynamic framework, albeit recognising that distribution plays some role. This is based on the view that changes in period  $t$ , even if they involve distributional rather than efficiency considerations at  $t$ , are likely to inspire more efficient outcomes in the longer run - e.g. because of the technical innovations that follow. To return to Marglin's (1974) analysis, for example: even if the factory implied short run distributional rather than efficiency changes, in the long run it leads to the development of machinery, etc. that implies all are better off than in earlier periods. But this does not analyse the fact that efficiency versus distribution in a dynamic framework requires comparison of alternative growth paths - e.g. whilst factory production leads to certain machines being developed, so too would other forms of production, technological innovation being tailored to the demands of the innovator. See Cowling (1982a).

32) That is, typical in the sense of the conclusion drawn and of the criticism that can be made of it regarding SDH.

33) See also Steuer and Gennard (1971), Gennard (1972), Dunning (1976), ILO (1976b) - giving a useful general survey - and Dunning and Morgan (1980).

34) In numerous discussions of earlier versions of this paper, this point has been raised.

35) Steuer and Gennard (1971), referring to the U.K., note:

"the foreign subsidiary, particularly the American-owned firm, is alleged to utilise labour more effectively, which could be a nice way of saying people work harder." (p. 119).

- 36) Comments from a British Trades Union Congress Conference Report.
- 37) The view of the French CGT.
- 38) A statement from a Swedish Metalworkers Union Congress.
- 39) See ILO (1976a), where this point is recognised.
- 40) See again the discussion in Section 4.1, where CIS (1978) is quoted.
- 41) October 29th, 1983, page 3.
- 42) February 23rd, 1984, page 1.
- 43) Moreover, the evidence is not confined to the car industry. Gennard (1972) notes that Goodyear Tyre Company, for example, has used supplies from its operations elsewhere to undermine industrial action in Britain. Also, Fröbel et al (1980) give an illustration of an undisguised threat regarding future investment. They discuss the acquisition of production facilities in Wexford, Ireland, by Nino AG, a West German textile producer. The views of Eire's development agency chairman are quoted from the economic supplement of the West German newspaper Frankfurter Allgemeine Zeitung:  
"You have heard that this German company wishes to extend its operations here in Wexford .... However, the plans for this expansion do not only depend on the state of the economy, but also on how much you people here in Wexford are willing to cooperate with this undertaking ... you should ... bear in mind that we are competing with many other countries in the world to obtain new industries, and that there are development corporations everywhere. We therefore have to convince the investor that he is going to find himself in surroundings which will let him succeed..." (p. 122).
- 44) Throughout, liberal use has been made of footnotes to compare the analysis with others.

PAPER FOUR

THE ALLEGED SEPARATION OF OWNERSHIP AND CONTROL IN THE  
THEORY OF THE FIRM: A DYNAMIC, HISTORICAL APPROACH.\*

(JOINTLY WRITTEN WITH CHRISTOS N. PITELIS)

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## 1. INTRODUCTION

Existing literature on the separation of ownership and control in the theory of the firm is largely confined to a static, ahistorical context.<sup>1)</sup> It tends to view modern firms as different, both quantitatively and qualitatively, from their predecessors. Whereas the latter are seen as under the control of their owners, the large corporations of today are classified as either owner or manager controlled. This classification is based upon an ex post analysis of share ownership<sup>2)</sup>: if no cohesive group of shareholders - i.e. owners - is found to possess more than a fixed percentage of shares, the conclusion is that owners do not have control, which is assumed to pass to managers.

In contrast, the aim of this paper is to present an evolutionary approach to the theory of the firm.

Section 2 explores the theoretical framework, attempting to establish an alternative perspective on the control problem, and presenting a diagrammatic exposition of the argument and some alternatives. Beginning from the position where an owner(s) has control and recognizing that control is inherently beneficial, it is argued that owners will assess the percentage of shares others can obtain before control is lost. That is, it is suggested that causality in reality runs from control to share distribution. In general, the observed distribution of shares will suffice to give a subset of owners - "capitalists" - control.

The view taken is that this approach is more plausible than alternatives, and as such the burden of empirical proof must lie with those favouring these alternatives.<sup>3)</sup> Section 3 considers the existing evidence, both direct and indirect. The hypothesis that capitalists control firms performs at least as well as the alternatives.

Finally, Section 4 concludes the paper with a brief summary.

## 2. CONTROL OF THE FIRM: A THEORETICAL FRAMEWORK

### 2.1 WHAT DOES CONTROL MEAN?

To avoid semantic misunderstandings, it is initially essential to consider the question: what does control mean?<sup>4)</sup>

Throughout the paper, control implies the ability to determine broad corporate objectives, despite resistance from others. By broad corporate objectives, we refer to decisions taken over strategic issues, such as "the rules of the game" (i.e. a firm's relationship with rivals), the national or international orientation of the firm, and its relationship with the state, foreign governments, workers (and other non-controlling groups in the firm), sources of raw materials, and markets. See Zeitlin (1974). Control does not imply the making of day-to-day decisions over tactical issues, such as promotional activities, the choice of particular projects from a set of alternatives, etc.. Whereas these issues are significant for the short run smooth functioning of the firm, it is our assumption that, subject to rare exceptions<sup>5)</sup>, it is the long run strategic decisions which determine the success or failure of the firm.

Although the remainder of the paper simply refers to control, it should be noted that such control can in fact be "actual" or "potential".

Thus, from the time a strategic decision is taken, the problem of the best way of implementing it arises. This is not necessarily the concern of those taking the decision; it may be left to others specifically employed and/or trained for such a purpose. These individuals may be left with discretion as to the exact means of implementation, but this only implies control if two conditions are met:

- (i) The exercise of discretion replaces the strategic decision with another, and
- (ii) it succeeds in implementing this decision despite resistance from the original decision takers.

This would essentially be a transfer of control, a possibility analysed later in the paper.

If neither (i) nor (ii) is satisfied, control is with the original decision takers. However, if condition (i) is satisfied but (ii) is not, the situation is one of actual control; i.e. a strategic decision is altered but resistance from the original decision takers results in the original decision being implemented. Moreover, it is also possible that these day-to-day decision takers challenging the strategic decision will be punished, for example sacked, or not promoted.

However, in practice prospective challengers to a strategic decision can often be expected to realise the futility of a challenge, or to appreciate that a challenge would merely lead to their punishment. Therefore, they will not attempt to change a strategic decision. That is, control is more likely to be potential rather than actual, albeit this is equally as real. See also Zeitlin (1974), Scott and Hughes (1976), and Nyman and Silberston (1978).

Finally as regards definitions, note that throughout the paper, control exercised via a holding of shares is defined as owner control, whether or not those owners also play a role in the day-to-day decision making of a firm. In particular, the paper makes no attempt to analyse the consequences of control exercised by those who also make day-to-day decisions as against control exercised by those who do not make such decisions.<sup>6)</sup>

## 2.2 AN ANALYTICAL FRAMEWORK

Consider now the following situation. Firm F - a typical firm in nineteenth century capitalism - is a small enterprise owned entirely by individual(s) C - where C represents "capitalist(s)". Workers are employed to perform certain tasks, but C is in total control of the firm. Thus, firm F is indisputably an owner controlled firm.



Suppose now that the firm expands. Will control be lost by C ? If so, to whom? The answer to these questions can be sought in an exploration of the two critical needs of an expansion, namely:

- (i) finance - e.g. a new factory must be paid for - and
- (ii) managers - to administrate the now more complex and bulky firm organisation.

The prevailing view amongst economists appears to be that C does lose control, and to management. See, for example, Marris and Mueller (1980). This is based upon the observation that finance is obtained by the issue of shares in the firm to (often) numerous shareholders. The latter own the firm, possessing the right to hire and fire management, and receiving a dividend on each share. However, because there are (often) so many shareholders, it is argued that, save in exceptional circumstances, the power to hire and fire is to all intents and purposes non-existent. Managers therefore have discretion in following their own objectives. See also Scott (1979).

This managerial approach is deficient on at least three closely related counts:

- (i) It is unclear where the notion that exceptional circumstances results in owners' intervention fits within the overall concept of control. Exactly what does this power of intervention

entail? This deficiency of managerialism arises from a failure to explore the meaning of control.

- (ii) Even if it is accepted that owners lose control, managerialists only assume that managers have control. See Zeitlin (1974). But why not workers, for example?
- (iii) In their largely static, ahistorical analysis, managerialists have never adequately explained why the original owner(s) should be expected to lose control to managers. Put another way, the critical issue is: given that C initially controls the firm, why should C, in choosing that the firm expands, choose to give away control?

(iii) is the fundamental issue that will now be addressed.

The first point to note follows from the definition of control. The ability to determine broad corporate objectives despite resistance from others implies something inherently beneficial in possessing control. That is, whoever possesses control can make the firm follow a strategy that best suits his (or their) interests, rather than one preferred by others. The essence of the issue is consequently distributional<sup>7)</sup>, namely: who is to benefit and who lose as a consequence of the alternative strategies for deploying the often vast resources available to a firm? Moreover, it should also be recognised that control may be desired in its own right, not simply because it enables its possessor

to pursue other ends desirable per se, but because the power to make decisions confers utility; see, for example, Rothschild (1971).

Thus, there is an a priori expectation that C will not be willing to give away his (their) control. It would be surprising, assuming C has any option, if he (they) chose expansion and as a result lost control, thereby losing the benefits it confers. More likely is the prospect that expansion and the maintenance of control are chosen.

Such an outcome merely requires a weak non-satiation assumption: assuming the consumer - in this instance C - is not satiated in either of two non mutually exclusive goods - in this instance, expansion and control - then both goods will be consumed.

For obvious reasons, direct evidence on this issue is difficult to acquire; owners will be reluctant to voice their intention not to give away control. However, as a rare instance of this happening, Marglin (1974) reports the case of a nineteenth century owner who did not allow his manager to obtain perfect knowledge of the work process, as a means of preventing the manager from taking his business. This example indicates the will on the part of owners to retain control rather than giving it to managers, the implication being that owners will

attempt to invent appropriate means by which their desire is realised. Unless their failure and/or unwillingness is proved beyond doubt, the expectation should be that C will retain control.

Nevertheless, it must be asked whether or not this a priori expectation can withstand closer scrutiny. The possibilities can be explored by considering an expanding firm's need for finance and managers.

### 2.3 AN EXPANDING FIRM'S NEED FOR FINANCE AND MANAGERS

First of all, consider the issue of shares.<sup>8)</sup> Broad corporate objectives can be voted upon and therefore determined at shareholders' meetings. The ability to win such votes can thereby determine who controls a firm. Thus, possession of sufficient votes can imply control.

Moreover, it is generally accepted that it is not necessary to have 51% of the shares to win a vote. For example, using a probability model Cubbin and Leech (1983) suggest that well under 10% may be more than sufficient, 2% or even 1% being enough in some cases.<sup>9)</sup> In practice, therefore, it could well be that in obtaining finance for the expansion of firm F, C retains a sufficient shareholding to maintain control. This is crucial.

Consider again the managerialist approach. This examines the ex post distribution of shareholdings, arguing: if C has less than a fixed percentage of shares - the percentage being assumed, e.g. in Berle and Means (1967), or evaluated, e.g. in Cubbin and Leech (1983) - the conclusion is that C has lost control, which, in the absence of other significant shareholdings, is assumed to pass to managers.

Such reasoning is not plausible. Causality in the managerialist argument runs from share distribution to control; failure to own a specified percentage implies loss of control. Yet it is surely more plausible to begin from the position where owner(s) C has control, recognize that control is inherently beneficial, and assume that C will at most obtain finance from others just to the point prior to the loss of control.<sup>10)</sup>

In reality, however, C may not have access to the financial reserves that allow the purchase of a controlling interest. One of two outcomes can be expected in this situation.

Given the benefits of control, C's first reaction will be to attempt to collude with another shareholder to form a controlling interest. It seems reasonable to assume that the costs of such collusion will, at least amongst a few shareholders, be very small compared to the benefits; a few well-timed business lunches for example,

may suffice. Following, for instance, Cubbin and Leech (1983), the exact number of shareholders needed in the controlling group depends upon the share distribution and the voting behavior of shareholders. However, the only case where collusion amongst more than a few shareholders will be necessary is where there is another group of shareholders competing for control. There would then be a struggle between these groups, one of which would emerge as in control - or, indeed, the groups may join forces. In any event, a group of shareholders - capitalists - will control the firm.

Neither of these expected outcomes will be realized if owners misjudge the critical percentage of shares necessary for control. This is a feasible possibility in exceptional cases but, if managerialism is to be accepted as realistic, it implies acceptance not only of the assumption that, in default of owners control, managers control, but also of the view that all owners in all firms misjudge the critical percentage. Can it really be believed that all owners are incompetent? Surely not. Moreover, even where an exceptional mistake is made, recognising this owners can be expected to form a new cohesive group and regain control.<sup>11)</sup>

The conclusion to be reached thus far is therefore that it is reasonable to hypothesise that a subset of owners - i.e. capitalists - control firms.

A further argument advanced by managerialists focuses upon information, namely: the many small shareholders in a firm do not have the information to monitor managers - i.e. they do not have the information to determine whether or not their interests are being served - and therefore do not control the firm. This directly contrasts with the neoclassical approach, in which all shareholders are taken to have, and to act upon, this information. See, for example, the exposition in Lambrinides (1973). What can be said of these two views?

Firstly, they reveal that our hypothesis of capitalist control implies that capitalists:

- (i) can win a vote amongst shareholders, and
- (ii) have the information upon which to vote.

That is, (i) and (ii) are both implicit in the statement that, for instance, 1% of shares suffices to control a firm. This is a plausible hypothesis. It seems reasonable to suggest that capitalists will assess and obtain the information they need for control. Why? Although obtaining information is not costless, the reward is the power to determine a firm's strategy. The benefits of the latter can be expected to warrant the acquisition of information.

This is not to say that managers have no discretion in their behaviour. In a world of uncertainty, there will always be discretion. But the crucial factor to realise is

that this discretion is analytically parallel to that of workers. Similarly to the way in which the controller of a firm may be unsure what the worker can do, there may be uncertainty surrounding managers.<sup>12)</sup> Capitalists will not base their strategic decisions on perfect information, either as regards workers or managers. Nevertheless, imperfect information does not constitute failure to make the decisions.

The reason that less than 51% of shares is needed to control a firm - and thus a reason that the neoclassical approach is incorrect - is that many, indeed the vast majority of shareholders obtain their shares to receive dividends or capital gains, content in the knowledge that other shareholders are concerned with these issues. One possibility is that this vast majority is not interested in monitoring a firm's activities - perhaps, for example, they have complete trust in the minority controlling shareholders. Or it could be that each small shareholder considers futile an attempt to win a vote against a large shareholder. Then again, perhaps the vast majority cannot acquire information about the firm - for instance, they may have no "contacts" in the firm or industry.

But are we to believe this of C ? More generally, are we to believe that larger shareholders will simply ignore corporate strategy and give managers, for example, a free hand? Surely not. Whilst their information may not be



perfect, it is most unlikely that they get themselves into a position where it is non-existent, given the benefits of control. This view is supported by the fact that high level managers are normally recruited from the ranks of owners, or at least their close environment. That is, they are owners themselves, and/or owners functionaries. See, for example, Nichols (1969), Nyman and Silberston (1978), and Francis (1980). From this, it should be expected that high level managers have interests closely connected with owners rather than low level managers, and therefore will assist capitalists in their control of the firm. However, it should not be expected that capitalists only acquire their information from high level managers; rather, they will use outside sources, and indeed, their own wits in reaching their decisions.

Consider now another possible argument for manager control, albeit one apparently absent in the existing literature. This is the view that managers are in such short supply that they can demand control of the firm as the price of their services. C would pay this price if he (they) believed he would be better off as a shareholder in a manager controlled larger firm rather than himself controlling a smaller enterprise.

Note firstly that this is a bargaining problem again analytically parallel to the owner/worker relationship. For example, when a skilled craftsman is employed by a firm, a price is negotiated. It is theoretically possible

that skilled craftsmen can demand control of the firm as the price of their services. Similarly, owners negotiate with managers.

Moreover, in reality this theoretical possibility of manager control is at most likely to be no more than a passing phenomenon. In the first place, the supply of managers is endogenous to the system, and at least partly determined by a firm's controllers. Managers are needed to administrate the firm. As with all "talents", the ability to administrate varies across the population, but at least to a large extent it is something that can be learnt. It is no coincidence that numerous schools of management have emerged simultaneously with expanding firms.<sup>13)</sup> It is clearly in the interests of capitalists to encourage such schools. Moreover, firms can introduce internal training schemes, thereby producing their own administrators. Secondly, if the price of managers is control, it is by no means clear it will be paid; after all, the consequence of transferring control is the inability of capitalists to protect their interests, a heavy price indeed.

There is also a third, more important comment to be made. Suppose managers could demand control. Would they leave it at this? By definition of their position, shareholders could, if the supply of managers subsequently increased, sack their existing management and reclaim control. That is, owner control is at least only dormant.

If managers have control, it is because it is allowed by owners. Thus, if managers have such a strong bargaining position, they should be expected to require shares as part of their payment. By becoming owners, they safeguard their control. But this is then owner control of the firm, not manager control.<sup>14)</sup>

The notion that owner control is at least only dormant is important. It was seen earlier when it was argued that owners could regroup to regain control if they misjudged their position. A crucial conceptual difference between owners and managers is that owners can choose whether or not they determine a firm's strategy. In this sense, managers always take a back seat.<sup>15)</sup>

Thus, the conclusion to be reached from the analysis in this and the previous Subsections is that it is reasonable to hypothesise that a subset of owners - capitalists - control firms. An aspect of the analysis deserving particular emphasis is the inversion of causality as compared to managerialism. Rather than examining ex post what percentage of shares capitalists need for control - as managerialists have done - it is better, bearing in mind the benefits of control, to examine what percentage a subset of owners will allow others to obtain before control is lost. The share distribution observed in reality will then be one which suffices to give control to a subset of owners.

Such an approach accomodates two related ideas:

- (i) the concept of fixed shareholding percentages as used by managerialists is artificial, and
- (ii) the percentage of shares required for control may vary across firms - in one, for example, it may be 1%, in another 5% . The outcome depends upon the distribution of ownership, and groupings amongst shareholders.

The approach to control we are suggesting is similar to managerialism insofar as both assert something about reality without giving proof. However, the approaches contrast in their starting points; managerialism does not have a dynamic, historical perspective. It is this difference in perspective that makes managerialism less appealing than our approach.

A further criterion for choice between the approaches is the empirical evidence that can be marshalled - either direct evidence, or indirect evidence that examines implications of the approaches. This is the concern of the next Section.

First of all, however, it is useful to depict some of the arguments made above by a series of diagrams.

## 2.4 A DIAGRAMMATIC EXPOSITION

Figures 1-4 show various analyses<sup>16)</sup> of the control issue. In each, boxes are used to represent individuals or groups of individuals - "classes" - participating in a firm. As will become clear, the box at the top of each diagram - the box to which all others are linked - represents the controlling class. Thus, Figure 1 represents the starting point of Section 2.2 . Firm F, typical of nineteenth century capitalism, is owned and controlled by a capitalist, C. The firm employs workers, W. Box C represents capitalists, box W workers, and box C is drawn above box W to show that, of the two classes, capitalists are in control.

Moving to the twentieth century, there has been an expansion of firms and a consequent controversy surrounding their control. Figure 2 depicts our suggested outcome. The need for finance implies that ownership is divided amongst shareholders. However, either the original controlling individual(s) can be expected to retain control, or control will pass to another subset of shareholders, which may or may not include the original controllers. In either case, the controlling owners can still be referred to as capitalists. Thus, in Figure 2, C and W again denote capitalists and workers respectively. S denotes the non-controlling shareholders, and M managers.<sup>17)</sup>

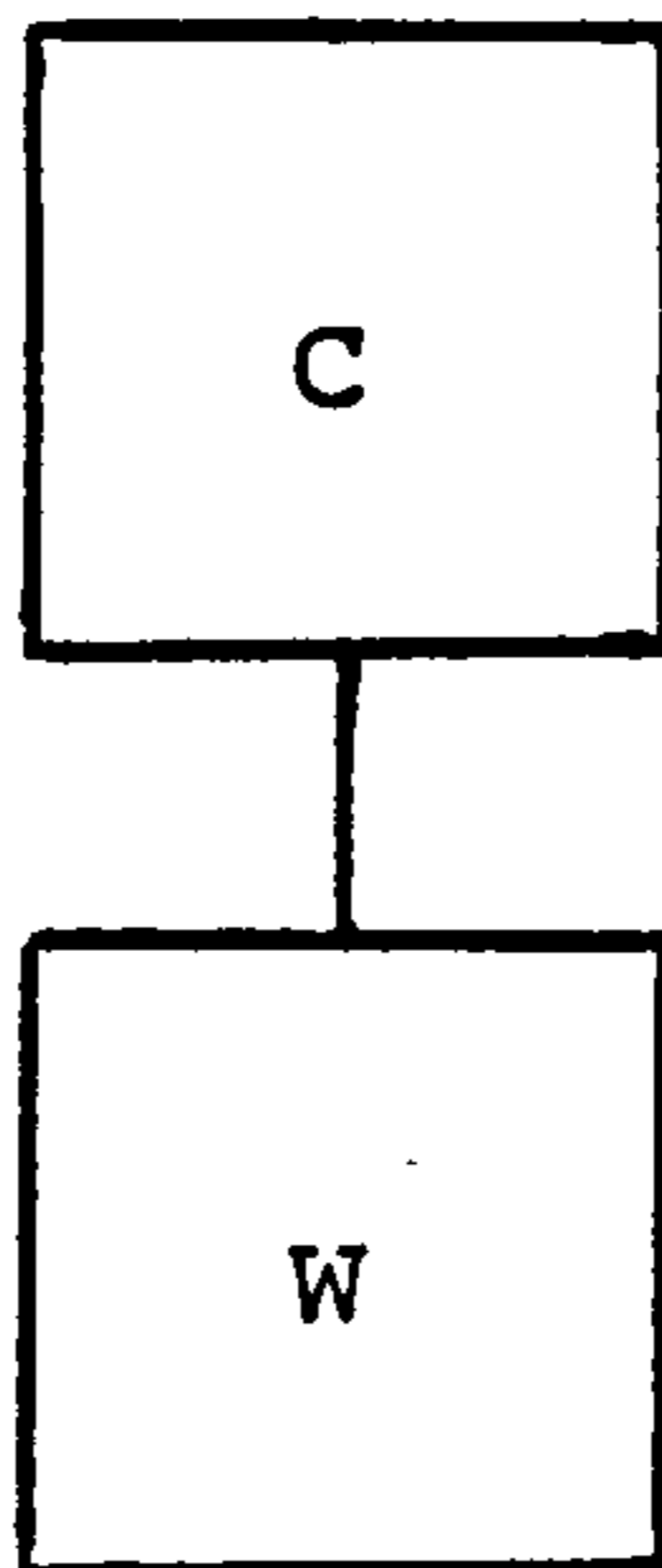


FIGURE 1: CONTROL IN A TYPICAL NINETEENTH CENTURY FIRM

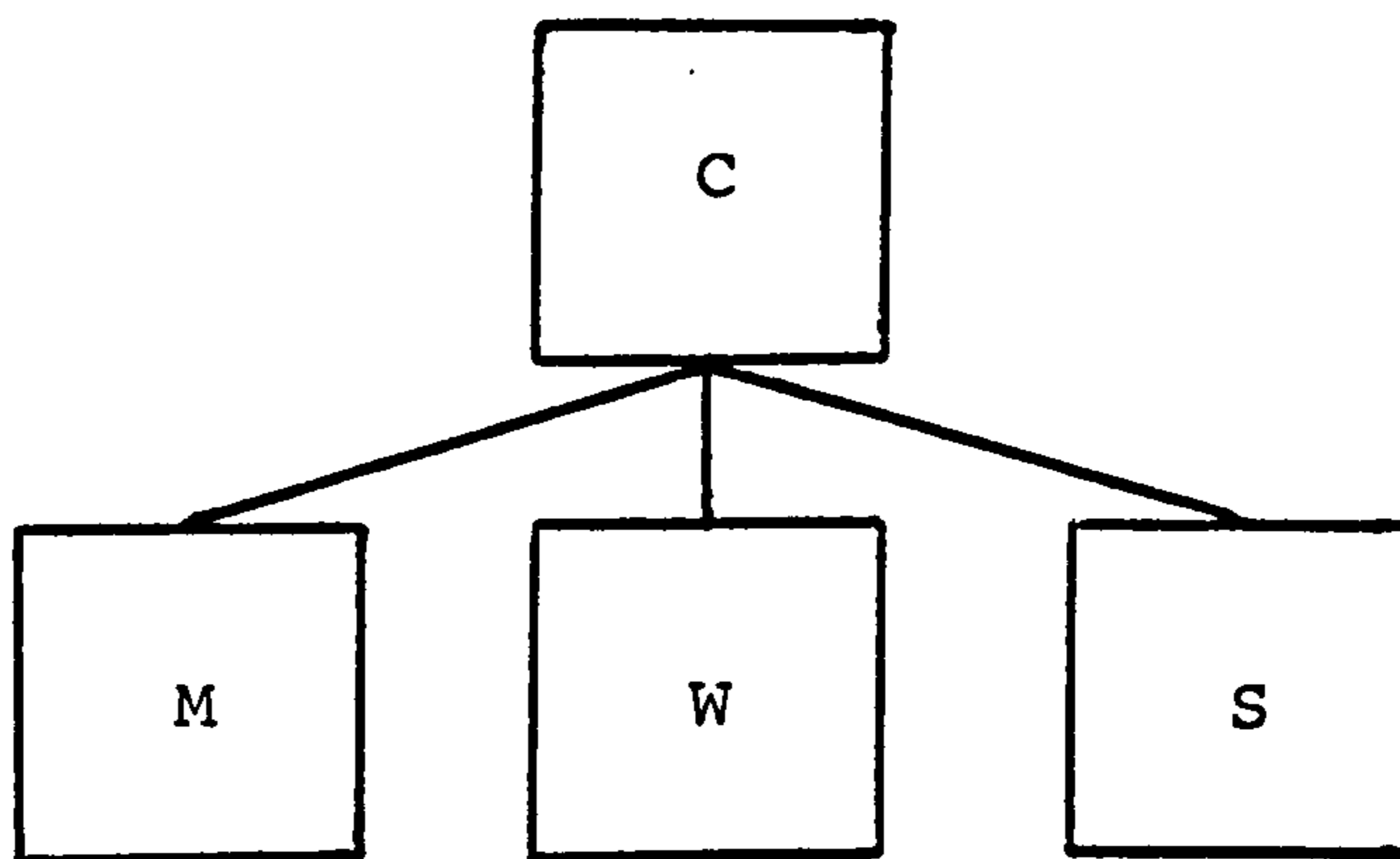


FIGURE 2: CONTROL IN A TYPICAL FIRM TODAY

Figures 3 and 4 show the neoclassical and managerial approaches respectively. In the former, all shareholders have control - there is no dominant capitalist subset. Thus, in Figure 3 S' represents all shareholders. This is a special case of Figure 2, where C controls S. Again M and W depict managers and workers. Figure 4 shows the managerial approach. Not only is C absent, but also managers, M, control all owners, S', and workers, W. The reversal of the roles of S' and M in Figures 3 and 4 is due mainly to information differences.

Whereas Figures 1-4 depict various approaches in a consistent and therefore comparable framework, Figure 5 represents only the approach to the control of the firm advanced in this paper. In brief, beginning with firm F, owned and controlled entirely by individual(s) C, expansion implies a need for finance and management. The former results in the issue of shares. The original and/or new owners assess the percentage of shares required for control. If their assessment is correct, shareholders are divided into capitalists and others, capitalists having control. If it is wrong, control passes to non-shareholders, but there will be a reassessment of the critical percentage needed for control. As regards managers, if they are in short supply they may become owners and thus controllers.

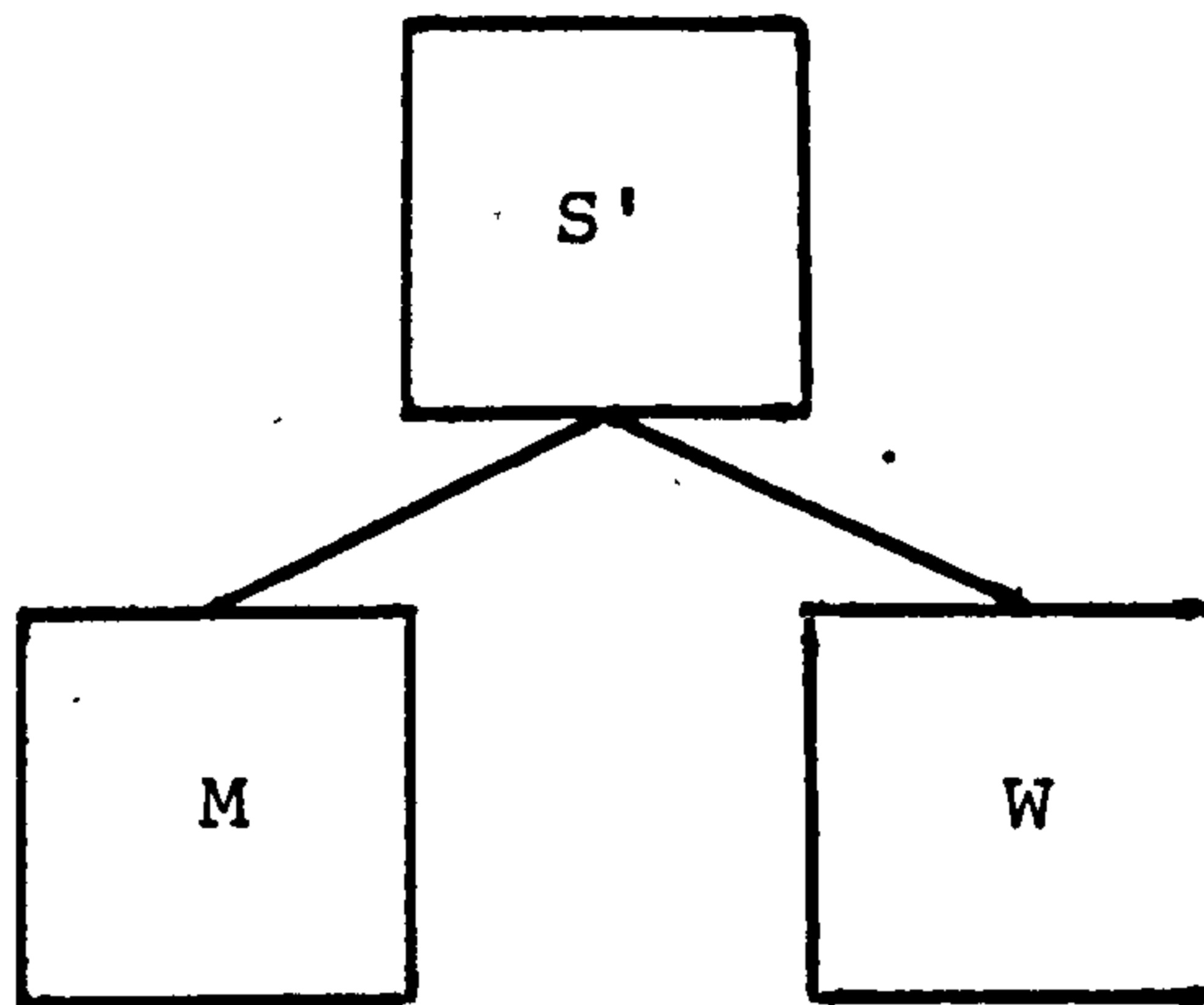


FIGURE 3: CONTROL IN A TYPICAL FIRM TODAY - THE NEOCLASSICAL APPROACH

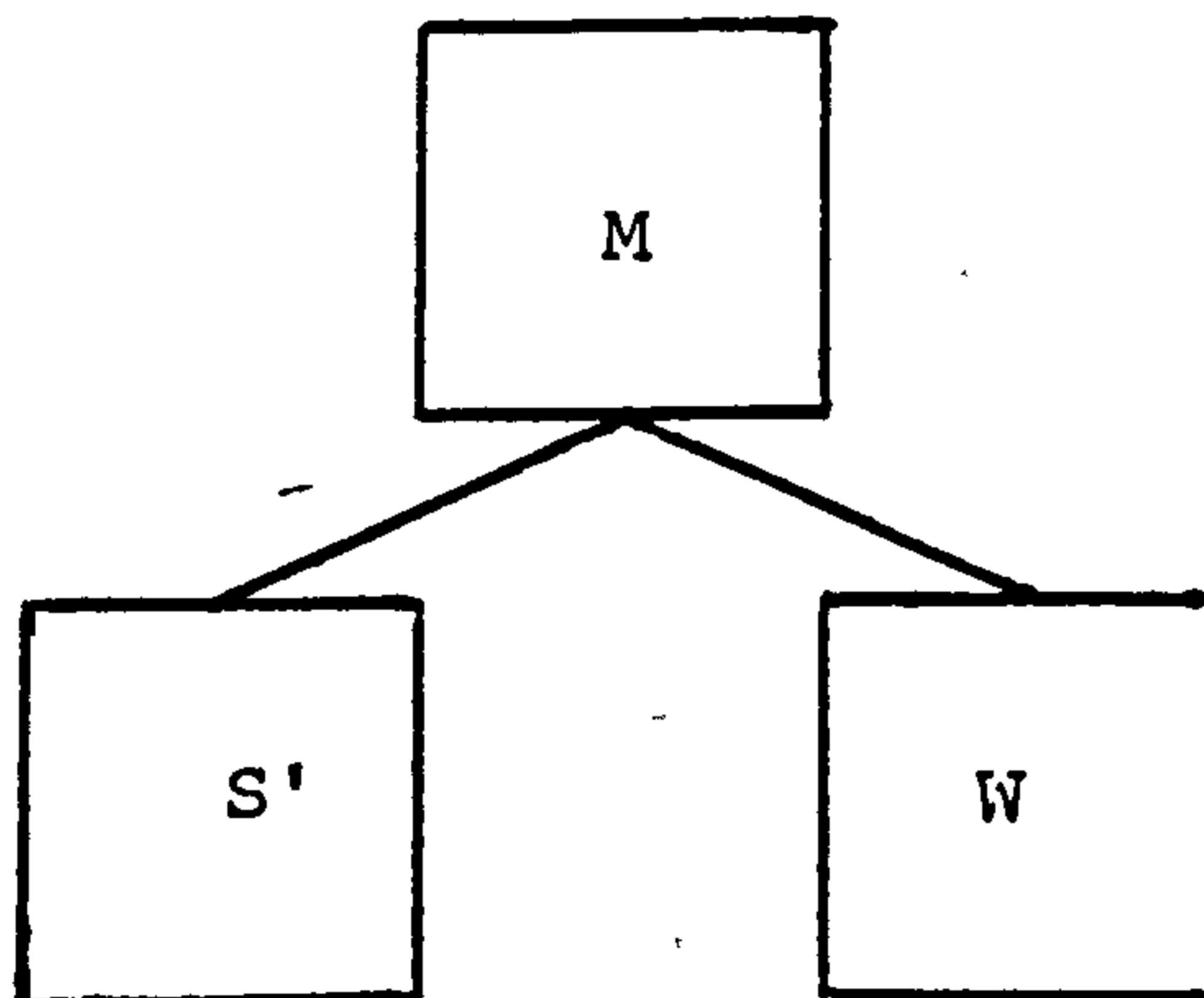


FIGURE 4: CONTROL IN A TYPICAL FIRM TODAY - THE MANAGERIAL APPROACH



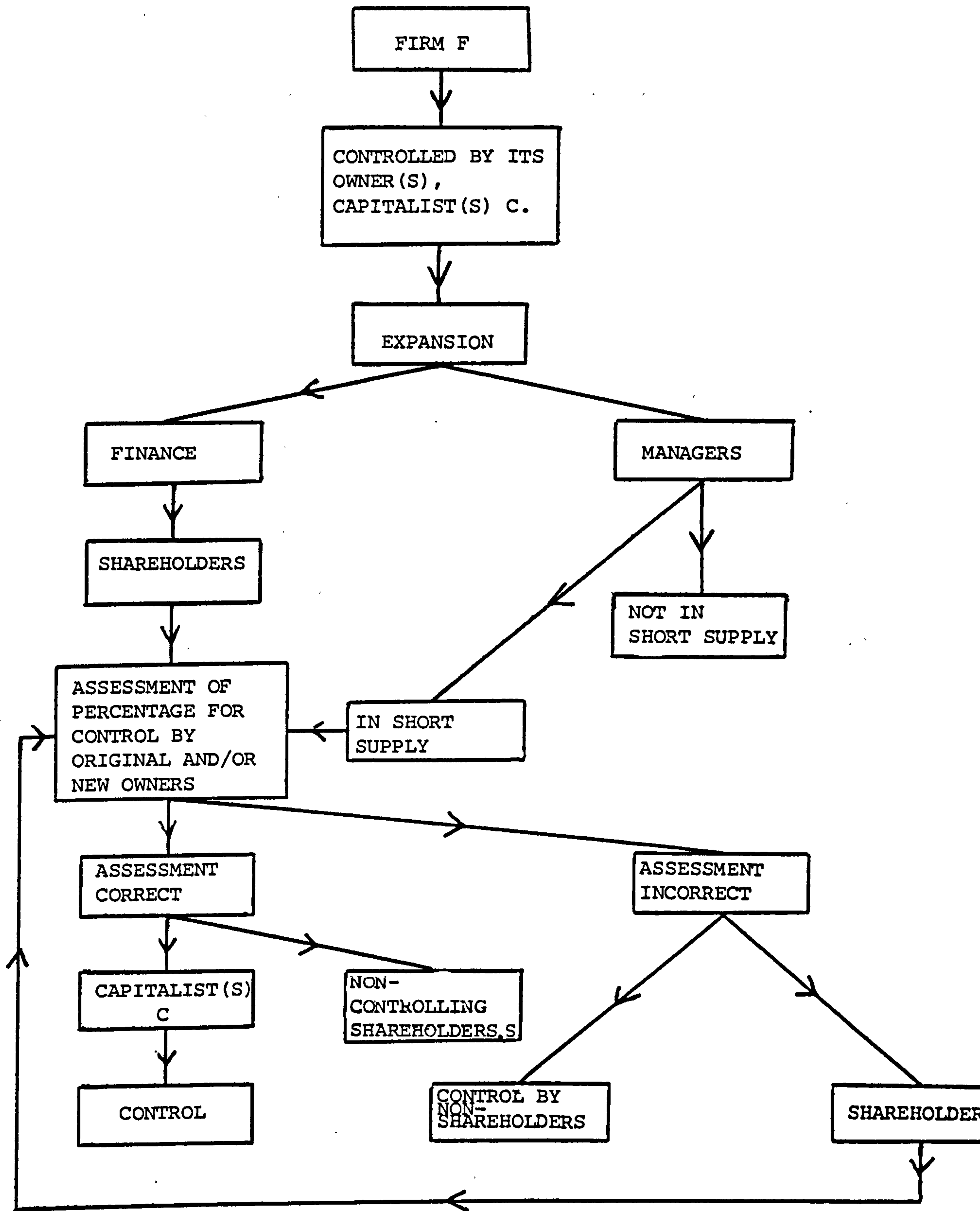


FIGURE 5: CONTROL OF THE FIRM

### 3. CONTROL OF THE FIRM: EMPIRICAL EVIDENCE

#### 3.1 DIRECT EVIDENCE

A crucial, original aspect of the argument in Section 2 is the inversion of the causality used by managerialists. Thus, any empirical "evidence" that merely considers an ad hoc critical percentage of share ownership to determine control type is not really evidence at all. For example,<sup>18)</sup> when Berle and Means (1967) note that in 44% of the 200 largest US corporations no cohesive group of shareholders owns at least 20% of shares, this reveals nothing. In fact, the suggestion in Section 2 is that whatever share distribution is observed, this will be that which ensures control for a subset of owners, save if an exceptional mistake has been made and not rectified. That is, virtually all firms are expected to be owner controlled. Thus, as regards direct empirical examination of the issue, the implication is that as analysis becomes more detailed, so more firms will become classified as owner controlled. For example, the 44% of firms Berle and Means (1967) classify as having no cohesive group of shareholders with at least 20% of shares should, on closer examination, be revealed as actually owner controlled.

However, it is not entirely clear what a more detailed study entails. For instance, Scott and Hughes (1976) show that a more careful examination of shareholder groups

reveals that the proportion of firms satisfying the managerialists' criteria for owner control is higher than might otherwise be expected.<sup>19)</sup> Analysing 220 Scottish registered firms with stock exchange quotations, they initially conclude that in 77% of cases an individual, institution, or cohesive group owns at least 5% of shares, and therefore classify these as owner controlled firms. Moreover, recognising that they too may actually be owner controlled, some of the residual 23% were examined in more detail. Sure enough, owner control was found to be more widespread than initially concluded. For example, the Scottish and Continental Investment Trust was included in the 23%, but closer study revealed that nearly 20% of its shares were held by various members of the Murray Johnstone group of investment trusts.

But what does such a result show? Whereas it may help to persuade some who believe the managerialists' criteria is useful that in fact owners control firms, if it is accepted that the criteria is inappropriate, such studies do not in fact take the analysis much further.

What is needed is a departure from shareholder distribution analysis. It is necessary to examine the policies actually pursued by companies and assess whether or not these appear to be determined by owners or managers. This is clearly a very complex, time consuming task, but it has been attempted by Francis (1980a).

Francis argues that, within a firm, the Chairman of the Board plays a vital role. This is apparently a clear result of the Oxford Growth of Firms Project (upon which the analysis is based):

"From observation, from interviewing and from administering a questionnaire in the companies in our study it was clear that the Chairman of the company was in a very dominant position. The role was viewed, both by the incumbent and by senior managers, as the peak of the firm's organizational hierarchy and not merely a primus inter pares at Board meetings. His influence in decision making was acknowledged by all to be powerful." (p. 12)

Thus, Francis concludes that a detailed examination of who the chairman is - for example, an owner? - or how he came to be appointed - e.g. by owners? - will reveal the centre of control.

Time constraints restricted his study to a mere 17 firms. Nevertheless, the result is very illuminating: (at least) 15 of the firms were classified as owner controlled, and (at most) only 2 as controlled by their own professional management. These 17 firms were randomly drawn from a sample of 227 of the "top 250" UK companies in the "Times 1000" (1975-1976). Of these 227, in 110 - i.e. 48% - at least 5% of shares were owned by an individual, institution, or cohesive group. Admittedly 17 is a very small sample, but the proportion of owner controlled firms in the more detailed study was classified as 88%!

Such results are consistent with the analysis of Section 2. However, it should be remembered that the latter suggests the two management controlled firms found by Francis are either exceptional cases or, in a still more detailed examination, would be revealed as owner controlled.

Unfortunately, such evidence is not easily acquired. Although Francis' approach is very useful in highlighting the inadequacy of the fixed percentages type of criteria, and indicating that a more elaborate analysis is far from supporting the managerial approach, it is not conclusive.

Other direct evidence consistent with the analysis of Section 2 is reported cases of owners in fact replacing managers. For instance, Nyman and Silberston (1978) discuss the cases of a group of dissatisfied owners bringing about the replacement of senior managers in two UK companies, Vickers and Debenhams. However, such evidence is also consistent with managerialism, given the latter's acceptance that owners can hire and fire managers in exceptional circumstances - see again the discussion in Section 2.2 .

Nevertheless, a way in which the approaches can be distinguished is by considering their differing implications. Such indirect evidence is the concern of the following Subsection.

### 3.2 INDIRECT EVIDENCE

One indirect means of acquiring support for our approach is to observe changes in the organisational form of firms. As already emphasised, the idea that owners control does not deny the possibility of managers having discretion in the day-to-day decisions of a firm. Although such discretion does not constitute control, it does imply the possibility of managers attempting to change a strategic decision - see again Section 2.1. However, the original controllers can be expected to resist such a change, if it is attempted, and indeed to preempt the possibility of an attempt. Within this framework, the relatively recent phenomenon of the transition of most firms in the UK and Europe from a so-called U-form organisation to an M-form organisation can be explained.

The U-form organisation is characterised by a board of directors and various divisions each responsible for a specific function - such as production, marketing, etc. - throughout the firm. Williamson (1970) has suggested that, as a U-form firm expands, there is a tendency for decisions over broad corporate objectives and the day-to-day operations of the firm to become entangled. In contrast, an M-form organisation is characterised by a board of directors responsible solely for determining strategic decisions, and a series of operating divisions - each responsible for its own production, marketing, etc. - making day-to-day decisions. Thus, the transition from

U-form to M-form can be explained in terms of control. In the M-form firm, broad corporate objectives are determined by the board, which is only concerned with such issues. This allows the controlling group to focus upon the relevant control issues more easily than in the U-form organisation.

Moreover, there is evidence supporting this view that organisational form is an issue of control. For example, Steer and Cable (1978) have concluded from a study of 83 UK companies over the period 1967-71 that a firm's profitability is affected by whether it has a U-form or M-form organisation. This suggests that organisational form does affect a firm's strategic decisions.

These results<sup>20)</sup> fit neatly into our theoretical framework; the transition to M-form can be seen as a response by capitalists to an attempt by managers to seize control, or as a means of preempting an attempt.<sup>21)</sup>

However, the same cannot be said for the managerial approach. The only way managerialism could offer a sound explanation for this transition to M-form and its resulting constraint of low level managers to nothing but day-to-day decisions would be by arguing that a conflict arose over control between low level managers and high level managers (i.e. those having contact with the board). But this would merely undermine the very foundations of managerialism. Evidence referred to in the previous Section on the class

origin of high level managers and their connections/relationships with owners takes on great importance. If, as posited, high level managers are owners themselves, or owners functionaries, the observed conflict would in fact be one of owners versus managers, not an endo-managerial conflict.

Consider finally an implication which distinguishes our approach from neoclassicism; that is, from the view that all owners have control. Fortunately, empirical evidence on this issue is easier to acquire, at least as regards one of the important implications of the two hypotheses, namely: the consumption-savings decision of households.

In its general form, the private (i.e. personal plus corporate) savings function can be written:

$$S_t^{\text{prv}} = s (Y_t^{\text{prs}} , S_t^{\text{C}} , z_t)$$

where, in period  $t$  :  $S_t^{\text{prv}}$   $\equiv$  private saving,  $Y_t^{\text{prs}}$   $\equiv$  personal disposable income,  $S_t^{\text{C}}$   $\equiv$  corporate retentions, and  $z_t$   $\equiv$  a vector of "other" explanatory variables.

At least in the "Life-Cycle" form expounded by Ando and Modigliani (1963), the neoclassical hypothesis of consumption-savings behaviour by households implies that



the estimated coefficients of the  $y_t^{prs}$  and  $S_t^C$  variables should be the same. This is discussed more fully by Pitelis (1982), (1983). The outcome basically results from the idea that control in particular firms is of no consequence to the observed aggregate saving in an economy since shareholders can always switch from one corporation to another if they realize others control the corporations they own. Such behaviour would constrain potential controllers - for example, a subset of owners or managers - from diverging away from owners decisions. Thus, effective control is always with all shareholders, implying that aggregate savings propensities via both personal disposable income and their income in the form of corporate retentions will be the same. In short, there is perfect substitutability between personal and corporate savings.

In contrast, if a subset of households control firms, and hence determine the level of corporate retentions, the implication is that the estimated coefficient on  $S_t^C$  is significantly higher than that on  $y_t^{prs}$ . There are various possible explanations for this. For example, for a controlling subset of owners - i.e. capitalists - observed corporate retentions will simply reflect their earlier decision not to consume or save as personal savings a part of their income. Since an ex ante preference for lower retentions is simply reflected in a lower ex post retentions ratio<sup>22)</sup>, no substitutability should be expected between observed corporate retentions and personal savings. As regards non-controlling groups, if

personal savings are too low to allow any substitutability with corporate retentions - as evidence suggests - then a similar "add-on" phenomenon will be observed - i.e. a rise in retentions will not be accompanied by a fall in personal saving.

The existing empirical evidence conclusively rejects the neoclassical argument. It suggests the propensity to save out of  $S_t^C$  is significantly higher than the propensity to save out of  $y_t^{prs}$ . See, for example, Pitelis (1983) for evidence and a survey.

Although this does not discriminate our approach from managerialism, which, for example, Marris (1964) shows to result in similar implications, it at least offers some conclusive evidence against the neoclassical argument as developed in the Life-Cycle hypothesis.

Thus, the conclusion to be reached from this examination of existing empirical evidence, both direct and indirect, is that our hypothesis performs at least as well as the alternatives.

4. CONCLUSION

By following an evolutionary approach to the theory of the firm, it has been argued that a subset of owners - capitalists - can plausibly be expected to control firms. Particularly important is the inversion of causality that leads to this result: rather than examining ex post the percentage of shares needed for control, it is better, bearing in mind the benefits of control, to examine the percentage capitalists will allow others to obtain before control is lost.

Moreover, although the plausibility of this capitalist control hypothesis implies that the burden of proof lies with those favouring its alternatives, the hypothesis performs at least as well as alternative approaches when confronted with existing empirical evidence, direct and indirect.

NOTES

- 1) There are some notable exceptions, such as Francis (1980a), and Nyman and Silberston (1978).
- 2) See Scott (1979) for a survey.
- 3) See also Fitch (1972).
- 4) Such a discussion is noticeably absent in other work by economists.
- 5) That is, a totally incapable management.
- 6) See the discussion in Cubbin and Leech (1983) of internal versus external control.
- 7) See the discussion of firms' organisational form - an issue taken up in Section 3 - in Cowling (1982a).
- 8) It is also possible that the need for finance is met by borrowing from banks and other financial institutions. This is not an issue that will be explored in this paper, where the concern is with owner versus manager control. However, note that the original controllers will not be indifferent regarding the two ways of obtaining capital. In particular, capital possessed by financial institutions is normally more concentrated than that possessed by the vast majority of households. See Zeitlin (1974) for evidence. Such concentration facilitates the possibility of financial institutions asking a higher price for capital. They could, for example, require that a certain strategy be followed, i.e. they could demand control as the price of their funds. In this instance, whilst control is not retained by owners, it does not pass to managers. Such possibilities raise interesting issues that could be pursued further.
- 9) The value of empirical studies based upon share distributions will be discussed in Section 4.
- 10) A similar argument is made in Francis (1980a), but its implications (i.e. the reverse causality argument) are not explored.
- 11) Albeit the new controlling group need not include the original controllers.
- 12) A consequence of this is that capitalists will persuade and cajole workers and managers into adopting their objectives.

- 13) What is more, the cost of this to firms has been minimal because such schools are often state financed.
- 14) See also Cubbin and Leech (1983).
- 15) Similarly to managers and workers, financial institutions may bargain for control as the price of their funds. See note 8.
- 16) Other theoretical frameworks could also be depicted by such diagrams - e.g. the "Marxist managerialist" approach of Baran and Sweezy (1966).
- 17) Note that the diagrams are not designed to depict the entire hierarchical organisation of firms. They merely show which class has control. Thus, for instance, it is not being suggested that managers do not have some measure of power over workers by virtue of their making tactical decisions.
- 18) See also Cubbin and Leech (1983) for a non-exhaustive but useful summary.
- 19) See also Zeitlin (1974), Nyman and Silberston (1978), Scott (1979), and Francis (1980a).
- 20) There is a potential problem with Steer and Cable (1978) vis-à-vis this paper, namely: their regressions of profitability on organisational form also include a dummy variable of owner versus manager control based upon an ad hoc percentage of shares.
- 21) As noted in footnote 7), the distributional importance of control is discussed with respect to organisational form in Cowling (1982a).
- 22) The ratio of corporate retentions to income.

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