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ASPECTS OF PRICING BEHAVIOUR AND LONG-RUN
COMPETITIVE ADJUSTMENT IN INDUSTRIAL MARKETS
WITH IMPLICATIONS FOR COMPETITION POLICY

by

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A submission of thesis and published papers for
the

DEGREE OF DOCTOR OF PHILOSOPHY

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Contents

PART 1: ASPECTS OF PRICING BEHAVIOUR AND LONG-RUN COMPETITIVE ADJUSTMENT IN INDUSTRIAL MARKETS WITH IMPLICATIONS FOR COMPETITION POLICY:- AN INTEGRATIVE ESSAY

	page
CHAPTER 1 Introduction: the contribution of the published papers by R.M. Grant	6
CHAPTER 2 Pricing behaviour in oligopoly industries	16
Introduction	17
2.1 Formal approaches to oligopoly price	19
2.2 Oligopoly coordination: collusion and price leadership	23
2.3 Oligopoly price and market structure	31
2.4 Pricing behaviour in the supply of petrol	37
2.5 Evidence on oligopoly pricing behaviour in other industries	46
2.6 Concluding comment	60
CHAPTER 3 Buying power, price discrimination and public policy.	63
3.1 Buying power in economic theory	64
3.2 The contribution of the Grant papers to the debate over buying power	72
3.3 Some empirical evidence on retail buying power in the UK	76
3.4 Implications for competition policy	84
3.5 A survey and appraisal of recent price discrimination measures	86
3.6 The OECD report on buying power	89
3.7 The MMC report on discounts to retailers	94
CHAPTER 4 Diversification and long-run competitive equilibrium.	100
4.1 Theories of the determinants of diversification	103
4.2 Measurement of diversification	106
4.3 The determinants of the pattern of diversification in UK manufacturing	

	industry	page 110
4.4	Diversification and the efficiency of resource allocation	112
4.5	Adjustment to long-run equilibrium: preliminary remarks	115
4.6	The relationship between risk and rate of return in long-run equilibrium	118
4.7	Application to the identification of monopoly profit and the regulation of prices and profits	124
CHAPTER 5	Conclusions and directions for future research	132
	REFERENCES	139

PART II: THE PUBLISHED PAPERS

(i) Oligopoly Pricing and Public Policy

PAPER 1	Pricing behaviour in the UK wholesale market for petrol 1970-80: a "structure-conduct" analysis. (<u>Journal of Industrial Economics</u> , vol.30,1982, pp272-292)	150
PAPER 2	Discriminazione del prezzo al dettaglio e politica commerciale. (<u>Commercio. Rivista di Economia e Politica Commerciale</u> , anno 1, 1979, pp25-46)	172
	English version: The influence of large buyers on price and public policy towards price discrimination. City University Business School Working Paper No 16, May 1980	194
PAPER 3	Recent developments in the control of price discrimination in countries outside North America. (<u>Antitrust Bulletin</u> , vol.26,1981, pp593-632)	217

(ii) Diversification and Long-run Competitive Equilibrium.

PAPER 4	On the theory of diversification: a comment. (<u>Scottish Journal of Political Economy</u> , vol.21, 1974, pp77-83)	257
---------	--	-----

- PAPER 5 The determinants of the inter-industry pattern of diversification.
(Bulletin of Economic Research, vol.29,1977, pp84-95) 264
- PAPER 6 The relationship between risk and rate of return on capital in UK industry.
(Applied Economics, vol.13, 1981, pp205-214) 276
- PAPER 7 The Monopolies Commission and the rate of return on capital: a comment.
(Journal of Business Finance and Accountancy, vol.5, 1978, pp387-392) 286

APPENDIX: SUPPLEMENTARY PAPERS ON STRUCTURAL
ADJUSTMENT AND INDUSTRIAL INTERVENTION

- PAPER A.1 The impact of EEC membership on UK industrial performance.
(in Roy Jenkins ed. Britain and the EEC, Macmillan, London, 1983) 292
- PAPER A.2 (i) A survey of structural policies and their evolution in the BRD and UK. 316
(ii) Structural policies in the UK and BRD towards the computer industry. 337
(iii) Structural policies towards the ship-building and shipping industries. 357

(chapters 4, 5 and 6 of A.T. Peacock et al Structural Economic Policies in West Germany and the United Kingdom, Anglo-German Foundation, London, 1980)
- PAPER A.3 Appraising selective financial assistance to industry: lessons from the recent experiences of the United Kingdom, Sweden and West Germany.
(City University Business School Working Paper No. 32, 1982; to be published in the Journal of Public Policy) 384

LIST OF TABLES

	page
Table 2.1 Rates of return on capital in industries subject to parallel pricing	57
Table 3.1 Special discounts and industry structure variables: observations for 17 products	81
Table 3.2 Regressions of retail selling prices on buying prices	96
Table 4.1 A comparison of empirical studies of diversification in UK manufacturing industry, 1958-68	111

ABSTRACT

The published papers and accompanying essay which make up this doctoral thesis examine economic aspects of the competitive process in mature product industrial markets and draw implications for competition policy. The analysis of price competition relates patterns of price leadership and discount competition to features of market structure (using the UK petrol market as a case study) and examines the influence of large buyers on price determination. Policies towards buying power and price discrimination in several countries are compared and appraised. The analysis of long-run adjustment and competitive equilibrium focuses on the diversification process, analysing the industry structure determinants of the inter-industry pattern of diversification within a risk/return framework. The same risk/return optimisation provides the basis for an examination of the role of risk differentials in determining inter-firm and inter-industry differences in return on capital. Some implications are drawn for the interpretation by competition authorities of the returns earned by dominant firms.

PART ONE

ASPECTS OF PRICING BEHAVIOUR AND LONG-RUN
COMPETITIVE ADJUSTMENT IN INDUSTRIAL
MARKETS WITH IMPLICATIONS FOR
COMPETITION POLICY : AN INTEGRATIVE
ESSAY

CHAPTER 1

INTRODUCTION: THE CONTRIBUTION OF THE
ATTACHED PAPERS BY R.M. GRANT

INTRODUCTION: THE CONTRIBUTION OF THE ATTACHED PAPERS BY R.M. GRANT

Since this submission for a research degree principally comprises a selection of my published papers, this brief thesis serves only as an introduction to the attached papers. The purpose of the introductory essay is threefold:

- (i) to explicitly identify the contribution of my papers to research in economics;
- (ii) to explain the relationships and complementarities between the individual papers submitted;
- (iii) to provide a fuller survey of prior research to which the papers contributed, together, where appropriate, with an outline of the findings of parallel and subsequent research studies;

In comparison with most doctoral theses in economics, the principal characteristic of the papers which make up my submission is that they cover a broadly-defined sector of study. This reflects the fact that the papers arise from a number of separate but overlapping research projects and interests over a period of a decade rather than from a single, continuous programme of full-time research. Yet despite the apparent diversity of the titles of my papers, they are linked and, to a substantial degree, unified by a number of factors.

The dominant theme of all the papers is the analysis of competitive behaviour. The division of the papers into two groups corresponds to the distinction between price competition (essentially short-run competitive behaviour) and competitive adjustment through

inter-industry resource allocation (essentially long-run competitive behaviour). In both areas the basic approach has been to examine the relationships between market structure and the competitive behaviour of firms, primarily in the markets for manufactured goods. This focus represents a central area of interest in the field of study that has become known as "industrial economics" or the "economics of industrial organisation". In seeking to explain competitive behaviour with reference to market structure and then to draw implications for economic welfare and public policy, the papers utilise traditional price theory and in particular the methodological framework of "structure-conduct-performance" analysis, which continues to be the dominant paradigm in industrial economics. Care has been devoted to avoiding any over-naïve or mechanistic application of the structure-conduct-performance approach. For example, the work on industrial diversification recognises the two-way interaction of structure and conduct, while the adoption of a case study approach to examine oligopoly pricing behaviour permits the careful evaluation of the usefulness of a "structure-conduct" analysis in explaining and predicting competitive behaviour at a very detailed level.

The papers are related not only by subject matter and methodology, but also because they involve the application and influence of a small number of key ideas. For instance, in several of ^{the} papers attention is given to the importance of the structure and behaviour of the buying industry in influencing competitive behaviour in industrial markets. A further theme is the importance of risk in the study of industrial economics, in particular, the usefulness of risk concepts developed in financial economics.

A final unifying factor is that all the papers reflect a common motivation in that they deal with subjects which I have regarded as interesting aspects of economic behaviour and many of which were important from a public policy viewpoint. Many of these interests arose directly from my work as an economist with the Monopolies and Mergers Commission where I recognised a number of features of competitive behaviour by firms that had not been sufficiently appreciated by academic economists or adequately addressed by the standard microeconomic literature. These included the prevalence of price leadership across much of manufacturing industry; the impact of buying power in intermediate markets; the complex composition of "market price" in terms of list price, discounts, rebates, credit terms and so forth and the differential behaviour of list and non-list components of price; the importance of diversification as a source of entry and a mechanism for resource allocation; and the apparent failure, even of competitively structured industries, to adjust to competitive equilibrium earning "normal" profit.

The absence of satisfactory analysis of these features of market behaviour and performance has been less a weakness of conventional microeconomic analysis, as a failure to recognise and examine these phenomena. Hence before moving towards the development of new theoretic approaches or retreating to ad hoc institutionalism and description, a first priority was to apply conventional microeconomic theory to the analysis of these problems in the form of Marshallian neoclassical

analysis together with the further insights and tools provided by "structure-conduct-performance" approach to industrial economics (associated in particular with work of J.S. Bain, 1956). The attached papers all reflect the desire to use standard tools of economic analysis to explain, as simply and directly as possible, important and interesting aspects of industrial market behaviour.

In terms of the specific additions to the stock of economic knowledge, I consider that the papers which make up this doctoral submission have made the following contributions:

1. The analysis of pricing behaviour in oligopoly.

The analysis of price competition in the UK wholesale market for petrol (Grant 1982) has both descriptive and theoretical value. As an account of pricing behaviour in an oligopolistic industry supplying a homogeneous product, it clearly reveals several features which appear to be typical of such industries.

First, a pattern of pricing based upon published list prices and various off-list discounts and rebates with a dichotomisation of collusive and competitive tendencies between list prices and discounts. Second, notable changes in the pattern and the extent of competitive behaviour over time in response to changes in market structure and a tendency towards instability of oligopolistic price equilibrium. At the theoretical level, the paper takes some modest steps towards bridging the gulf between the complexity of observed oligopoly price behaviour and the abstraction

of formal models of oligopoly price determination. To do this the paper synthesises a number of the hypotheses which have been proposed in the industrial organisation literature concerning the relationships between market structure and pricing behaviour, and shows how this informal theory of oligopoly achieves considerable success in explaining and predicting the general features of pricing behaviour in the UK petrol market and changes over time in the intensity of competition and level of price.

2. Buying power and policies towards price discrimination.

The conventional textbook classification of markets focuses upon the structure of the supply side, notably upon seller concentration. Yet most of the markets for producer goods are characterised by bilateral oligopoly and probably the most important structural change in the wholesale markets for consumer products has been the growth of concentration, and hence buying power, in the retail sector. This has had far-reaching consequences for price determination, marketing and the overall competitive strategies pursued by the manufacturers of consumer goods.

The analysis of price discrimination (Grant 1979; English version: Grant 1980), focuses upon the role of large buyers in influencing prices and argues that the traditional approach to the analysis of oligopsony, as a mirror image of oligopoly, does not accord either with the nature of buying power or with observation.

The analysis developed in the paper examines oligopsony within the framework of oligopoly theory and shows that buying power rests not upon collusive tendencies among concentrated buyers, but on the ability of large buyers to counteract the market power of oligopolists and provoke competition between them.

The growth in concentration in the retail sectors of most industrialised countries since the beginning of the 1960s and the growing buying power of the large retail chains has been one of the most pressing and difficult problems facing the competition authorities in these countries. In response to the difficulties of applying established monopoly legislation to the problems of buying power, several countries have introduced new measures against buying power and price discrimination. In "Recent developments in the control of price discrimination in countries outside North America" (Grant 1981b), the experiences of France, West Germany, Ireland and Australia with new price discrimination measures are compared. Some remarkable similarities are apparent in the objectives and implementation problems in the four countries which parallel the much-discussed experience of the United States with the Robinson-Patman Act. On the basis of my findings, some general conclusions are drawn regarding the use of competition law to deal with the problems of price discrimination and buying power.

3. Industrial diversification.

While the level of industry price and output in the short run results chiefly from the extent of price competition between the firms in the industry, over the long term, it is the movement of resources between industries that is fundamental to the establishment of competitive equilibrium. Conventional analysis has implicitly assumed that the adjustment towards long run equilibrium occurs through the entry of new firms and exit (through liquidation) of established firms.

In practice, an important mechanism for inter-industry resource adjustment is diversification by established firms. My two papers on industrial diversification attempt to analyse the structural factors which influence the extent and the direction of diversification.

The first (Grant 1974) argues that the analysis of diversification behaviour does not require complex managerial theories of the firm but can be approached using the conventional motivational assumption that firms seek to maximise shareholder wealth through maximising expected return and minimising risk.

In the second paper (Grant 1977) the analysis is further developed and is used to generate and test predictions concerning the inter-industry pattern of diversification by UK manufacturing firms between 1963 and 1968. An innovative feature of these papers is the application of the Sharpe/Lintner concept of "systematic risk" to the analysis of structure-conduct relationships in industrial economics. Past research in industrial organisation

has given insufficient attention to the role of risk and has tended to look at specific sources of risk and subjective attitudes towards risk. The advantage of the Sharpe-Lintner approach is that it provides an overall measure of risk for the firm, which is empirically measurable and is soundly based upon optimising behaviour by investors and equilibrium in the securities markets.

4. Risk and long run competitive equilibrium.

The growth of industrial diversification and the ability of diversification by large firms to breach conventional barriers to entry raises issues for the establishment of long run competitive equilibrium across industries. At the simplest level, long run competitive equilibrium involves the establishment of the "normal" rate of profit across industry. "The relationship between risk and rate of return on capital in UK industry" (Grant 1981a) argues that the competitive rate of return on capital depends upon the degree of industry risk, where the appropriate risk measure is the systematic risk of firms' equity return adjusted for the degree of leverage. This measure of risk gives a remarkably good explanation of differences in rates of return between firms in competitively structured industries. The implication is that a failure to take account of risk has been a major weakness of the many studies which have sought to relate industry profitability to market structure.

A practical application of this empirically measured relationship between risk and the competitive rate of return is in the identification of monopoly profit. Grant (1978) examines some of the difficulties which the Monopolies and Mergers Commission has encountered in interpreting the rates of profit earned by dominant firms. It is suggested that in preference to comparing the return on capital of the monopoly enterprise with the average for industry, a more sophisticated approach would be to compare the company's return on capital with the risk-adjusted competitive rate of profit.

CHAPTER 2

PRICING BEHAVIOUR IN OLIGOPOLY INDUSTRIES

INTRODUCTION

- 2.1 FORMAL APPROACHES TO OLIGOPOLY PRICE
- 2.2 OLIGOPOLY COORDINATION: COLLUSION
AND PRICE LEADERSHIP
- 2.3 OLIGOPOLY PRICING AND MARKET STRUCTURE
- 2.4 PRICING BEHAVIOUR IN THE SUPPLY OF PETROL
- 2.5 EVIDENCE ON OLIGOPOLY PRICING BEHAVIOUR
IN OTHER INDUSTRIES
- 2.6 CONCLUDING COMMENT

CHAPTER 2

PRICING BEHAVIOUR IN OLIGOPOLY INDUSTRIES

The primary motivation underlying my study of pricing in the UK market for petrol (Grant 1982) was dissatisfaction over the lack of integration between the theory of oligopoly and the empirical study of pricing behaviour in the markets for manufactured products. The absence of an integrated and general theory of oligopoly capable of explaining and predicting pricing behaviour across the range of concentrated industries represents one of the major failures of economic science. Part of the problem may be a misdirection of effort; as Needham has noted, "traditional analysis of oligopoly models in economics, has with few exceptions, dealt with models selected for their mathematical tractability than with their empirical relevance" (Needham 1978, p.63). A symptom of this failure of oligopoly theory to address the principal features of pricing behaviour in industrial markets is the separation in industrial economics textbooks of pricing theory from the discussion of empirical aspects of pricing behaviour (see, for example, Scherer 1980, chapters 5-12; Hay and Morris 1979, chapters 4-7; Needham 1978, chapter 3; Koch 1980, chapters 12 and 13). In examining the pricing of petrol (an industry selected for the richness and variety of its pricing behaviour in recent years), my paper (Grant 1982) attempts to explain the complexities and variability of pricing behaviour using an informal framework of hypothesised structure-conduct relationships.

Although lacking in theoretical elegance and in the ability to generate a determinate equilibrium with predictable levels of pricing and profits, the approach encounters some success in analysing observed patterns of price behaviour. Apart from any analytical contribution at the descriptive level the study succeeds in identifying certain features of pricing behaviour which, apart from any intrinsic interest, would appear to be more generally characteristic of oligopolistic competition.

The purpose of this chapter is to provide background to my study of petrol pricing behaviour by relating the study to the theory of oligopoly and to other empirical research into pricing in imperfectly competitive markets. A review of the theoretical literature identifies two principal strands in the analysis of oligopoly. First, the more formal approaches to oligopoly theory which rests upon profit maximising price-output decisions given specific assumptions concerning the nature of oligopolistic interdependence (section 2.1). Second, are the various oligopoly theories which start from the presumption that oligopolists behave collusively in seeking to maximise industry profits (section 2.2). Drawing upon both these areas of theory, section 2.3 examines the relationship between market structure and oligopoly pricing with the conventional "structure-conduct-performance" approach. The findings of my petrol market study (Grant 1982) are summarised and compared to earlier work on competition in the supply of petrol both in the UK and the US (section 2.4). In section 2.5, the conclusions reached in relation to petrol are examined in relation to empirical research on pricing in other oligopoly industries. In addition to surveying other published work, this section draws heavily upon evidence on pricing behaviour described in reports by

the Monopolies and Mergers Commission.

2.1. Formal approaches to oligopoly price

The essential weakness of oligopoly theory identified in the petrol study was that: "no single theory is powerful enough to explain the wide range of pricing behaviour observed both across different industries and in the same industry over time" (Grant 1982, p.272).

The restrictiveness of oligopoly theory in relation to the range of predictions of individual theories have their origins in over-specificity of behavioural assumptions and the narrow range of market structure variables which the theories incorporate.

The central problem of oligopoly is that, unlike perfect competition or pure monopoly, each firm's demand and marginal revenue schedules are not immediately determinate because they are dependent upon rivals' reactions to price or quantity changes by the initiating firm. In achieving a solution to this indeterminacy, two main approaches have dominated the literature. The first is to make specific assumptions about firm's expectations of how rivals react to changes in price or output ("conjectural variations") and then to derive a price-output equilibrium on the basis of optimising decisions by individual firms. The second, which will be examined in the following section, is to assume collusive behaviour by firms and to identify the factors which determine the extent to which the industry price will approach the pure monopoly level.

The principal feature of most of the more formal approaches to oligopoly has been to achieve a determinate price-output equilibrium by introducing assumptions concerning conjectural variations. The basic

model here is that of Cournot (1963), a quantity adjustment model distinguished by each firm's assumption that changes in his own output leaves his rivals' outputs unaffected. Extending the analysis from duopoly to oligopoly causes equilibrium price and output to approach the perfectly competitive level as the number of firms increases. Where firms' market shares differ, due to cost differences between firms, then the price-cost margin in equilibrium is H/E , where H is the Herfindahl index of concentration and E is the price elasticity of market demand.¹ This condition represents a simplification of the Cowling-Watson result (see below)

The basic Cournot model has been extended in several directions to produce a whole class of oligopoly theories. For example, more complex conjectural variations terms have been introduced through embodying adaptive expectations (Friedman 1968; Cyert and DeGroot 1973). While the motivation for such extensions appears to have been the desire for more realistic conjectural variations terms, the result has been the emergence of a body of literature on the stability properties of equilibrium in Cournot type models (see, for example, Theocharis 1960; Hahn 1962; Quandt 1967; and Okuguchi 1970). A further development has been to identify price rather than output as the appropriate decision variable and may be solved either for product homogeneity (the Bertrand model) or differentiated products (Scherer 1980, pp 150-152). Stackelberg's duopoly model (Stackelberg 1952) extends the Cournot model by introducing alternative conjectural variation terms: either Cournot-type "follower" behaviour, or "leadership" behaviour where the firm maximises profit on the assumption that the other behaves as a follower (for a summary see Cohen and Cyert 1965, pp 236-239).

Even the kinked demand curve model (Sweezy 1939; Hall and Hitch 1951), which is a theory of price stability rather than price equilibrium, is distinguished by its assumptions regarding conjectural variations. For price increases, each firm assumes that rivals' prices remain constant ($dp_j/dp_i = 0$), for price decreases, it is assumed that rivals match the price change ($dp_j/dp_i = 1$). The consequence is that each firm perceives a kinked demand schedule with the result that each firm's price is unresponsive to changes in cost and demand.

The principal characteristics of these formal approaches are, first, their focus upon optimising decisions by the individual firm and, second, the specific assumptions which are made concerning conjectural variations. It is differences in these assumptions about conjectural variations which are the primary source of the different predictions of the different theories. Several attempts have been made at generalising these Cournot-type models to embody a wider variety of assumptions about interdependence while preserving some predictive content. The most successful of these is by Cowling and Waterson (1976).²

Maximising firm i 's profit function subject to an industry demand function gives a first order condition:

$$\frac{d\pi_i}{dX_i} = p + X_i \frac{dp}{dX} \cdot \frac{dX}{dX_i} - \frac{dC}{dX_i} = 0$$

Where p is price, X_i is firm i 's output, X is industry output and C is cost.

Multiplying by X_i and summing over N firms gives:

$$\sum pX_i + \sum \frac{X_i^2}{X^2} \cdot \frac{dp}{dX} \cdot \frac{dX}{dX_i} \cdot X^2 - \sum \frac{dC}{dX_i} \cdot X_i = 0$$

$$\text{or } \frac{\sum pX_i - \sum \frac{dC}{dX_i} \cdot X_i}{pX} = -\sum \left(\frac{X_i}{X} \right)^2 \cdot \frac{dp}{dX} \cdot \frac{X}{p} \cdot \lambda$$

i.e. industry price-cost margin = $-\frac{\text{Herfindahl index of concentration} \cdot \lambda}{\text{price elasticity of demand}}$

Where $\lambda = \frac{\sum \frac{dX}{dX_i} X_i^2}{\sum X_i^2}$

The analysis offers predictions as to the determinants of the level of price in an industry which are independent of the nature of inter-firm interactions. The conjectural variations term λ could take values corresponding to a variety of assumptions. Under the Cournot assumption λ would equal 1, while at the other end of the range, full collusion would imply λ equalled N where all firms are of equal size, or $\frac{1}{H}$ where firms have differing market shares.³ In their empirical results, Cowling and Waterson obtain a regression coefficient which implies that as seller concentration increases, the value of the conjectural variations terms falls - i.e. collusion tends to fall. In examining this problem, Dickson (1982) shows that this counter-intuitive result arises from an inappropriate specification of the conjectural variations term as an index of collusion. "To avoid such problems", notes Dickson (*ibid* p.40), "a collusion measure should focus more directly on the retaliatory assumptions that firms extend to one another." Hence Dickson proposed an index of collusion with a constant range, the maximum value of which does not automatically increase as seller concentration falls.

The Cowling and Waterson model is important in that it shows that price and output in oligopoly are not exclusively a function of assumed conjectural variations and that concentration and demand elasticity are related in a systematic manner to price-cost margin, independent of the conjectural variations terms. The problem still remains, however, that the conjectural variations term enters the model as an exogenous variable. The central question which these theories do not answer is what factors determine the way in which oligopolists interact?

Dissatisfaction with the implausibility of Cournot-type behaviour has encouraged the development of theories of oligopoly based upon the assumption that firms will seek to increase joint profits by eschewing independent pricing behaviour in favour of coordination.

The tendency towards collusion can be incorporated within a formal profit maximising oligopoly model by assuming a collusive conjectural variations term, the result being a constant-market share demand curve for each firm and a pure monopoly solution. However such an approach fails to examine the mechanism of such behaviour ignoring the problems of achieving and maintaining collusive equilibrium. One of the major contributions of the more behavioural collusive approaches to oligopoly has been the identification of conditions conducive to oligopolistic coordination and the determinants of the resulting price level.

The incentive for collusive behaviour among competitors has long been recognised in the analysis of markets.

It was clearly identified by Adam Smith in his renowned statement that: "People of the same trade seldom meet together, even for merriment or diversion, but the conversation ends in a conspiracy against the public or in some contrivance to raise prices".

(Smith 1910, p 117). The principle was extended by Chamberlain (1933) whose small group model of monopolistic pricing behaviour postulated that even in the absence of formal collusion, where the number of sellers in an industry is small, recognition by firms of the interdependence of their price-output decisions would result in the attainment of a monopoly price.

But while there is incentive for firms to increase industry profits by avoiding competitive pricing behaviour, it is generally recognised that collusion, either explicit or tacit, is unlikely to result in the attainment of the pure monopoly price. The reason is that once a price has been established above the competitive level, it is in each firm's interest to increase its output by making small price reductions. This propensity towards price cutting (normally secret and selective) is the fundamental source of instability in collusive arrangements and the principal reason for the breakdown of cartels.

An alternative approach to the analysis of oligopoly is to postulate an equilibrium between the conflicting forces towards industry collusion and independent price cutting at the firm level. Such an equilibrium lies at the heart of Stigler's theory of oligopoly (Stigler 1964) which assumes that each supplier selectively offers secret price reductions to the extent that his resulting acquisition of market share is just compatible with the random movement of buyers between sellers, and hence his price reductions remain undetected by competitors. The greater are the random shifts in market share between suppliers, the greater is the ability of firms to secretly cut price. It can therefore be shown that the extent of price cutting, and thus the level of industry price, depends (positively) upon the number of suppliers, the fewness and size of buyers, the greater the frequency of entry and exit of buyers to and from the market and the greater the differentiation of products by suppliers.

Apart from detailed criticisms of the formulation of Stigler's model by McKinnon (1966), in relation to our quest for a general theory of oligopoly price, the chief weakness of the Stigler model is the restricted circumstances to which it applies. In particular, the notion that suppliers will engage in price cutting only up to the point where they are likely to be "found out" implies a formal collusive arrangement. Under informal collusion as envisaged by Chamberlain, such clear limits to independent price cutting are unlikely to be perceived.

The tendency for oligopolists to indulge in independent price cutting is only one reason why the monopoly price level may not be attained. Even if coordination between competitors is perfect, the theory of limit pricing predicts that the level of industry price will be determined by the level of barriers to entry to the industry, the price elasticity of market demand and entrants' expectations of established firms' reaction to its entry. By assigning Cournot-type expectations to the entrant (that established firms will hold their output constant in the event of entry), Sylos-Labini (1962) and Modigliani (1958) derive a limit price, the level of which depends upon the extent of scale economies and the elasticity of market demand.

The numerous extensions to ^{the} Bain-Sylos-Labini-Modigliani analysis of limit pricing has done little to clarify and generalise the theory. While further underlining the importance of entry barriers for the development of industry structure and the competitive behaviour of firms, the role of entry barriers in determining the level of oligopoly and monopoly price has become more complex and confused. Some of the most useful extensions of limit price theory have been to recognise that entry depends not only upon whether industry price exceeds the limit price, but also on the amount by which the ~~actual~~ ^{actual} price exceeds the limit price. Thus Kamien and Schwartz (1971) make the probability of entry dependent upon the degree to which the limit price is exceeded while Gaskins (1971) makes the rate of entry a function of the degree to which the limit price is exceeded (see Scherer 1980, pp 236-239 for a summary of the principal features of Gaskins' analysis).

More contentious has been the plausibility of the "Sylos Postulate" concerning the reaction of rivals to entry. Maintenance of pre-entry levels of output once entry has occurred is to forego profit by forcing down the level of industry price and Wenders (1971a) has argued that the formation of a new collusive agreement which includes the new entrant would be more rational. On a wider front, the whole theory of limit pricing has been undermined by questioning the need for limiting price in order to deter entry.

Entry is deterred by creating unfavourable expectations as to the post-entry behaviour of established firms towards entrants. While the maintenance of a pre-entry limit price is one means of deterring entry, a less costly alternative might be the threat of aggressive post-entry price competition. Such threats will be more credible when backed by the maintenance of excess capacity in reserve (see, for example, Wenders 1971b; and Spence 1977).

A final complication is that the level of barriers to entry (and consequently the level of limit price) depends upon both the identity of the entrant and the method of entry. While the literature distinguishes between small and large scale entry, in the case of entry through diversification by established firms, the level of barriers to entry are dependent upon the resources of the diversifying firm. The capacity for established firms to breach or circumvent conventional barriers to entry is enhanced further by their ability to take over an existing firm and to build upon a "toehold" acquisition by internal investment. 4

What emerges from this survey of limit pricing models is very similar to the conclusions which were drawn from the survey of the formal models of oligopoly which assumed independent pricing by firms: determinate equilibria can be predicted but only in highly simplified circumstances. Like the Cournot-type oligopoly models, limit pricing theories deal with only a small number of market structure variables and incorporate implausibly naive assumptions about firms' expectations.

The introduction of greater complexity and greater realism cause a loss in determinacy with the result that we are left with only rather imprecise qualitative predictions regarding the influence of structural variables on price. Thus, just as with seller concentration where it is possible to predict a positive relationship with the level of oligopoly price but difficult to specify the precise form of the relationship,^{SC} with barriers to entry it is similarly likely that a positive relationship to oligopoly price exists, but difficult to support any particular theory of a determinant level of price.

Theories of limit pricing presume collusive behaviour among oligopolists, hence the only issue is finding the optimal price level for the industry as a whole. However the limit pricing theories, in common with the Chamberlain and Stigler theories, are not explicit as to how oligopolists coordinate their pricing decisions. Clearly, the success with which firms achieve collusion is a critical determinant of the level of industry price - particularly where cartel agreements are illegal. Hence, a further important contribution to the theory of collusive oligopoly is analysis of the process by which the firms in an industry achieve coordination of their pricing behaviour. Unlike most oligopoly theory, such analysis has been firmly grounded in empirical studies of oligopoly pricing, particularly in certain US antitrust actions, notably tobacco (U.S. v American Tobacco Company 1946), steel (U.S. v United States Steel Corporation et al, 1920) and harvesting machinery (U.S. v International Harvester Co., 1927).

The principal observation of these studies - the tendency for suppliers' prices to move in parallel usually with one firm acting as leader - has formed the basis for the theory of price

leadership. The basic schema was proposed by Markham (1951) who identified three major forms of price leadership which have subsequently become known as dominant firm, collusive and barometric price leadership. The most fully developed of these models is dominant firm price leadership where the dominant firms sets

his profit maximising price and output in the knowledge that smaller firms will act as price takers. As Markham recognised, however, such behaviour is merely a consequence of a near-monopoly market structure and, as a theory of oligopoly, the model lacks general interest. ⁵

More interesting for students of oligopoly are collusive and barometric price leadership. Collusive price leadership (referred to by Markham, 1951, as "price leadership in lieu of an overt agreement") describes the practice where coordination of prices in a concentrated oligopoly is achieved through one firm being recognised as a price leader. In the knowledge that other firms will follow initiatives, the price leader bears the responsibility of setting an industry price which is attractive to all firms in the oligopoly. Unlike dominant and collusive price leadership, barometric price leadership carries no connotations of uncompetitive pricing behaviour. In a industry supplying an homogeneous product, suppliers will be constrained by competitive forces to charging the same price. In this situation there may be some apprehension on the part of firms in being the initiator of price changes in response to changing market conditions and one or more firms may become recognised as price leaders simply because of their rapid identification of, and response to, changing circumstances in the market. As Stigler has noted: the barometric firm "commands adherence of rivals to his price only because, and to the extent that, his price reflects market conditions with tolerable promptness". (Stigler 1947, p 446). ⁶

Ono (1982) has criticised the traditional classification of price leadership as being based upon both market structure and behaviour, but without clarifying how the structure or behaviour is determined and without establishing any general model of price leadership. On the basis of a simple optimising model, Ono establishes whether firms will find it profitable to behave as price leaders or price followers. Ono then goes on to establish three basic types of price leadership:

- (i) Voluntary price leadership, where one firm has a clear cost advantage over his rivals. This corresponds to the standard dominant price leadership model, with the exception that the price leader doesn't necessarily possess the greatest market share.
- (ii) Deceived price leadership exists where followers are unwilling to reduce price despite a fall in marginal costs in order to ensure that the price leader maintains his leadership role. The leader is "deceived" into price leadership since it would be more profitable for him to adopt a follower role
- (iii) Forced price leadership occurs where price competition leads to all firms adopting follower roles with a consequent adjustment of price towards the competitive level, at which point it becomes profitable for every firm to adopt a leadership position.

While Ono provides a more satisfactory derivation of leadership behaviour, the model does not provide an entirely convincing analysis of the collusive price leadership type which is the most interesting and prevalent of the various forms of price leadership behaviour. The problem appears to arise from the clear distinction which is made between leadership and follower behaviour which does not deal adequately with the notion of tacit collusion in oligopoly.

The approaches to oligopoly price determination which assume coordinated behaviour among firms lack the elegance of the more formal models which proceed from specific assumptions about conjectural variations. However, the collusive approaches have the advantage of plausibility in the basic behavioural assumptions and, furthermore, they lack the restrictiveness of the more formal approaches being more flexible in the range of pricing behaviour predicted. At the same time, none of the theories proposed is adequate from an empirical point of view. As has already been noted, the principal feature of oligopoly industries is the variety of pricing behaviour observed ranging from well-organised collusion resulting in a monopoly price level, to destructive price warfare. Indeed, individual industries display a wide range of behaviour often over fairly short periods of time. None of the theories of oligopoly discussed so far is capable of generating a range of behavioural outcomes extending from the fully collusive to the highly competitive, and offering unique predictions based upon the structural conditions of the particular market. Certainly some theories do relate both to competitive and collusive outcomes. For example, Bishop (1960) develops an oligopoly theory where three possible reaction schedules are identified: a collusive equilibrium where joint profits are maximised, a warfare reaction and a limited warfare reaction. The central problem of the analysis is that the pricing outcome depends upon the behavioural stance adopted by each firm and is not determined within the model.

2.3. Oligopoly pricing and market structure.

In relation to our requirements for an oligopoly theory which is powerful enough to encompass the whole range of oligopoly pricing behaviour and make specific predictions based upon predetermined structural variables, the existing theories suffer from two principal shortcomings. First, all the theories consider only a limited range of structural variables.

For example, the Cournot-type models show only how the level of equilibrium price varies with seller concentration, while the limit price theories focus upon the height of barriers to entry. Second, in all the models the range of predictions is constrained by the assumptions made concerning the nature of oligopolistic interdependence. For example, the Cournot-type models make highly specific assumptions about conjectural variations, while the collusive approaches presume particular types of business coordination.

Different theories vary considerably in their restrictiveness - for instance, Stigler's theory of oligopoly (Stigler 1964) achieves a considerable degree of generality both in incorporating elements of competitive and collusive behaviour, and in relating the level of industry price to a number of elements of market structure. To extend our analysis even more widely necessitates an abandonment of determinate theories of oligopoly price in favour of a looser, more generalised approach towards the factors influencing the nature and extent of competitive behaviour which utilises the "structure-conduct-performance" paradigm based upon the work of Bain (1959) and Mason (1939).

One of the earliest attempts at relating the degree of competition in industry to a detailed examination of the structural conditions of the industry was Clark's theory of workable competition (1940). Although the focus of Clark's interest was performance - the conditions under which socially-desirable competitive performance of industries could be attained - his primary concentration was on the range of imperfectly competitive industries. Here he considered how combinations of structural conditions (seller concentration, product differentiation, geographical distribution of firms, cost conditions and method of price setting) affected the nature and intensity of price competition.

Clark's analysis of market conditions conducive to competitive behaviour was extended in relation to oligopoly market structures by Bain (1950). Four patterns of competitive behaviour in oligopoly were identified:-

- (i) Effective collusion on price and/or output quotas, or its equivalent through tacit collusion or mutually recognised interdependence - tendency towards monopoly price and output.
- (ii) Imperfect collusion with internal discussion, secret price shading, or its equivalent through mutually recognised interdependence - price lower than monopoly level, selling costs may exceed monopoly level.
- (iii) Conventional kinked demand pattern, resulting from a certain pattern of sellers' conjectures about their rivals' reactions - price below monopoly level.
- (iv) Chaotic competition or active price rivalry arising from unrecognised interdependence or inconsistent conjectures by rivals - prices below "normal" profit level, at least temporarily.

Bain argued that market structure could effect both the choice of behaviour patterns and the specific results of each behaviour pattern in relation to the level of price and profit. The structural features identified by Bain were :

- (i) The level of barriers to entry - the existence of substantial entry barriers facilitates collusion and determines the level of collusive price in relation to the monopoly level. Furthermore, protection from entry permits the achievement of a rationalised size distribution of firms such that all firms are producing at an efficient scale of operation.

- (ii) Level of seller concentration - moderate concentration is likely to result in quasi-competitive behaviour (types (ii) and (iii) above) with the appearance of chaotic competition - very high concentration tends to produce type (i) collusion. "This hypothesis essentially rests on the premise and argument that given the incentive to joint profit maximisation, the impediments to express or tacit agreement increase, while the restraint of recognised interdependence on independent price cutting should decrease (with ordinary frictions and imperfections) as concentration decreases, and at such a rate that a shift in competitive pattern results over a certain concentration zone within oligopoly (Bain 1950, p 43).
- (iii) The number and size distribution of buyers - high buyer concentration puts pressure on sellers which makes effective collusion among them more difficult - hence tending towards lower prices and profits, and possibly towards "destructively" low prices.
- (iv) Product differentiation - selling costs tend to be higher where products can be effectively differentiated, the principal effect of differentiation on price is likely to be in raising entry barriers; it is difficult to identify the effect of product differentiation on price competition - it may dampen the tendency towards severe price competition and enhance the prospect for collusion on price.

This informal approach to oligopoly price behaviour which relates the structure of industry to the nature of firm interaction and the level of industry price has been further elaborated in the leading industrial organisation textbooks. The general approach has been to outline the structural features of industry which are likely to lead either to competitive or collusive behaviour: in Scherer's terminology "conditions facilitating oligopolistic coordinations" and "conditions limiting oligopolistic coordination" (Scherer 1980) or, following J.M. Blair, "centripetal" and "centrifugal" tendencies (Blair 1972).

The hypotheses relating market structure to pricing behaviour are not deduced from optimising behaviour by individual firms reconciled in a determinant equilibrium, but are based upon some simple a priori postulates regarding the attractiveness and feasibility of collusive behaviour together with generalisations drawn from observed pricing behaviour in a number of industries.

My own contribution (Grant 1982) to this informal approach to oligopoly pricing is in summarising and integrating a number of the hypotheses which have been proposed regarding the relationship of market structure to oligopoly price behaviour. The basic framework is to identify the level of industry price (in relation to the competitive and monopoly levels) with the extent to which firms can successfully coordinate their pricing behaviour. This is shown to depend upon:

- the profit incentive for collusive behaviour,
- the recognition of interdependence by firms,
- the ability to achieve coordination of pricing decisions,
- the successful maintenance of price above the competitive level.

The next stage is to relate these behavioural factors to elements of market structure. The approach is entirely qualitative: it only indicates the factors which are likely to influence price and the direction of that influence. Thus, although the analysis identifies the variables which determine the price level of and, in most cases, the sign of the first order partial differentials, it is not possible to specify the form of the functional relationship so as to show the quantitative impact of each independent variable or the way in which the independent variables interact.

Indeed, one of the specific features of my approach is that an equilibrium price, certainly a stable one, does not exist.

Industry price is unlikely to be either unique or stable.

The outcome is a balance of conflicting competitive and collusive factors, but not an equilibrium with stable properties.

In contrast with other theories of oligopoly, this approach emphasises the mechanism by which prices are set. Thus, published list prices facilitate the coordination of prices between suppliers, hence their behaviour tends to reflect the forces of coordination and industry discipline. Simultaneously, competitive pressures are manifest through a range of discounts, rebates and other allowances. The selective and semi-secret nature of discounts means that price discrimination between buyers is a general feature of oligopoly industries and, even where parallelism of list prices is near-perfect, suppliers' net prices may diverge significantly from one another.

A further prediction is that the balance of competitive and collusive forces is unlikely to be stable - once competitive initiatives are taken, then retaliation is likely resulting in a cumulative departure from the collusive price level. The speed of retaliation will depend largely upon the cross-elasticity of demand between competing suppliers' products (the greater the substitutability, the more rapid is retaliation). A further factor is industry demand relative to industry capacity - the greater the extent of excess capacity, the more willing are firms to follow a competitive initiative. Hence periodic price wars are likely to be a feature of oligopoly industries supplying standardised products which face a highly cyclical demand.

The sole purpose of this market structure - oligopoly conduct approach to pricing was to provide an analytic framework capable of a richer and more general explanation of observed oligopoly price behaviour than that provided by the more precise and rigorous theories of oligopoly. My research on pricing behaviour in the UK wholesale market for petrol provided a good test of the usefulness of this analysis.

2.4. Pricing behaviour in the supply of petrol

The UK wholesale market for petrol provides a particularly demanding empirical test for any theory of oligopoly pricing. Over the period 1970 to 1980 the industry displayed a remarkably varied pattern of pricing behaviour during which the stable orderly pricing which had existed for several decades gave way to more flexible pricing interspersed with temporary price wars. In view of the changability and, at times, instability of industry prices, the results of the study are moderately encouraging both in identifying characteristic features of oligopoly pricing and in supporting the predicted relationships between market structure and competitive behaviour (Grant 1982, pp 289-291).

With regard to the general pattern of price behaviour, a clear distinction between coordination of list prices and competition in discounts, which I have argued is a general feature of those oligopoly industries where list prices are quoted, is clearly displayed (*Ibid*, p 281). Also the tendency in industries supplying relatively undifferentiated products for competitive initiatives to produce instability in industry prices through a cumulative process of competitive retaliation is apparent (*Ibid*, pp 288-289).

power

As regards the explanatory/ of the structural variables, this was shown both qualitatively and quantitatively, facilitated by a separation of short from long-term influences. Over the longer term, seller concentration appeared to be the major factor influencing the ability of the industry to coordinate its pricing behaviour and changes in seller concentration were instrumental in distinguishing the earlier 'collusive' period from the later 'competitive' period. Over the short term, competitive behaviour was indicated primarily by the level of discounts offered. The extent of discount competition was shown to be dependent primarily on cost conditions and the ease of entry, both factors being reflected in the level of Rotterdam spot prices for petrol relative to the UK scheduled wholesale price.

The limitations of the analysis, both in relying exclusively upon market structure to explain and predict pricing behaviour, and the failure to predict quantitatively the level of price are discussed in the article's conclusions (*Ibid*, pp 289-291). In spite of these qualifications, the paper adds substantially to previous work on competitive behaviour in the UK petrol market.

Academic interest in the petrol market has been stimulated by the attention which the industry has received from government authorities. The industry has been subject to two Monopolies Commission investigations (Monopolies Commission 1965; Monopolies and Mergers Commission 1979) as well as an inquiry by the Department of Prices and Consumer Protection (1976) and several reports by the Price Commission. The earlier Monopolies Commission report was concerned primarily with the competitive effects of vertical arrangements in the industry: exclusive supply contracts with retailers, forward integration into retailing, tie-in sales and the recommendation of retail prices by the petrol suppliers. The academic debate which followed the publication of the report was provoked by differences of opinion within the Commission as to the effects on competition and efficiency of the "solus system" of distribution. Tibor Barna's note of dissent to the report (Monopolies Commission 1965, pp 171-181) was a determined attack upon the inefficiencies and anti-competitive effects which he associated with the distribution practices of the major oil companies. The debate which followed in the pages of Economica (Townsend 1965; Barna 1966) and the Antitrust Bulletin (Pass and Hawkins 1972; Dixon 1973) concentrated upon the impact of exclusive dealing on distribution costs, capital investment in upstream activities and price competition at wholesale and retail levels. However, as with the main report, relatively little attention was given to the description or analysis of price competition in the industry.

More detailed consideration of competitive behaviour in the UK petrol market was provided by Shaw (1974) and Lowe (1976). Shaw identified a well-coordinated pattern of price leadership among the major suppliers of petrol at the beginning of the 1960s, while in the course of the decade price parallelism became less cohesive and the primary focus of price competition switched to the retail level following the abandonment of recommended retail prices. Shaw concluded that pricing by the majors did not constitute limit pricing, as witnessed by the entry which took place both by small, cut-price wholesalers and integrated majors not previously represented in Britain. Rather the level of prices was designed to control the rate of entry and the growth of market share of the new entrants.

Lowe's article is of interest since it documents and analyses features of and changes in the structure of the petrol market in the period up to the oil crisis of 1974. Even during this period of comparative stability, some important changes in market structure are noted: the entry of new suppliers, the growth of market share by the cut-price independent wholesalers, an acceleration in forward integration into retailing, and the increasing failure of the majors to successfully differentiate their products by advertising and promotion. It is notable too that Lowe identified the Rotterdam price of spot petrol as a major influence on the pricing behaviour of the small independent wholesalers. What is striking however, is that despite these changes in market structure, price competition was remarkably subdued throughout the period and it was not until the major shocks of the post-1973 period that oligopolistic coordination was seriously shaken.

The reports by the Department of Prices and Consumer Protection (1976) and the Monopolies and Mergers Commission (1979) were stimulated by the sudden change in the competitive environment of the petrol suppliers after 1974 and concern (voiced primarily by retailers) that the pricing behaviour of the majors might be both predatory and discriminatory (directed in particular against small wholesalers and independent retailers). The reports documented some of the principal features of wholesale price competition over the period and the Monopolies and Mergers Commission report went as far as to relate changes in pricing behaviour to the evolution of the competitive structure of the industry and changes in the balance of supply and demand (Monopolies and Mergers Commission 1979b, chapter 3).

The outbreak of price competition after 1974 was unprecedented in the history of the British petrol supply industry. However, such a pattern of temporary, localised price wars interspersed with periods of comparative stability are an established feature of competition in the US petrol market. For this reason a brief review of US studies on competition in petrol supply is useful. As in the UK, academic study of the US petroleum industry was stimulated by the active interest of the antitrust authorities in the structure and practices of the industry.

Following the break-up of Standard Oil in 1911, the industry was under constant scrutiny from Congress, the Justice Department and the Federal Trade Commission. After the Second World War the industry was subject to a number of Congressional inquiries (U S House of Representatives 1948, 1953, 1955, 1957; U.S. Senate 1952, 1953, 1956). The result was a number of detailed studies of competition in the supply of petroleum products, and petrol in particular, covering the period 1940-1958.

The purpose here is not to provide a detailed survey of the literature on price competition in the United States petrol supply industry, but to briefly examine the principal findings of some of the key U S studies to compare them with my own for the UK, and to determine to what extent the hypotheses which I advanced concerning the relationship between market structure and pricing behaviour are supported by the U S evidence.

De Chanzeau and Kahn (1959) provided one of the most thorough investigations into structure and competition in the U S petroleum industry. What is apparent from their study, which makes the U S petrol supply industry interesting for purposes of comparison with the U K, was that its organisation, in terms of the main groups of participants and their relationships, was similar to that of the U K. Integrated oil companies accounted for the majority of the product flow from refining to retailing, and almost half of retail outlets were wholesaler-owned at the end of the 1950s. A number of independent wholesalers operated including distributors of the blended petrol of the integrated majors and the independent marketers which purchased from refineries and terminals and supplied under their own brand or under no brand at all. Independent wholesalers purchased either on long term contracts or on a spot basis. The principal differences between the US and UK markets were, first, the US is geographically segmented which meant that market structure varied between regions and suppliers to one region were potential entrants to adjacent regions, second, independent wholesalers were longer established and occupied larger shares of the market than in the UK, third, a number of non-integrated refiners existed which provided comparatively secure sources of supply for the independent wholesalers and ensured active spot markets for petrol in the principal refining areas.

The pattern of pricing behaviour described by De Chazeau and Kahn (D & K), over the period from the late 1920s to the end of the 1950s showed many similarities to that observed in the UK during 1970-80. Announced prices to retailers, the tank-wagon price, provided the focal point for price leadership among the integrated majors. The role of leadership was traditionally exercised by the Standard Oil companies which continued to dominate their respective territories after Standard Oil's dissolution in 1911. The pattern of pricing bore many resemblances to that predicted by the dominant firm price leadership model: the Standard companies maintained an industry price level which was largely followed by the smaller companies and which was accompanied by a steady loss of market share by Standard (*Ibid*, pp. 403-406).

Further evidence on price leadership during this period is provided in the Brookings study of big business pricing (Kaplan *et al* 1958) and by Bain (1945). On the Eastern seaboard Esso was a consistent price leader, its price being determined primarily on a cost-plus basis by cost of crude plus transportation cost, less the sales realisation from fuel oil and other fractions (Kaplan *et al*, 1958, pp80-85). Gulf on the other hand, despite its size, exercised very little pricing initiative and invariably followed Standard's lead (*ibid*, p 206). On the Western seaboard, Bain noted that price leadership was the principal means of averting instability and was inevitable in view of the level of concentration: "price leadership by Standard was recognised in fact and was followed consistently with only minor defections by the other majors" (Bain 1945, p. 291).

While the same forces for coordination of prices between the major petrol suppliers existed in the US as in the UK, the achievement of coordination was rendered more difficult in the US by the more competitive structure of the industry, as indicated by the importance of independent refiners and wholesalers and the importance of spot markets for petrol. D & K placed considerable emphasis on the role of the spot market as a competitive influence upon petrol prices, this paralleled the role of the Rotterdam market on UK pricing during the period 1975-80 (Grant 1982, pp 283-289). The "significant and controversial question" identified by D & K (1959, pp 393-394). was "whether and to what extent (the spot markets) assure competitive pricing throughout the industry".

The answer they gave was that, despite the small proportion of petrol sales through spot markets, spot petrol markets exerted a powerful influence on the level and structure of wholesale prices : "the short tail has wagged the huge dog" (Ibid, p. 398). The spot price "signifies to all marketers the price at which their competition can purchase"; thus spot prices were "sensitive barometers of industry wide conditions of supply and demand, and the basis to which all prices must conform (Ibid, p. 394).

D & K identified the strategy of the majors over the period as a quest for stability in a potentially turbulent market, the essential ingredient of such stability was an avoidance of price competition through price leadership backed by forward integration to limit the potential for instability. "Forward integration therefore plays some part in making price leadership effective. The concern of the integrated refiner to shun price wars and to insulate his operations as far as possible from the competition of disorderly independents who have no good alternative to price cutting" involved the establishment of differentiation through brand advertising and the provision of services at retail filling stations (ibid, pp 446-447).

But even the absence of independent wholesalers, D & K identified competitive tendencies amongst the integrated majors. In the main this was reflected not in direct price competition but in the offer of service station leases at nominal rents, the provision of equipment at subsidised rates and the willingness to fuel local retail price wars through selective price reductions. This tendency for retail price competition to feed back into wholesale price competition through appeals by retailers for support and "interventions by majors to induce retailers to meet lower competitive offers" reflected "irresistible competitive pressures on themselves" which were themselves partly a product of forward integration (ibid, p 453).

Indeed, noted D & K, it was the fact that vertical integration was not perfectly balanced that created supply and demand imbalances which led to the outbreak of price competition. Because additions to refining capacity were large and lumpy leading to temporary excess capacity, and because changes in product demand led to temporary surpluses and shortages in the supply of individual refined products, surplus supplies appeared on the market depressing spot prices.

Lower spot prices were translated into increased wholesale competition largely through independent wholesalers, at the same time excess supplies of petrol encouraged incursions into one another's marketing areas. (Ibid, pp 458-459).

Again the mechanism for wholesale price wars was similar to that which occurred in the UK during 1975-78:- surplus petrol at low spot prices enabled price competition by independent wholesalers, excess supplies at the European refineries of integrated majors induced some of the European-based majors to increase their supplies to the UK market at lower prices, while increased competition at the retail level encouraged defensive measures by the established majors to support their retailers. As D & K noted, 'what appears clear in most cases is that the major refiners do not start price wars, although their oil may power it and in the end they are drawn into the fray to meet competition' (Ibid, p. 468).

By examining the petroleum industry as a whole, D & K were able to show the influence of upstream activities and markets upon the wholesale petrol market. In particular, the influence of crude oil supplies and prices and the role of the independent refiners, influences which were considered exogenous in my own study. However, because the study dealt with the petroleum industry at a national level, the analysis of competition in the supply of petrol can only be treated in general terms. To examine in detail pricing behaviour and its relationship to market structure it is necessary to focus upon regional or local product markets. For this reason the studies by Learned and Ellsworth (1959) and Cassady and Jones (1951) are of particular value.

Learned and Ellsworth's study of 'Gasoline Pricing in Ohio' represents by far the most detailed account of petrol pricing at wholesale and retail levels available in the literature. The principal feature of market structure in Ohio during the post war period was the predominant position of Standard Oil Ohio (Sohio) with about 31 per cent of gallonage retail sales and with 28 per cent of retail outlets. The largest six suppliers to the Ohio market accounted for about 74 per cent of total sales, while in addition to the 14 integrated majors there were a number of small refiners and independent wholesalers which together accounted for 2.4 per cent of sales.

The most prominent feature of price behaviour over the period 1948-1955 was the orderliness of prices and the restrained nature of price competition. In this, price behaviour corresponded to that of the UK market prior to 1975, rather than to the more turbulent behaviour of 1975-1980. Tank wagon prices were subject to near-perfect parallelism: uniform prices were charged by the major suppliers, all price changes were initiated by Sohio and competitors followed these initiatives, either on the same day or within five days. Yet, despite evidence of other commentators of Sohio's sister companies' dominant price leadership (see, for example, McLean and Hagu^o 1954, pp 210-222 for a discussion of Standard of Indiana's "price umbrella" policy), Learned and Ellsworth are emphatic that Sohio's leadership was of a barometric type. The evidence for the barometric, as opposed to dominant or collusive, nature of Sohio's leadership was chiefly Sohio's stated policy of selling prices which reflected all market factors and Sohio's obvious efficiency in doing so.⁷ Following the abandonment of state-wide tank wagon pricing by Sohio, regional differentials in posted tank wagon prices emerged. Regional price differentials were a function both of differences in distribution costs and differential degrees of competition. In general it was in the cities and larger urban areas where retail and wholesale competition tended to depress prices.

The pattern of price competition was familiar (see Grant, 1982, pp 283-285): "The price movers in downward price adjustment were a small number of aggressive dealers, often supplied by jobbers, private brand distributors or suppliers of unbranded gasoline, always located in, or very close to, an urban market where potential sales were high. Some of these retailers, by cutting prices deeply, attracted so much gallonage that competing dealers felt obliged to follow suit. When such price cutting became widespread, suppliers cut their tank wagon price, realizing that any other course would result in such low margins for some dealers that their very existence would be threatened." (Learned and Ellsworth 1959, p 52).

Where this pattern of price competition deviated from the typical UK pattern after 1974 was in the response of the majors. On identifying emerging retail price competition and pressure on wholesale prices, Sohio was normally the first of the majors to post a lower tank wagon price for the locality while introducing a smaller price reduction in a "buffer zone" peripheral to the centre of price competition

(ibid, p 52 and pp 67-68). What is apparent, therefore, is that despite the competitive pressures which emerged on a local and temporary basis, Sohio was able to maintain a leadership role in responding to and containing the competitive pressures in an orderly manner, and then leading the market back to "normal" pricing once the source of the disturbance had abated. In comparison even with the competitive urban areas of Ohio, (Akron and Toledo), the structure of petrol distribution in the Los Angeles area in the post-war period was substantially more competitively structured. The six largest majors accounted for only about 49 per cent of total retail outlets and a total of around 150 petrol brands were represented, including those of a number of independent wholesalers and retailers (Cassady and Jones 1951, pp 44-54). The emergence of a price war in the Los Angeles area between 1949 and 1950 is carefully documented by Cassady and Jones and it is interesting to compare the sources and development of competition and the reactions of the majors with those in the UK between 1975 and 1976.

Between the end of the Second World War and February 1949 price cutting was practised by a number of independent wholesalers and their dealers, but the price differentials below the majors' brands were fairly stable. Between February and June 1949 a number of Shell and Tide Water retailers began to meet the lower prices of the independents, which was followed by a rapid spreading of discounting among the retails of major brands.

The price cutting intensified towards the end of 1949 and beginning of 1950 to the point where virtually all retailers were selling at cut prices. While price cutting by retailers was a major factor in initiating the price competition, the development of a full-scale price war necessitated competitive discounting at the wholesale level.

It was notable that in the course of the price war no movement in the majors' tank wagon price occurred and the wholesale price cutting took the form of fixed rebates to dealers in critical areas or discretionary rebates conditional upon the dealer lowering his retail price to a particular level.

The results of these U S studies confirm a number of features of pricing behaviour observed in my own study - notably the tendency of wholesale list prices to follow a pattern of price leadership (although different interpretations have been offered as to whether the leadership was dominant, collusive or barometric in nature), the localised and temporary nature of wholesale price competition and its promotion through selective rebates, the importance of retail price competition and excess petrol supplies at refinery level as sources of wholesale price competition (with independent wholesalers and their dealers occupying a key role in linking the two), and the effect of vertical integration by the majors both in insulating the major companies from competitive forces and in providing a mechanism for transmitting price competition from retail to the wholesale level.

At the same time, the U S studies are largely descriptive and their explanations of competitive behaviour refer primarily to the specific economics of the oil industry rather than to more general theories. By failing to provide a theoretical framework within which petrol pricing can be examined it is difficult on the basis of those studies to predict the nature of pricing behaviour in different localities or time periods. The principal virtue of my own study is that it outlines hypotheses concerning the relationship of market structure to pricing behaviour, and uses these hypotheses to relate changes in pricing behaviour over time to changes in structural variables. The U S studies have not provided any general hypotheses of why pricing behaviour changed over time or sought to explain variations in price practices and levels between different geo graphical regions. In the light^{of} the evidence for the UK, further interpretation of some of the earlier U.S. studies is possible. For example, the differences in petrol pricing behaviour between Ohio and Los Angeles would appear to be partly a result of differences in seller concentration and, in particular, the presence of a natural and traditional market leader in Ohio.

2.5. Evidence on oligopoly pricing behaviour in other industries

The results of my research (Grant 1982), together with the findings of other studies surveyed in the previous section, identify some interesting features of pricing behaviour in the supply of petrol.

Certain characteristic patterns of pricing behaviour are apparent with regard to leadership and competition, and clear relationships emerge between market structure and competitive behaviour. To the extent that these findings are valid only for the petrol supply industry, they are of limited value. However, the objective of case study inquiry is to generate, through the careful and detailed study of particular economic sectors and units, results which can be applied more generally. Whether the observations made and hypotheses developed in the context of the petrol industry are capable of more general applicability can only be judged by a comparison with the findings for other industries.

Relating the research findings for the petrol industry with the body of previous empirical research into oligopoly pricing behaviour is no easy task. In common with other areas of scientific endeavour the expectation which underlies economic research is that an increasing stock of empirical knowledge will enable more precise discrimination between the effectiveness of competing theories, and that the application of existing theories to new data will enable the adaptation of theory towards greater generality. In the case of oligopoly pricing behaviour such a process of development has been hindered by the absence of a generally agreed body of theoretical knowledge (see section 2.1 above) and by the fragmentary and heterogeneous nature of the empirical literature. Indeed, only a comparatively small part of the literature deals with the process of price competition in concentrated industries. The two principal areas of empirical work have been concerned, first, with the relationship of market structure to the level of industry price and, second, the determinants of price setting by individual firms.

The "structure-performance" studies have focused upon the influence of seller concentration, product differentiation and barriers to entry on the level of price as indicated by the profit/sales ratio and the rate of return on capital.

These studies have been characterised by a weakness of the underlying theory of the influence of market structure on price, wide discrepancies between empirical variables employed and the theoretical variables which they represent, and a remarkable inconsistency of findings. To some extent it is dissatisfaction with the results of the "structure-performance"

studies which provides a justification for detailed case study analysis of pricing behaviour. For example, to take just one relationship, that between seller concentration and price, the diversity of empirical findings together with a lack of clear theoretical guidance suggest the need for more detailed study of the process by which structural variables influence industry performance, i.e. research into the conduct link between structure and performance. This represents one of the primary purposes of my petrol study.⁸

The second area of empirical investigation, price setting by firms, has developed the early work by Hall and Hitch and has been particularly concerned with testing the cost-plus pricing hypothesis - the view that business firms set their prices in relation to their perceived average cost,⁹ paying little or no attention to market demand or the state of competition. Important studies of the pricing practices of individual firms include: in the UK, Hague (1971), in the U S, Kaplan et al (1958), and in Denmark, Fog (1960). Industry-wide econometric investigations into the movement of industrial prices in the UK include Rushdy and Lund (1967), Coutts et al (1978) and Sawyer (1980) and have been stimulated by the debate in the United States over the "administered pricing hypothesis" - the view that in oligopoly industries firms use their market power to ensure a stability of the price level, to avoid downward adjustment of prices, and to raise prices principally in response to general increases in costs.¹⁰

The principal deficiency of these studies, from the point of view of this survey, is that the focus on the impact of cost changes in firms' prices has resulted in very little attention being devoted to the competitive interaction of firms within an industry which is the essence of oligopoly pricing behaviour. Both Kaplan et al and Hague report the existence of "follower" behaviour by some firms in setting their prices, but the focus of their studies upon individual firms precluded the investigation of pricing behaviour at the industry level.

Adherence to rigid cost-plus pricing procedures by firms represents a denial not only of market forces, but also of the interdependence which is generally regarded as the characteristic feature of oligopoly industries. However, once the tendency for cost mark-ups to vary is accepted and the role of discounts and allowances off list price is acknowledged, then cost-plus pricing can be viewed as a useful procedure in setting prices in the face of uncertainty over demand conditions. Moreover, it has been argued that common adherence to traditional "rule of thumb" approaches to price setting facilitates oligopoly coordination (particularly when suppliers are subject to common cost conditions) and the maintenance of a fixed relationship between price and average cost is consistent with limit pricing (see Scherer 1980, pp184-190; Sylos-Labini 1979).

That part of the empirical literature which deals in a systematic and analytical way with the competitive interaction of firms' pricing decisions at the industry level and the resulting patterns of industry pricing behaviour is limited. Probably the most extensive and detailed British study of price competition at industry level was that undertaken by Dennis Swann and his colleagues at Loughborough University (Swann et al 1973). The principal findings of the study and the implications for competition policy are summarised in Swann et al (1974). The purpose of the study was to identify the impact of restrictive practices legislation on competitive behaviour in previously cartelised industries; in doing so, the study provides a detailed account of pricing behaviour in a number of manufacturing industries. To the extent that all the industries surveyed were subject to some form of price fixing agreement, then they do not represent an unbiased sample. At the same time, the patterns of pricing behaviour which they reveal are instructive and tend to support the findings of other studies of pricing behaviour, in particular those concerning the UK petrol market.

The principal finding of the Loughborough study was that the abandonment of price fixing agreements increased price competition — substantially so in the case of wire ropes, sanitaryware, drainpipes and cables — hence suggesting that tacit collusion is unlikely to be

as effective as formal collusion in preventing price competition (Swann 1974, p150). Where price competition was successfully avoided, then the primary reason was the substitution of an information agreement for the price fixing agreement (these were particularly effective in tyres, electric light bulbs and transformers) (Swann 1974, pp161-163).

In several industries collusion was replaced by price leadership. Thus, in electric cables BICC led price changes, in wire ropes - British Ropes, in steel pipes - Hepworth Iron Co., and in metal windows - Critall -Hope. In all cases the price leader was the dominant firm in the industry. In no case was price leadership entirely effective in eliminating price competition; in electric cables, for instance, price competition was notably severe (Swann 1974, pp164-172). The strength of the price leadership depended considerably on the position and behaviour of the price leader. In wire ropes, British Ropes ability to induce obedience in its competitors' list prices and discounts was due to its market share and its willingness to either retaliate against or acquire competitors which took competitive initiatives.

An even more comprehensive study of pricing behaviour across a number of industries was that undertaken by Bjarke Fog in Denmark (Fog 1960). Again price leadership was observed to be a general feature of the pattern of price movements, although only in one case did Fog identify "perfect" price leadership where the price changes announced by one firm were followed immediately and identically by competitors. In some other industries followers maintained a constant price differential below the price of the leader, while in others followers would undercut the leader by a variable amount. In some industries only a vague pattern of price leadership was discernible - the leader changed identity and price initiatives were not always followed.

In general the price leader was the largest firm in the industry, although exceptions were observed. Price leadership did not necessarily result in high prices. Very often the price leader had the lowest variable costs with the result that the profits for followers

were very low. One reason for this suggested by Fog was that the leader may have an interestⁱⁿ a low price level both to prevent price cutting by small firms and to limit the market share of the smaller firms (a prediction of the dominant firm leadership model). A further feature of pricing policy by large firms when faced with price-cutting by small competitors was for the major firms to maintain their list prices while retaining sales through the introduction of a cut-price brand, or the offer of special discounts to larger customers. However, the use of secret discounts was regarded by leading suppliers as dangerous because of the rapidity with which rumours of discounts spread, thus encouraging all customers to demand discounts "and, thereby, the bottom will fall out of the entire pricing system" (Fog 1960, p146).

More detailed evidence on pricing behaviour in highly concentrated British industries is provided in reports by the Monopolies and Mergers Commission (MMC). Between 1976 and 1979 a number of reports were published on concentrated oligopoly industries:

- Frozen Foodstuffs (Nov.1976) (3 suppliers)
- Cat and Dog Foods (July 1977) (2 major suppliers)
- Flour and Bread (July 1977) (3 major suppliers)
- Ceramic Sanitaryware (Aug 1978) (4 major suppliers)
- Insulated Electric Wires & Cables (March 1979) (6 major suppliers)
- Ice Cream and Water Ices (Aug. 1979) (2 major suppliers)
- Electricity Supply Meters (Aug 1979) (4 major suppliers)

The industries fall into two groups: frozen foods, cat and dog foods, flour and bread, and ice cream and water ices are all processed foods sold principally through grocers' outlets; the others are industrial products. All the products display some measure of parallel price movements. The objective of the following comparison is to relate the similarities and differences between the price patterns in the different industries to the structural characteristics of the industry, and to compare the observations in these industries with the findings for the petrol market. For purposes of comparison five aspects of pricing behaviour are examined: the extent of price uniformity, the existence of a leader, competition in discounts, mechanisms for coordination and the level of price.

(i) The degree of price uniformity

The extent to which the leading suppliers in each industry charged uniform prices over the study periods (normally between 5 and 7 years) varied from industry to industry.

In the two principal categories of electric wires and cables, general wiring cable, and winding wires and strips (MMC 1979a pp65-71, 80-82) and in standard bread (MMC 1977a, pp67-68), prices were identical over the whole period. For the major types of electricity meter, (MMC 1979d, p.68), bakers' flour (MMC 1977a, pp58-59), similar types of frozen food (MMC 1976, p-06), competing brands of cat and dog food (MMC 1977b, pp79-81) and for most ice cream and water ice products (MMC 1979, pp190-194), the list prices of the major suppliers were identical for most of the periods studied. Discrepancies in the prices of competing products were most noticeable during the period 1975-76 when rapid inflation together with the operation of price controls by the Price Commission made the maintenance of parallel prices more difficult.

In the case of ceramic sanitaryware products, slight differences in the prices of the four major suppliers existed over the whole period. These price differences seldom exceeded 4 per cent, (MMC 1978, pp78-82).

(ii) The existence of a price leader

In all the industries price changes took place at similar times although the time lags and the degree of price leadership varied from industry to industry.

Bread was unique in that equal price changes almost always occurred on the same date, hence no price leader was evident, although ABF was recognised as the least-cost producer or "back-marker" which could not be ignored by RHM or Spillers (MMC 1977a, p.63).

In three industries there was a clearly recognised price leader:- BICC in electrical wires and cables, Birds Eye in frozen foods and Pedigree Petfoods (a subsidiary of Mars Ltd) in cat and dog food.

In all three cases the price leader was the largest supplier and in frozen foods and cat and dog foods the largest supplier was also the least-cost manufacturer (due partly to economies of scale). In the remaining industries a consistent price leader did not exist. In electricity supply meters, GEC Measurements was responsible for most price initiatives, particularly during the late 1970s, however during the earlier 1960s the lead in price increase switched between the suppliers (MMC 1979d, p.68). In flour, RHM was responsible for most price initiatives between 1960 and 1963 when there were only two major milling companies. Following the entry of ABF into milling, price leadership was less disciplined: while RHM and Spillers tended to change price simultaneously, ABF failed to coordinate its price changes with the other two (MMC 1977a pp53-59, 92-94). Similarly, in ceramic sanitaryware the absence of a consistent price leader was also noted (MMC 1978, p.66). In ice cream and water ices leadership switched between the two major suppliers. Between 1973 and early 1975 Wall's initiated most price changes, while between mid 1975 and 1978 Lyons Maid led most price increases, (MMC 1979c, pp190-194).

(iii) competition in discounts and allowances

In all of the seven industries the parallelism of prices existed only in list prices, and on discounts, rebates and other allowances significant competitive behaviour occurred, particularly in the terms offered to large customers. Only in ice cream and water ices were the scales of discount and rebate and ultimate net prices largely identical between the two companies. (MMC 1979c, pp102-103). The extent of competition in discounts and rebates varied considerably between the remaining industries. In cat and dog goods there was a notable lack of competition in discounts off list prices, indeed Pedigree Petigoods gave no other discounts other than its published quantity discounts. In electricity supply meters, manufacturers offered standard rebate terms which had the effect of parallel list prices being translated into parallel actual prices. Between 1974 and 1976 some selective price concessions were introduced, while after 1976 competition in concessionary prices increased substantially, largely reflecting a change in purchasing practices by the electricity boards (MMC 1979d, pp27-29).

In electrical wires and cables there was a similarity between the types and the rates of discount and rebate offered by the competing suppliers although the Monopolies Commission found that this did not preclude competition in any sector^{of} the market. Thus between late 1971 and 1973, higher rates of discount by a smaller supplier led to a price war in general wiring cable. (MMC 1979a, p116).

In sanitaryware, price competition occurred primarily through the offer of confidential rebates to builders' merchants. These rebates were based upon the customer's annual purchases. Rebates were first introduced around 1963 and the levels of rebate rose considerably in the following years.

Two industries where competition in discounts and rebates was particularly intense were frozen foods and bread. In both cases the competition was limited to larger retailers (notably the major supermarket groups). In frozen foods, the competitive situation was relatively stable, with the major supermarket groups purchasing at net prices which were substantially lower than those of small retailers. Thus small grocers' shops received no discount off wholesale price by Birds Eye, while the 20 largest retail customers received discounts which averaged over 10 per cent (MMC 1976, p31). In bread, on the other hand, price competition has been unstable with periodic price wars breaking out between the major baking companies, in which discounts to the major supermarkets have risen to levels at which the bakeries have sold at net prices far below average costs.¹¹

(iv) Mechanisms for coordination

One of the interesting features of oligopoly price behaviour which all the empirical studies have failed to shed much light on, is the mechanism by which coordination of prices is attained. While Chamberlain (1933) claimed that the mere recognition of interdependence is sufficient for the achievement of a monopoly price level, Fellner in his introduction to the revised edition of "Competition Among the Few" (1965) has pointed to the importance of uncertainty in hampering bargaining among competing oligopolists.

Swann et al (1973) noted the extent to which the abandonment of price fixing agreements was followed by the institution of agreements or informal arrangements between companies to exchange information on actual or proposed price changes. In some industries (e.g. transformers, and wire ropes) these arrangements were effective means of preventing competition, in others (e.g. glass containers) they were not.

In the period covered by the selected Monopolies Commission investigations, information agreements were illegal. However, it was apparent that flows of information either directly or indirectly between competitors was the principal mechanism by which similarity list prices was achieved. In electricity supply meters there was a formal, but apparently legal agreement, to exchange price lists between competitors through the trade association. In ceramic sanitary ware there was notable price parallelism, again without a clearly defined price leader, coordination being facilitated by companies announcing their price increases well in advance of their implementation. Here it would appear that past cartel agreements and the geographic concentration of the industry facilitate understandings and communications that "have sometimes touched on increases in costs and intentions regarding prices" (MMC 1978, p66). In ice cream too, substantial price parallelism was achieved without clear and consistent price leadership. It would appear that the existence of a dominant duopoly, each with secured market shares through the system of distribution agreements with retailers and with issued recommended price lists, obviated the necessity for leadership in price increases.

In the industries with a well-defined price leader, changes in prices were announced through published price lists, though only in electric cables did it appear that the leader's price lists were actually distributed direct to competitors.

(v) The level of prices

To evaluate the practice of price leadership from the viewpoint of the public interest it is necessary to consider the effect of price leadership upon the level of industry prices. Theoretical considerations would suggest the best indicator of market power to be the degree to which prices are raised above marginal cost (the price-cost

margin or Lerner index) since this would indicate the exercise of market power both in the short run and the long run. However, because of the difficulties of measuring marginal cost, rates of profit are the only practical measure of monopolistic pricing. The underlying principle here is that, in the long-run, competition will force the rate of return on capital to the "normal" level. In the absence of intra-marginal rents due to inter-firm efficiency differences, a long-run rate of return above the normal level implies monopolistic pricing. A more detailed consideration of the problems of and methodology for inferring market power follows in Chapter 4, for the present let us adopt the approach traditionally employed by the MMC of comparing return on capital with industry averages. Table 2.1 shows the results for seven industries where price parallelism has been observed by the MMC.

The most striking feature of Table 2.1 is, with the sole exception of cat and dog foods, the low level of profitability in the industries subject to parallel pricing. However, in the light of numerous studies into cartel behaviour and performance, the finding that apparently uncompetitive behaviour does not lead to above average profitability in the US (Asch and Seneca 1976) and Denmark (Fog 1960) shows that the profitability of colluding firms tends to be below that ^{of} non-colluding firms. The interpretation of these low rates of profit is crucial to any appraisal of the role and influence of parallel pricing practices. Three explanations of the figures in Table 2.2 present themselves: parallel pricing is effective in raising industry prices above their competitive level, but this is not readily observable through industry profit rates, second, parallel pricing is ineffective in avoiding price competition; third, parallel pricing is potentially effective, but firms choose not to utilise their potential market power.

Effective price leadership might give rise to only average rates of industry profit in industries where competitive pricing might be expected to result in particularly low profitability. Thus in industries supplying undifferentiated products suffering stagnant or declining demand where substantial barriers to exit operate, then one would

Table 2.1 Rates of return on capital in industries subject to parallel pricing

INDUSTRY	COMPANIES	PERIOD	RETURN ON* CAPITAL	WEIGHTED AV.	AV. RETURN FOR MANUFACTURING INDUSTRY
Frozen Foods	Birds Eye	1971-74	18.0	12.2	15.6
	Findus	"	7.3		
	Ross	"	5.8		
Cat and Dog Foods	Pedigree Petfoods	1972-76	44.0	36.6	16.2
	Spillers	"	19.2		
Insulated Electric Wires or Cables	BICC	1971-76	16	17.7	16
	AEI	"	23		
	Delta	"	21		
	Pirelli General	"	13		
Ice Cream & Water Ices	Walls	1972-77	20.9	17.7	16.2
	Glacier	"	13.2		
		"			
Electricity Supply Meters	Ferranti	1972-77	4.7	17.8	16.2
	GEC	"	34.5		
	Landis & Gyr	"	8.0		
	Sangamo-Weston	"	24.0		
Flour and Bread	ABF	1971-75	14.8	13.0	15.4
	RHM	"	15.3		
	Spillers	"	7.4		
Ceramic Sanitaryware	Armitage Shanks	1971-76	16.9	16.6	16
	Twyfords	"	17.4		
	Doulton	"	6.9		
	Ideal Standard	"	23.4		

*Historic cost basis, before tax but after interest payments.

expect rates of return on capital that fell below both the all-industry average and the long-run "normal" level. Some of the industries considered, notably insulated wires and cables, electricity supply meters, flour and bread and ceramic sanitaryware, combine low growth of demand with low product differentiation. However these factors would not account for the low profitability of frozen foods and ice cream.

A further factor which might obscure the effectiveness of parallel pricing in raising industry profit rates is inefficiency which lack of competition might permit. Such a possibility was emphasised by the Monopolies Commission in its Report on Parallel Pricing (1973, pp26-28). Evidence of cartel performance shows that absence of price competition results in the survival of inefficiently small firms and the encouragement of inefficiency in otherwise efficient firms (X-inefficiency). Thus Swann et al (1974) observed that abandonment of price fixing agreements and the emergence of price competition was frequently accompanied by considerable structural adjustment involving the elimination of inefficient plants and firms from the industry. Some support for the inefficiency hypothesis is provided by the wide inter-firm variability in profit rates observed in table 2.1 (for instance in electricity supply meters and ceramic sanitaryware).

The second group of explanations for the co-existence of price parallelism with low profitability is that parallel pricing does not involve any significant restriction of competitive behaviour. Thus any tendency for parallelism in list prices to produce monopoly profit may be counteracted by competition in discounts and other allowances, the net result being net prices which correspond to broadly competitive levels. Such tendencies have been observed in petrol, bread, frozen foods, sanitaryware and cables.

A further possibility is that parallel pricing itself is not collusive in nature. Where no substantial differentiation exists between different suppliers' products price parallelism is inevitable and where one supplier possesses some cost advantage over his competitors

then it is likely that other suppliers would be reluctant to initiate price changes. Thus price leadership arises not through collusion or the exercise of dominance by one firm, but by the desire of firms to adopt followership roles. This phenomenon is indicated by Ross Foods' statement of its pricing policy for frozen foods:

"Ross Foods sets its prices generally at the same level as those set by Birds Eye. Since Ross Foods only advertises and promotes its products on a very limited scale, it cannot hope to win space in retailers' cabinets and charge prices above those charged by Birds Eye. On the other hand it cannot afford to undercut Birds Eye's prices to any significant extent.... In the economic conditions prevailing... Ross Foods had every incentive to move its prices up to the level of Birds Eye's prices whenever it had the opportunity to do so. (MMC 1976 p.2).

In these circumstances the important issue is the extent to which the emergence of follower behaviour encourages the price leader to set prices above the competitive level. This brings to our final set of considerations: whether low profitability may be the result of firms deliberately not seeking to use oligopolistic coordination to earn monopoly profit. In industries where entry barriers are low, limit pricing by firms might result in collusive oligopoly prices being set at levels close to the competitive level. Of the industries listed in table 2.1, only ⁱⁿ frozen foods and bread would entry appear to be easy. But similar considerations which lead firms to set limit prices in the face of potential entry might also induce firms to keep industry prices low in the face of potential competition between existing industry participants. The costs of price competition lie not only in low profits but also in the uncertainty with regard to prices, profits, market shares and sales which independent pricing behaviour gives rise to. A price leader's attempt to elevate industry prices far above the competitive level might threaten the cohesiveness of price parallelism. Similar behaviour has been observed in Fog's study of cartels where fear of a breakdown in the cartel resulted in cartel prices remaining static over a long period in the face of rising costs (Fog 1960).

2.6 Concluding comment

In surveying the literature on oligopoly pricing, the principal impressions gained are of the gulf between theory and evidence and the sheer diversity of the approaches and the findings both of the theoretical and the empirical studies. One of the main objectives of my study of petrol pricing was to forge a closer linkage between theory and evidence by studying changing pricing behaviour over time in a single industry. The confirmation of many of the predictions of my structure-conduct model was encouraging, even if the model represented only a loose theoretical framework which synthesised a number of prior approaches, as opposed to an integrated model rigorously derived from basic behavioural axioms.

The features of pricing behaviour which were identified in the UK petrol market - notably price parallelism, discount competition and the tendency for instability - correspond, not only to the pricing behaviour observed in other studies of the market both in the UK and the US, but also to that of other manufacturing industries whose structure and products are very different from those of the petrol supply industry. A superficial survey of pricing patterns observed in some other industries, including evidence from a number of Monopolies Commission reports, suggests that many of the elements of market structure identified as relevant to petrol price behaviour are also important influences in other industries.

The picture is far from clear however. It is difficult to determine the extent to which the patterns of price leadership observed represent collusive behaviour or are simply forms of price competition that are the inevitable consequence of these types of market structure. The interpretation of the different levels of profitability across separate industries is also problematic. But despite these various qualifications and uncertainties, one of the main conclusions arising from this survey is the potential value of case study investigation of pricing behaviour. The

results of
several decades of cross-sectional structure-performance studies
of the determinants of the levels of ^{industry}prices and profits have
been disappointing in that no clear and consistent story has
emerged as to the key structural determinants of the industry
price level. Hence, the most obvious direction for further
study is into the detailed investigation of the pricing process
and inter-firm interactions at the level of individual industries.

FOOTNOTES

1. Where firms are of equal size, price-cost margin under Cournot assumptions is $-\frac{1}{NE}$, where N is the number of firms and E is the price elasticity of demand (see Cowling and Waterson 1976, p 268).
2. The Cowling and Waterson analysis is reproduced in simplified form in Hay and Morris (1979, pp.143-144 and Sawyer (1981, pp. 19-20).
3. Full collusion would imply that where firm sizes are equal, each firm j would make equivalent changes in output to firm i, i.e. $\frac{dX_j}{dX_i} = 1$, therefore $\frac{dX}{dX_i} = N$.
4. The role of diversification in the inter-industry allocation of resources is discussed more fully in Chapter 4.
5. In the analysis of near-monopoly positions, however, some very interesting applications of the dominant leadership model have been undertaken, see for example, Yamawaki (1982)
6. Distinguishing collusive from barometric price leadership is very difficult in practice even though the nature and results of the two are quite different. Scherer (1980, pp 178-184) identifies price leadership in petrol and steel as barometric, while the Monopolies Commission Report on Parallel Pricing (1973, pp 12-13) outlines certain characteristics of barometric price leadership.
7. This discussion further underlines the difficulties of applying Markham's classification of price leadership types.
8. See Yamey (1972) for a survey of the pre-1970 literature. Among recent UK studies see Cowling and Waterson (1976), Hart and Morgan (1977), Hitiris (1978) and Nickell and Metcalf (1978).
9. Different views have been expressed as to the appropriate measure of cost: full costs, variable costs, standard cost, buying-in-cost.
10. The hypothesis was proposed by Gardiner Means (1935), the principal contributions to the debate being Stigler and Kindahl (1970, 1973); Means (1972); Weston et al (1974) and Weiss (1977).
11. See chapter 3 for further discussions of preferential terms to large suppliers and section 3.3 for an analysis of levels of discount reported in MMC reports.

CHAPTER 3

BUYING POWER, PRICE DISCRIMINATION AND PUBLIC POLICY

- 3.1 BUYING POWER IN ECONOMIC THEORY
- 3.2 THE CONTRIBUTION OF THE GRANT PAPERS TO
THE DEBATE OVER BUYING POWER
- 3.3 SOME EMPIRICAL EVIDENCE ON RETAIL BUYING
POWER IN THE UK
- 3.4 IMPLICATIONS FOR COMPETITION POLICY
- 3.5 A SURVEY AND APPRAISAL OF RECENT PRICE
DISCRIMINATION MEASURES
- 3.6 THE OECD REPORT ON BUYING POWER
- 3.7 THE MMC REPORT ON DISCOUNTS TO RETAILERS

CHAPTER 3

BUYING POWER, PRICE DISCRIMINATION AND PUBLIC POLICY

The two papers on buying power and price discrimination (Grant 1979¹, Grant 1981b) were motivated by the discrepancy between the importance of these related phenomena as a problem for competition policy and the inadequate economic analysis of their causes and effects. This chapter enlarges upon the material in my two papers, first, by surveying earlier literature on the economics of buyer market power, second, by supplementing the analysis of buying power with an empirical test, and, finally, by updating the papers principally through reviews of recent reports by OECD and the Monopolies and Mergers Commission (1981).

3.1. Buying power in economic theory

The survey in Chapter 2 of pricing behaviour in oligopoly industries included a number of instances where buyers exerted an important influence on the level of price and the nature of competitive behaviour by sellers. In the UK petrol, market buyers (retail filling stations) were small and unconcentrated in comparison with sellers, but despite the general absence of buying power, the emergence of a small number of larger retailers (such as ASDA and Heron) was a significant factor in the growth of discount competition during the mid-1970s. In other industries, such as bread, frozen foods, cables and electricity supply meters, the size and concentration of major customers, either supermarket chains or public authorities, exercised a major influence on pricing behaviour.

In view of the extent of buyer concentration in the markets for most manufactured products and the observed impact of large buyers on prices, it is remarkable that economic theory has largely ignored the structure of buyers and its influence on market equilibrium. The basic market models of price theory are defined largely in terms of the seller side of the competition, the usual assumption being that buyers are unconcentrated. Such an assumption is valid in the case of final markets where supply is to households, however in intermediate markets and supply to public authorities, buyer concentration, though lower on average than seller concentration, is frequently moderate or substantial.²

Theoretical approaches to the impact of buyers on price have focussed upon the single buyer case, monopsony, where the treatment has been precisely analagous to monopoly analysis. The two basic models of perfectly competitive supply - monopsony demand, and bilateral monopoly are standard textbook material. The analysis can be extended by assuming that the monopsonist is a reseller and in the resale market he is either a perfect competitor or a monopolist (see Scherer 1980, pp299-306).

The analysis of markets with concentrated buyers (oligopsony) has followed a similar pattern - oligopsony has been regarded as the mirror image of oligopoly. In oligopoly, as has been argued in the previous chapter, the relationship of concentration to market power stems essentially through the recognition of interdependence and the ability to coordinate pricing behaviour. A similar propensity seems plausible on the buyer side of the market and such a hypothesis has been proposed by Lustgarten (1975). It is my contention, however, that the 'collusive

oligopsony" approach to the market power of buyers is unsatisfactory in relation to the markets for most manufactured goods in that it fails to take account of the relatively low buyer concentration ratios facing most industries and the fact that, for most manufactured goods, list prices tend to be set by suppliers. The ease of collusion is further limited by the tendency for buyers of most intermediate products to be drawn from a number of industries. Certainly in auction markets where prices are set by competitive bidding, collusive behaviour among concentrated buyers is likely and is commonly observed (see Grant 1980, p.4 and footnote 4). For the great majority of manufactured goods, however, the implausibility of the collusive oligopsony thesis is demonstrated by the observation that the principal manifestation of buying power is in individually negotiated discounts and allowances rather than a uniform buying price.³

Fortunately the analysis of concentration among buyers has not been limited to hypotheses of collusive oligopsony. Galbraith's concept of "countervailing power" (Galbraith 1980) was aimed primarily at explaining the structural trend towards bilateral concentration, the underlying idea being that competition at the horizontal level was no longer the principal constraint upon the exercise of economic power; vertical countervailing economic power on the opposite side of the market was more influential. The tendency for concentration on one side of a market to beget concentration on the other, implies that the predominant market structure in advanced capitalist societies will be bilateral oligopoly. Galbraith devotes little attention to the mechanics of countervailing

power and provides no general model of price determination in such markets. What is notable, however, is that his concept of countervailing power is different from conventional monopsony market power. In the monopsony model, the buyer is able to push market price below the perfectly competitive level. However in Galbraith's analysis, concentrated buyers only countervail the market power of sellers: "The opportunity to exercise such (buying) power exists only when the suppliers are enjoying something that can be taken away: i.e., when they are enjoying the fruits of market power from which they can be separated." (Galbraith 1980, p.118). The power of the buyer in such cases rests upon his ability to inflict loss of sales volume on the supplier by taking his business elsewhere.

The notion of buying power as countervailing power is supported by what is probably the most thorough empirical study in buying behaviour by a major firm - Adelman's study of A&P (Adelman 1959). Based upon his own research and data submitted as evidence in the anti-trust case against A&P, Adelman provided a detailed examination of the terms on which A&P purchased from its suppliers of processed foods (Adelman 1959, chapters 10 and 11 and appendix 4). The findings are not only that A&P exercised little or no market power (in terms of being able to influence market price over the medium to long term), but that in many instances the effect of the Robinson-Patman Act was to cause suppliers to discriminate against A&P. Where A&P was able to purchase at lower net prices than other retail buyers (taking into account differences in the cost of supply), this was the result of one of two factors. First, where variations in quoted prices emerged either between sellers or over time, then

A&P had greater incentive, because of fixed information and negotiation costs, to seek these out and greater ability (through its warehousing space) to take advantage of them. Second, when faced with the market power of oligopoly suppliers, A&P could secure discriminatory price reductions through its size of purchasing. But against competitive small suppliers A&P was not able to secure any discriminatory concessions. Also when faced with sellers of the most highly differentiated products, then favourable discounts and allowances were similarly unforthcoming (Adelman 1959, p.220).

Statistical studies of the effect of buying power on prices have taken the form of cross-sectional studies where buyer concentration ratios have been one of the market structure variables upon which industry price-cost margins have been regressed. To give two examples of the profit equations fitted to US census data:

Lusgarten (1975)

$$PCM = a + b_1 K/O + b_2 CR_4 + b_3 BCR + b_4 AFP + b_5 RFS + b_6 DSP$$

McGuckin and Chen (1976)

$$PCM = a + b_1 K/O + b_2 CR_4 + b_3 BCR + b_7 G + b_8 D$$

where PCM is price-cost margin in selling industry

K/O is capital-output ratio in selling industry

CR_4 is 4 firm concentration ratio in selling industry

BCR is buyer concentration ratio across buying industries

AFP is average annual purchases per firm in buying industries

RFS is ratio of firm size in buying industries to firm size
in selling industry

DSP measures dispersion of buyers across different industries

G is rate of growth of selling industry

D is a dummy variable for consumer or producer industry.

In both studies the capital/output coefficient (b_1) was positive and significant as was the seller concentration coefficient (b_2), while the coefficient of the buyer concentration variable (b_3) was negative and significant.⁴ Lustgarten further found that the average volume of purchases by each buyer, relative size of buyer and lack of dispersion of buyers across industries all tended to depress price-cost margins in the supplying industries.

Both the studies found evidence that the impact of buyer concentration does not act independently of seller concentration, but operates in conjunction in the manner suggested by Galbraith and Adelman. Thus McGuchin and Chen noted that the omission of buyer characteristics understated the effects of seller concentration on profits (McGuchin and Chen 1976, p.131) while Lustgarten found that the negative impact of buyer concentration on profit was strongly significant in high seller concentration industries, but negative in low concentration industries (Lustgarten 1975 p.129).

The foregoing analyses have only considered concentration among the buying industries as relevant to the bargaining power which can be exerted against firms in the supplying industry. But concentration amongst buyers also implies concentration and market power in supply by the buying firms. One of the limitations of partial equilibrium approaches of the Lustgarten type is that the impact of successive market power upon the primary industry is ignored.

The extent to which buying power in an intermediate market implies monopoly power in the secondary market is of crucial importance in appraising the effects of retail buying power on prices to the consumer

and Adelman devoted considerable attention to the issue of how far the fruits of A&P's buying power were passed on in lower retail prices (Adelman 1959 pp360-379). However, buying power is not the only method by which concentration in the consuming industry affects prices and profits in the supplying industry. Where firms in the buying industry possess market power in the market which they supply, this will influence their demand for inputs and, consequently, the revenues and profits to the suppliers of those inputs.

Based upon an extension of Cournot's analysis of price determination in an intermediate market, Waterson (1980) shows that price-cost margin in an intermediate product industry is positively related to the Herfindahl index of seller concentration in the consuming industry and negatively related to the price elasticity of demand facing the consuming industry. The effect therefore is the opposite of that predicted by the buying power hypothesis.

In his empirical test, Waterson includes both effects: the successive market power effect, where concentration in the buying industry increases the profitability of the industry supplying the intermediate good, and the buying power effect, where concentration in the buying industry decreases the profitability of the supplying industry. The signs of the two buying industry concentration variables are of opposite signs as predicted, but the larger relative size and greater statistical significance of the former concentration variable indicates the greater quantitative importance of this effect.

The notion of vertical cooperation as opposed to conflict between supplying and customer industries is also developed by Porter in

an analysis of manufacturer-retailer interaction (Porter 1974). The basis of retailer power, argues Porter, is in the contribution of the retailer to the differentiation of the manufacturer's product through information, advice, and after-sales service. In this respect consumer goods fall into two categories: convenience goods where product differentiation is almost entirely the responsibility of the manufacturer and the retailer offers virtually no services other than retail distribution, and non-convenience goods where the retailer (normally small and specialist) plays a vital role in promoting and differentiating manufacturers' products. The importance of the distinction between convenience and non-convenience goods was demonstrated by running standard structure-performance regression analysis of consumer industry profit rates. For the convenience goods industries the standard market structure variables (seller concentration, advertising/sales ratios, growth and minimum efficient scale) performed well. However, in the non-convenience sector the results were poor, due, argued Porter, to an exclusion of retailer variables. Including average retail firm size (a proxy for retailer power) improved the R^2 and the significance of the other structural variables.

This result and the theory upon which it is based has some peculiar features. Porter argued that the retailer's influence on product differentiation, and hence his power, is indicated by smallness of size (Porter 1974, p.434). This reasoning conflicts with most notions of buying power, is lacking in intuitive appeal and runs counter to most casual observation.

3.2. The contribution of the Grant papers to the debate over buying power

My own contribution to this rather confused and conflicting discussion is an attempt to clarify the nature of buying power in industrial markets and to examine its influence on price within a simple framework of oligopoly analysis. Grant (1980) argues that the principal impact of large buyers on price is to counteract the market power of sellers, indicates the mechanism of such countervailing power, and identifies the conditions conducive to the exercise of purchasing power.

The analysis of buying power is greatly simplified by examining the influence of buyers within the framework of conventional approaches to oligopoly pricing. Thus the impact of large buyers on price can be viewed primarily in terms of the behaviour of sellers. In my paper, I argue that the tendency of oligopoly suppliers to offer preferential prices to large buyers arises, first, from the lower barriers to entry which exist in relation to supplying large as opposed to small buyers and, second, from the willingness of oligopolists to undercut collusive prices in order to obtain the business of the large buyer (*ibid*, pp4-8).

These two mechanisms for the influence of large buyers are related to different structural variables.

The price differential between large and small firms arising from limit price behaviour by oligopoly suppliers in the face of differential barriers to entry between large and small buyers depends upon

- (i) the extent of economies of scale in marketing and distribution which will be related to the size of indivisible (i.e., fixed) cost elements in these functions;
- (ii) the proportion of industry sales which are to buyers whose size of purchases exceeds the minimum efficient plant size level of output in the supplying industry;
- (iii) the difference in the price elasticity of demand of large and small buyers, which depends primarily upon the extent to which the goods or services supplied by the larger firms in the buying industry are less differentiated than those of smaller firms;
- (iv) the level of seller concentration in the supplying industry which will be positively related to the ability of the supplying industry to adopt collusive limit pricing.

The ability of large buyers to encourage the breakdown of collusion in the supplying industry depends upon the fragility of oligopolistic coordination between sellers. This will be inversely related to the level of seller concentration in the supplying industry (i.e. as very high levels of concentration are approached, coordination between sellers is likely to hold even against large buyers) and positively related to the extent of excess capacity in the supplying industry (which is dependent principally upon the growth of demand).

Thus, the predictions yielded by my analysis as to the determinants of price differentials between large and small buyers and the overall impact of buyers on average market price are complex. Not only are there conflicting predictions as to the effect of seller concentration, but no simple structural measure of buyers' potential influence on price is suggested.

The problem which arises from my analysis is, therefore, how can the hypotheses concerning the relationship between market structure variables and price be tested? Even in Lustgarten's comparatively simple model, his concept of buying power being conferred by buyer concentration failed to translate into any easily estimable empirical measure: buyer concentration could only be inferred from seller concentration ratios related to supplying industries through input-output coefficients. Thus, Lustgarten measured buyer concentration in industry i as the average of four-firm concentration ratios in consuming industries weighted by the ratio of the sales of industry i to consuming industry j (X_{ij}) to total industry i sales (S_i)

$$\text{Thus } BCR_i = \sum_{j=1}^n \frac{X_{ij}}{S_i} CR^4_j$$

Guth, Schwartz and Whitcomb (1976) criticised this measure as overstating the extent of buyer concentration and proposed a measure of buyer concentration which, they claimed, is analagous to the calculation of standard seller concentration ratios. The approach is to rank the consuming industries by the average purchases of the four largest firms: $X_{ij} \cdot CR^4_j$, then to calculate the buyer concentration

ratio facing industry i (BCR_i)

$$BCR_i = \sum_{j=1}^n \frac{X_{ij} CR_j^4}{S_i}$$

where n is the number of buying industries to be included.

My analysis (Grant 1980) points to a somewhat different approach to measuring the likely impact of buyers upon price. The notion of buyer concentration proposed by Lustgarten and Guth et al appears to be based upon the belief that buying power operates in a similar way to selling power - presumably through some form of collusive behaviour on the part of buyers. My own analysis provides no simple structural measure of buying power. To the extent that the influence of buyers on price arises because of lower entry barriers in the supply to large purchasers, the extent of preferential prices depends upon the extent and nature of scale economies in supplying large as opposed to small buyers (through the standard Sylos-Labini/Modigliani analysis) and the threat of entry by large buyers which will depend upon whether purchases^{by} each of the large buyers exceeds minimum efficient plant size (MEPS) in the supplying industry. The overall effect of buyers on industry limit price therefore would seem to be indicated by the proportion of the supplying industry's sales which are to buyers whose level of purchases exceed the MEPS in the supplying industry.

The second effect of buyers is through their ability to encourage the breakdown of oligopolistic coordination. Here again it is the

size of purchases by individual buyers together with a wide size dispersion of buyers' purchases which would be conducive to the breakdown of price uniformity, rather than buyer concentration per se. The breakdown of price coordination depends not just upon the willingness of oligopoly suppliers to offer price concessions to larger buyers, but also on the bargaining power exercised by large buyers to force preferential terms from their suppliers. Bargaining power is a difficult concept to define or measure but essentially it is related to the relative costs which each party can impose upon the other as a result of a refusal to deal. The relative bargaining power of the buyer vis-a-vis a particular supplier depends, inter alia, upon the size of his purchases compared with the size of his supplier's sales, the number of alternative suppliers available to the buyer, the number of alternative buyers available to the seller, the extent of product differentiation in supplying and buying industries, the relative adjustment costs for both buyer and seller in refusing to deal and establishing the same volume of trade with alternative suppliers and customers, and the relative proportions of each firms' business which trade with the particular buyer or seller represents. It is interesting that this notion of the basis of economic bargaining power bears similarities with the concept of economic dependence which is incorporated in the anti-discrimination section of the German Act against Restraints on Competition (See Grant 1981b, pp.615 - 618).

3.3. Some empirical evidence on retail buying power in the UK

Although my analysis of buyer power represents a more cogent account

of the operations of large buyers in industrial markets than that provided by Lustgarten or Porter, the task of demonstrating the empirical validity of my analysis^{is} formidable. Because my analysis relates primarily to the degree of price discrimination in favour of large buyers rather than to the level of industry price and because the size of these differentials is a closely guarded commercial secret, there is a distinct absence of empirical data. However the reports of the MMC and the Price Commission provide a wealth of information on terms of supply of individual companies and industries, and, in the case of the report on "Discounts to Retailers" (MMC 1981), more comprehensive evidence on buying price differentials between retailers. This information can be used both to illustrate and test some of the hypotheses which have been formulated.

As regards the different views concerning the operation and the structural determinants of buying power, the evidence is inconsistent with the collusive oligopsony approach and tends to point to my own view of large buyers influencing their buying prices, partly through optimal price discrimination by monopolistic suppliers, and partly through the breakdown of oligopolistic coordination. The collusive oligopsony thesis is discredited by two types of evidence, first, that the influence of large buyers largely takes the form of individually negotiated discounts and special prices and, second, that buyer concentration ratios tend to be substantially lower than seller concentration ratios. This is particularly the case in wholesale markets where the manufacturers of consumer goods deal with

retailers. Of eleven consumer products studied in the MMC discount report, for six products the three firm concentration ratios exceed 70 per cent, while for only five products did the three-firm buyer concentration ratios exceed 10 per cent (MMC 1981, p.30).

Individual reports by the MMC provide a number of illustrations of the two mechanisms through which large buyers achieve discriminatory preferences. In near monopoly industries, price concessions to large buyers can usually be explained in terms of limit pricing behaviour. In metal containers, Metal Box's special terms to major canners such as Heinz and Pedigree Petfoods reflected these buyers' potential either to backward integrate or to encourage the entry of a new can maker (Monopolies Commission 1970). The London Rubber Company's special prices to the Family Planning Association and the Ministry of Defence for contraceptive sheaths and Rank Xerox's "group pricing scheme" for plain paper copiers recognised the attraction of large purchasers as a point of entry into the UK market (Monopolies Commission 1973; MMC 1976).

In more moderately concentrated industries price concessions to large buyers have been more closely associated with the ability of large buyers to defeat oligopolistic coordination of prices. An extreme case was the "discount war" between the three major bread suppliers during the mid-1970s (MMC 1977a, pp.62-67). Similar but less intense competition is recorded in insulated cables (MMC 1979a pp.72-76, 115-117). Such competition in preferential terms to large buyers is

particularly strong where products are relatively homogeneous and excess capacity is present . As the MMC report on retail discounts observes: "The generally static volume of sales of many food products in recent years has led to keen competition for market share. In the effort to secure or expand the volume of sales, competition between manufacturers for the business of the large multiples...has been intended to intensify, and business with them may sometimes be accepted at a price which makes less than a full contribution to the manufacturer's fixed costs." (MMC 1981, p.31).

In industries where seller concentration is very high and excess capacity less apparent, then suppliers tend to be more successful in holding their list prices in the face of large buyers. Thus in cat and dog foods (MMC 1977 b, pp.15-16) and in cigarettes (Price Commission 1978a, pp13-17; Hadjiraptis 1981, pp.87-103) discounts to large distributors were largely cost justified.

Drawing upon data on special discounts and allowances contained in a number of MMC and Price Commission reports, a statistical test of the determinants of preferential terms to large buyers is possible. As the MMC discounts report notes, the measurement of the extent of price discrimination in favour of large buyers is extremely difficult. In particular, "to discover what is the highest... and lowest price at which a supplier sells a particular product and to express one in terms of the other" will tell us little, particularly if we are unable to "ascertain the extent to which price differences are attributable to cost differences". (MMC 1981, pp.15-16). The measure of preferential terms to large buyers

employed by the Commission is expenditure on specially negotiated discounts, rebates, promotions and services expressed as a percentage of sales revenue. The justification is that manufacturers' published terms normally incorporate discount scales which take at least some account of cost savings in marketing and distribution. Discrimination in favour of large buyers occurs primarily through specially negotiated terms.

Table 3.1 shows the value of specially negotiated terms which include special prices or discounts and retrospective rebates or overrides on as consistent a basis as possible. Section 3.2 above identifies a number of factors which are likely to determine the degree of discrimination in favour of large buyers. Of these, three are likely to be especially important. These are capacity utilisation, seller concentration in the supplying industry, and proportion of sales to large buyers.

Capacity utilisation data is not readily available, but it might be expected to be related to growth in manufacturers' output over the medium term. Seller concentration was measured by the Herfindahl index. Not only do theoretical models of oligopoly pricing point to the appropriateness of the Herfindahl index (e.g. Cowling and Waterson 1976; Stigler 1964), but the index has the advantage of clearly distinguishing between industries dominated by one or two suppliers and oligopolies with four or five leading firms. Such industries may have very similar four or five firm concentration ratios, though the consequences for price and discount behaviour

Table 3.1. Special discounts and industry structure variables: observations for 17 products

PRODUCT	SPECIAL DISCOUNTS AS % OF SALES	GROWTH RATE OF UK MANUFACTURERS' SALES	HERFINDAHL INDEX OF SELLER CONCENTRATION	PROPORTION OF SALES THROUGH MULTIPLE RETAILERS	SOURCE
Biscuits	5.7	0.2	0.27	0.70	MMC 1981
Refrigerators	3.5	7.7	0.18	0.69	" "
Cigarettes	0.2	-3.2	0.51	0.21	" "
Cake	2.5	-0.6	0.13	0.60	" "
Canned beer	3.9	-1.5	0.11	0.72	" "
Bread	6.1	0.0	0.13	0.45	MMC 1977a
Frozen foods	3.4	4.8	0.18	0.79	MMC 1976
Cat and dog foods	0.34	3.9	0.44	0.60	MMC 1977b
Ice cream	3.7	3.0	0.21	0.30	MMC 1979c
Vacuum ware	0.0	0.5	0.53	0.40	Price Commission 1979a
Gas cookers	13.6	-2.5	0.24	0.97	MMC 1980a
Gas fires	15.6	-2.0	0.15	0.90	" "
Water heaters	7.4	4.2	0.43	0.75	" "
Tampons	1.6	3.7	0.55	0.40	MMC 1980b
Portable electric tools	0.9	5.1	0.89	0.63	Price Commission 1979b
Floor and furniture polish	2.6	0.2	0.34	0.50	Price Commission 1979c
Cigarette papers	0.2	2.8	0.96	0.30	Price Commission 1978b

of the different size distributions of firms are likely to be very different. As a measure of the impact of large buyers, the proportion of retail sales through national multiples was used. This measure was not entirely satisfactory due to failure to take account of the different sizes and therefore bargaining strength of large and small multiple groups, but it was broadly consistent with the concept of buying power discussed on pp 75 - 76 above and it was the only measure where reasonably consistent data could be obtained.

In view of the small number of observations (17) and the disparate nature of the products included, the results were surprisingly good. Linear multiple regression gave the following result:

<u>Independent variable</u>	<u>Regression coefficient</u>	<u>T-statistics</u>
Sales growth	-0.4570	-1.906 ^{**}
Seller concentration	-4.138	-1.722 [*]
Retail concentration	11.18	7.084 ^{***}

* significant at 10% level

** significant at 5% level

*** significant at 1% level

$$R^2 = 0.3999$$

Correlation matrix

	sales growth	seller concent.	retail concent.
sales growth	1	-	-
seller concent.	-0.3474	1	-
retail concent.	0.09367	-0.6434	1

All the coefficients are of the predicted sign with both sales growth and retail concentration clearly significant, while seller concentration is almost significant at the 5 per cent level. Ideally seller concentration should have entered the regression in a non-linear form in accordance with the inverted U shape relationship between discounts and concentration predicted by theory. However, since all the observations related to concentrated industries it seems reasonable to postulate a negative relationship for the range of concentration being considered.

Clearly, both the measurement of the variables and the small number of observations mean that only limited weight can be placed on these

results. At the same time it is encouraging that the sparse evidence which is available on this important but neglected area of pricing behaviour can be explained by reference to simple hypotheses of oligopoly behaviour.

3.4. Implications for competition policy

The principal result of my analysis (Grant 1980) supported by the empirical evidence in section 3.3 is that influence of large buyers on price is manifest principally in price differentials between large and small buyers. This phenomenon is not a consequence of monopsony (or collusive oligopsony) but is associated more with market power on the supply side. Hence it would appear that the appropriate policy response should be towards the exercise of market power by powerful sellers against small buyers, rather than towards the pressure by large buyers for competitive prices.

The problem here, as clearly illustrated by the empirical evidence in section 3.3, is that price discrimination between large and small buyers is most closely associated with moderately concentrated oligopoly industries, rather than with highly concentrated industries where price competition is more obviously absent. Hence conventional competition policies towards market dominating firms are either inapplicable or inappropriate in dealing with the price distortions arising from this assymetric oligopolistic competition. And yet, the problem is a real one in relation to welfare. Price discrimination, whether it is the conventional monopolistic exploitation-type or the result of assymetric oligopolistic competition in the face of

different sized buyers, is likely to encourage resource misallocation and increased seller concentration in the buying industry, apart from any considerations of equity.

Such concerns have been focused primarily upon the distributive sector where the emergence of large scale national chain stores in the retailing of a high proportion of consumer products and the declining role of independent retailers and the wholesaling sector has been strongly influenced by the preferential terms of supply which large retailers have been able to obtain. The response by the industrialised countries to the problem of discriminatory terms of supply between retailers and rapid structural change in the distributive sector have been influenced more by consideration of equity and the desire to protect traditional retailers than by thorough analysis of the welfare impact of these conditions. In several countries antitrust legislation was extended to specifically outlaw certain forms of discrimination in terms of supply. Enactment of anti-price discrimination measures have occurred in two waves. In the United States and Canada, the early advent of the chain store movement is retailing combined with the severity of the Great Depression resulted in the introduction of price discrimination laws during the mid-1930s. In Western Europe and Australia, the more recent (and in many ways more rapid) structural revolution in the retail sector has produced a similar rash of legislation.

Because the welfare effects are conflicting, necessitating careful quantitative measurement to determine the net effect of discriminatory pricing, no clear conclusion is reached in the paper as to the

desirability of price discrimination controls as a means of preventing and limiting price differentials in favour of large buyers. The most that can be achieved by a general discussion is to outline the principal issues (Grant 1980, pp.10-18). First is the effect of buyer - induced price discrimination on the level of price both in the supplying industry and to the final consumer. While the breakdown of oligopolistic competition might be expected to lower average supply prices, there is the possibility that discriminatory limit pricing could raise average prices, and, more seriously, deter new entry. Second, discriminatory prices to the buying industry will distort the allocation of resources between firms within the industry and promote the growth of concentration. There is clear evidence that favourable prices to large buyers has promoted the exit of small firms and growth of large firms particularly in retailing. However, most of the available evidence on prices (see Grant 1980, p.14; also Adelman 1959) suggests that the growth of size and buying power of large retailers has had the effect of lowering retail prices to consumers, even if only a part of the buying price advantage of the retail chains is passed on to the consumer. Indeed, the effect of price discrimination in raising retail seller concentration may be offset by the encouragement to independent retail pricing behaviour which differential buying prices induces.

3.5. A survey and appraisal of recent price discrimination measures

The existence of a market imperfection with adverse welfare consequences is an insufficient basis for the introduction of public policy measures. It is also necessary to carefully evaluate the consequences of the

policy, for no government intervention represents a simple correction of market imperfections; in many cases the imperfections of government policy are more damaging than the market imperfections which are the target of the intervention. The history of the Robinson-Patman Act is one of the classic examples of this phenomenon. Over four decades of criticism and calls for reform and repeal culminated in 1977 in a US Department of Justice report which identified the legislation as anti-competitive in intent, spirit and effect (US Dept. of Justice 1977). Yet during the early 1970s a number of countries introduced measures which were aimed at the same problem, discriminatory prices to large (particularly retail) buyers, and which resembled, to a greater or lesser extent, Robinson-Patman. Little had been written on the new approaches to discrimination, the only significant study was that of Ann Everton (1976) which concentrated upon the main features of legislation in a narrow range of countries and said little about the enforcement or the impact of the measures. My survey of the experiences of Germany, Ireland, France and Australia with recently enacted price discrimination laws (Grant 1981b) was to find out whether their experiences had paralleled those of the United States, and in particular to determine:

- whether price discrimination legislation can be effective in preventing or controlling discriminatory policy;
- whether the anti-competitive consequences of the legislation are worse than the initial problem; and
- whether anti-discrimination laws are the appropriate policy towards the basic problem.

All of the countries surveyed experienced severe problems of enforcement. Where the scope of the laws was narrow (such as in Germany⁵ and Australia) no widespread impact on pricing practices were discernible, while more general prohibitions had succeeded either in partial compliance (France) or outright flouting of the law (Ireland). For the most part, the ineffectiveness of the legislations arose from uncertainties as to the content and coverage of the provisions against discrimination. These uncertainties have been increased by confusion and indecision among the various competition authorities as to their interpretation and enforcement of the law. Only in Australia, and to a lesser extent France, has a concerted and consistent attempt at clarifying and explaining the anti-discrimination law been undertaken by the competition authority (Grant 1981b, pp603-605).

Evidence on the effects of the measures is sparse. In general the extent of any anti-competitive effect in terms of suppressing price competition depended upon the scope of the legislation in each country and its interpretation. But even where, as in Australia, the law is aimed only at price discrimination which involves a substantial impairment of competition, the effect may still be to encourage oligopoly coordination and the raising of net prices (Grant 1981b, pp601-602).

The overall results of the measures are disappointing. In all countries the price discrimination laws have given rise to considerable uncertainty and controversy and in none has a substantial

degree of compliance been achieved. The anti-competitive effects of the general prohibitions of price discrimination suggest a preference for more selective approaches aimed at discriminatory prices which are seriously anti-competitive in its effects (e.g Australia). If this is the case, however, then more conventional approaches to competition policy which concentrate upon the sources of price discrimination in the market power of suppliers and buyers rather than upon the manifestation of the problem may suffice (Grant 1981b, pp626-628).

3.6. The OECD Report on Buying Power

Subsequent to the publication of my own papers (Grant 1979 and 1981b), the OECD released a major report by its Committee of Experts on Restrictive Business Practices on "Buying Power. The Exercise of Market Power by Dominant Buyers" (OECD 1981). The scope of the report is somewhat wider than my papers:- in addition to an extensive discussion of the nature of buying power and its effects, the report surveyed policies towards buying power and price discrimination across most of the OECD member countries.

The report gathered together a considerable amount of information on the extent and the growth of buyer concentration in the OECD countries (largely from secondary sources), although there was a marked lack of any comprehensive statistical data which could allow detailed comparisons to be made either over time or across countries (OECD 1981, pp17-22). The main evidence related to the growth of concentration in the distributive trades which had occurred through

the creation of national retail chains, mergers between smaller chain retailers and the emergence of voluntary associations of small independent retailers. The report also noted the propensity for large retailers to integrate backwards into wholesale and manufacturing operations, thus supporting my view (Grant 1980,p5) that oligopolists perceive large buyers as potential entrants. The report found that the pattern of development of concentration at the buyers' level gave some support to the theory of countervailing power (OECD 1981,p88).

As to the effects of buying power on competition and economic welfare, the conclusions of the OECD Committee of Experts were largely consistent with my own (Grant 1980, pp10-18). In particular, the report emphasised the procompetitive effects of buying power on oligopolistic supplying industries through reducing the levels of prices and barriers to entry (OECD 1981 pp33-40). With regard to dynamic efficiency, however, a possible danger that was foreseen was that suppliers' profits might be depressed to a level which was detrimental to investment and innovation in manufacturing industries (ibid,p.90).

Two issues particularly concerned the Committee. First, whether discriminatory prices to large buyers would increase concentration in buying industries. Second, whether price concessions obtained by powerful retailers would be passed on to consumers. Clearly the two issues are closely linked. On the first, the report noted that buying power was only one factor in the trend towards increasing concentration in buying industries and particularly in

retailing. Scale economies in retail distribution and more aggressively competitive behaviour were very important factors causing the exit of small firms. As regards the ultimate effect on consumer prices, while risks were acknowledged, there was no empirical evidence that increasing concentration in buying industries was leading to higher consumer prices (ibid,p.90).

The OECD report paid little attention to the possibility that discriminatory terms of business might give rise to serious inefficiencies in the distributive sector. The primary argument of OECD was that preferential prices to big buyers would tend to promote concentration in the retail sector, but so long as price competition between retailers was active, then the consequences were unlikely to be serious. This appears to be based upon the presumption of scale economies in retailing. However, there is a clear danger that preferential buying terms to large retailers may enable inefficient large retailers to displace efficient small retailers and for inefficiencies to emerge among larger retailers in the form of excessive investment or X-inefficiency. Moreover the response of manufacturers to the increasing size and influence of leading retailers has frequently been a defensive strategy based on increased product differentiation principally through higher advertising. Such a strategy may represent socially inefficient market investment.

The bulk of the OECD report comprised a survey of policy measures used to control the abuse of buying power in the different OECD countries. The report found few cases of the enforcement of

competition law provisions against buying power. The principle reasons being the difficulties in estimating costs of supply to individual customers and the fact that on the basis of standard market share criteria, few buyers occupied dominant positions (ibid, pp.91-92)

The apparent scarcity of buyers occupying positions of market dominance in contrast to the abundant evidence of the power of large buyers to obtain favourable price concessions, calls for a detailed examination of the nature and sources of buying power in relation to conventional concepts of market power and monopsony power. Such a discussion is largely absent from the OECD report. Buying power is defined as: "the situation which exists when a firm or group of firms, either because it has a dominant position as a purchaser of a product or service or because it has strategic or leverage advantages as a result of its size or other characteristics, is able to obtain from a supplier more favourable terms than those available to other buyers. The degree of a firm's buying power is closely dependent on the magnitude of the extra costs or other disadvantages which it can occasion to its suppliers by ceasing to buy from them and, conversely, on the extra costs and other disadvantages which it can itself incur in consequence of the change of supplier." (ibid,p.10).

But the report goes on to acknowledge that buying power is not an independent phenomenon but can only effectively be exercised against suppliers with market power, what is called for, therefore, is a much more rigorous analysis of buying power and some explicit conclusions as to whether it constitutes market power. My own views on the subject

have been clearly stated (Grant 1980): the ability of large buyers to obtain discriminatory prices and discounts is most commonly a result of the market power of the suppliers, not of the buyers, hence the application of competition law to such buyers is inappropriate. Yet the OECD report suggests that the problems involved in the application of the dominant firm provisions of competition law to buyers could be resolved by redefining the conditions for market dominance by buyers, "For example by defining specialised methods of distribution to constitute markets" or the existence of buying which might be indicated "when the latter regularly obtains special benefits in addition to rebates or other considerations customary in the trade". (ibid,p. 5).

The report identified legal provisions to control discrimination as the most important measures directed towards the abuse of buying power in OECD member countries. The same problems of price discrimination control as were identified in Grant (1981b) were discussed in the report, most importantly the problems of enforcement and the anti-competitive effects of such measures. These problems are particularly serious in the countries which have adopted the most stringent prohibitions (France and the United States). The report cautioned against a strict ban on price discrimination. "The anti-competitive effects of a rigid prohibition of discriminatory prices, added to the costs and problems of administration, would seem to outweigh the claimed benefits of such a policy" (ibid,p.95). The recommendation was that measures to deal with buying power through controlling price discrimination should be "based upon the principle of avoiding systematic discrimination of a permanent character in

favour of certain groups of buyers which distort market forces in the long run." (ibid,p.94). How such a principle should be put into practice was not fully explained. However, the report noted that any price differences based upon cost differentials or offered to meet a competitor's price should be allowed. Also, where specific practices were likely to constitute an abuse of buying power - e.g. pressure on suppliers not to supply competing buyers, excessive delays in payments, certain types of promotional allowances and starting up bonuses - these could be prohibited or subject to stricter control (ibid,p.96).

In summary, the findings of the report about the effectiveness of price discrimination measures against powerful buyers largely supported the conclusions reached in my own survey (Grant 1981b). In its analysis and recommendations, however, the main characteristic of the report was its inability or reluctance to utilise the evidence obtained from seventeen member countries to identify the sources and effects of buying power and to establish clear guidelines for public policy. The failure to reach clear conclusions stemmed in part from the lack of a sufficiently clear conception of what buying power is, and in particular how it relates to the underlying notions of market power and bargaining power.

3.7. The MMC report on discounts to retailers

The inconclusiveness of the OECD report was probably inevitable in view of the impressionistic and fragmentary evidence which the Committee had at its disposal. In contrast, the principal virtue

of the Monopolies Commission report on retail discounts (MMC 1981) was that it was based on a much greater mass of empirical data on terms of supply to the distributive trades amassed over the three and a half years of the enquiry. Although the Commission could not achieve a statistical survey of the extent of price discrimination between retail buyers⁶, sufficient evidence was available for some clear conclusions as to the overall effects of discriminatory terms of supply on the public interest and for recommendations concerning public policy (ibid, chapter 9).

Discrimination in price and other terms of supply in favour of large retailers was found to be prevalent in the supply of manufactured products (both food and non-food) and was found to be "greatest when much of the market for the product in question is in the hands of a fairly small number of suppliers and some of their customers have significantly more bargaining power than others" and "it also tends to fluctuate...according to the balance between demand and supply or production capacity." (ibid, p.65). These findings conform to the analysis of buying power in Grant (1980) and are consistent with the statistical analysis above.

As regards the effects of discriminatory concessions to large retailers upon economic welfare, the report is far more positive and unequivocal than my own a priori analysis suggested. The report largely confirms the findings of other studies (e.g. US Department of Justice 1978) on the pro-competitive effect of buying power and discriminatory discounts on the supplying industry. In the processed

food industry in particular, the effect of growing retail concentration has been to contribute substantially to lower profitability (MMC 1981 pp36-37). What is interesting however is that the increased competition and reduced profitability has had no observable impact in reducing product variety, depressing capital investment and discouraging innovation. Indeed the observations of the Commission were that increased competition has had a stimulatory effect on all of these (ibid,pp37-37).

Some of the most interesting and rigorous analysis undertaken by the Commission concerned the relationship between the buying and selling prices of retailers. The issue here was whether the discriminatory concessions received by large retail organisations are passed on to the consumer through retailer competition or whether they simply serve to augment the profitability of an oligopolistic retail trade. Statistical analysis for 10 products showed that between 31 and 90 per cent of variability in retail selling prices was attributable to variations in buying prices. Regressing selling prices on buying prices for each of the 10 products and running separate regressions for multiples and independents gave the following results:

Table 3.2. Regressions of retail selling prices on buying prices

<i>Product</i>	<i>Multiples</i>		<i>Independents</i>	
	<i>Slope</i>	<i>Square of correlation coefficient</i>	<i>Slope</i>	<i>Square of correlation coefficient</i>
Baked beans	0.95	0.62	0.81	0.31
Canned beer	1.34	0.50	0.71	0.26
Toothpaste	0.92	0.56	0.83	0.40
Paper handkerchiefs	1.18	0.33	1.01	0.60
Refrigerators	1.18	0.91	1.91	0.30
Biscuits	0.78	0.59	1.13	0.72
Paint	1.17	0.76	1.08	0.93
Bread	0.63	0.24	0.38	0.80
Cigarettes	0.74	0.50	0.54	0.42
Chocolate confectionery	1.33	0.90	1.13	0.91

For 8 out of 10 products the slope coefficient of the least squares regressions was greater for multiples than for independents, showing that the multiples had a greater tendency to lower their gross retail margin with a lower buying-in price. Overall the evidence strongly supported the view that discounts to multiple retailers tend to be passed on to the customer (ibid, pp146-148).

Consideration was given by the Commission as to whether discrimination in favour of large retailers was likely to induce inefficiency in the retail sector either by encouraging retailers to grow beyond their most efficient size or by allowing large retailers to operate inefficiently. The report argued that price discrimination has been only one of the forces that has reshaped the retail trade in recent years and its role has been to sustain and accelerate the growth of successful retailers rather than to initiate change (ibid p.49).

The Commission found little reason to fear that discrimination might operate to protect inefficiency among large retailers. Not only have "the large multiple retailers who have emerged so strongly in recent years successfully exploited new techniques in retailing and represent an efficient response to changing market conditions", but the continuing vigour of competition among the multiples was seen as a powerful constraint upon inefficiency. While the domination of the retail trade by a small number of major retailers remained a possibility, continuing competition from independents and the opportunities for new entry limited such a risk (ibid, pp67-68).

In considering actions which might be taken to regulate discriminatory terms between retailers, the Commission considered both the

existing legislative measures (the Fair Trading Act and Competition Act) and new legislation, drawing on the experiences of overseas countries. The Commission rejected any comprehensive scheme of regulation (along the lines of the Robinson-Patman Act or France's Loi Royer) primarily on the basis of unenforceability, but also because such a measure would impair price competition. The desirability of selective investigation into discriminatory terms by a particular company or within a particular trade or industry was endorsed by the Commission because of the risk to the public interest arising from distortion of competition at the customer level or from the use of discriminatory terms in a predatory way or as a barrier to entry. For the short term, at least, the Commission considered that existing powers under the Fair Trading Act and the Competition Act were sufficient for the investigation of specific instances of discrimination and to provide for remedies (ibid,pp69-72).

FOOTNOTES

1. Subsequent references to this paper are to the English version (Grant 1980).
2. Buyer concentration statistics are not collected by public authorities or on any systematic basis. Estimates have been made for US industries using seller concentration data and input-output matrices (Guth et al 1977). Fragmentary evidence on buyer concentration in wholesale markets in the UK is provided by the Monopolies and Mergers Commission report (1981).
3. This raises the issue of whether in fact buying power does constitute market power. If the power of buyers over price is limited to bilateral transactions, then individual buyers are not exerting a significant influence over market price. However to the extent that bargaining power for concessionary prices by a large buyer increases the difficulty of oligopoly coordination and may trigger more general price competition across the market, then such an exercise of buying power can have a more general impact on market price.
4. Similar results were also found by Brooks (1973) at a higher level of industry aggregation.
5. A more detailed account of German price discrimination than offered in Grant (1981) is available in Gerber (1982).
6. Primarily because of the complexity of terms of supply which were found to extend from discounts and rebates to conditions of delivery, credit terms and the provision of various services, and the difficulty of distinguishing price discrimination from cost justified price differentials (MMC 1981, Chapter 4).

CHAPTER 4

DIVERSIFICATION AND LONG-RUN COMPETITIVE EQUILIBRIUM

- 4.1 THEORIES OF THE DETERMINANTS OF DIVERSIFICATION
- 4.2 MEASUREMENT OF DIVERSIFICATION
- 4.3 THE DETERMINANTS OF THE PATTERN OF DIVERSIFICATION IN UK MANUFACTURING INDUSTRY
- 4.4 DIVERSIFICATION AND THE EFFICIENCY OF RESOURCE ALLOCATION
- 4.5 ADJUSTMENT TO LONG-RUN EQUILIBRIUM: PRELIMINARY REMARKS
- 4.6 THE RELATIONSHIP BETWEEN RISK AND RATE OF RETURN IN LONG-RUN EQUILIBRIUM
- 4.7 APPLICATIONS TO THE IDENTIFICATION OF MONOPOLY PROFIT AND THE REGULATION OF PRICES AND PROFITS

CHAPTER 4

DIVERSIFICATION AND LONG-RUN COMPETITIVE EQUILIBRIUM

In focusing upon pricing behaviour, the analysis so far has concentrated upon competition in the short term (conventionally defined as the period during which productive capacity is fixed). As has been noted however in the previous two chapters, even short run pricing behaviour is likely to be influenced by established firms' recognition of the potential for new competition through the entry of new firms. Since the early work by Bain, the industrial economics literature on price determination has seen an increase in the emphasis placed upon the role of potential competition, as measured by barriers to entry, and comparatively less emphasis on the extent of actual competition, as indicated by seller concentration ratios. Indeed, the recent treatise by Baumol, Panzar and Willig (1982) dispenses with the concept of perfect competition in favour of a theory of "contestable markets" based upon the notion of costless entry and exit.

The analysis of barriers to entry in the Bain/SylosLabini/Modigliani literature has presupposed de novo entry. In practice, most entry on any substantial scale into already established industries has been primarily through diversification by established firms.¹ Recognition of the role of diversification as a primary mechanism for entry has important consequences for the nature and level of barriers to entry and consequently for the pricing behaviour by monopoly and oligopoly enterprises.

While the threat and the anticipation of entry represent important influences on competitive behaviour in the short-run, diversification is also the primary long-run medium for competitive behaviour. If we accept that most products have finite life spans and the Chandler (1962) thesis of the tendency for firms to develop from single product into multi-product firms, then over the longer term, competitive behaviour is concerned less with competitive interactions in individual markets as with the allocation of resources between the firm's current range of activities and decisions over entry into new industries.

Economists have traditionally viewed the reallocation of resources between industries as being undertaken by factor markets² with long run equilibrium being achieved where the rate of return on capital is equalised across industry at the "normal" rate.³ The important role played by diversification in the inter-industry allocation of resources has far-reaching consequences for the process of adjustment towards, and the achievement of, long-run equilibrium. The ability of established firms to breach conventional barriers to entry (and exit) is not only likely to constrain pricing decisions by established firms but also facilitates the inter-industry allocation of resources, thus accelerating adjustment towards long-run equilibrium. Secondly, to the extent that managers' diversification decisions are subject to different objectives than those of the owners of capital and respond to different industry variables, then the equilibrium positions

established under the two mechanisms for resource allocation will differ. For these reasons understanding of the process and determinants of diversification is fundamental to the analysis of competitive behaviour and the process of adjustment of the market economy.

4.1. Theories of the determinants of diversification

Economic analysis of diversification by firms has been inhibited both by the economist's analytical fiction of the single product firm and by scarcity of empirical data. Recognition of the importance of diversification as a source of company growth and a feature of modern industrial structure is associated in Britain with EAG Robinson (1958) and Edith Penrose (1959) and in the United States with Corwin Edwards (1955) and Alfred Chandler (1962). During the early 1970s a strong growth of interest in the empirical analysis of industrial diversification in the UK occurred, stimulated by the pioneering studies of Gert in the US (1962) and Amey in Britain (1964). Using Census of Production data which was available for 1958, 1963 and 1968 (though not on a comparable basis for all three years) studies of diversification in the UK focussed upon two main areas: the impact of diversification on firm growth and seller concentration and the determinants of corporate diversification. The former area, associated in particular with work of Berry (1975) in the United States, was the subject of limited work by Hassid (1977) and a much larger scale investigation by Utton (1979) which used a special compilation of Census data prepared by the Business Statistics Office.

The latter area was explored in parallel studies by Gorecki (1975a), Hassid (1975) and myself (Grant 1977), which were undertaken entirely independently and provide an interesting comparative study of how different investigators, addressing similar questions to identical data, employ different methodologies and emerge with differences in results and the interpretation of those results.

The principal findings of my own work on the subject are contained in Grant (1977). This represents an extension of earlier work (Grant 1974) which took the form of a commentary on a behavioural analysis of diversification by Sutton (1973). The article confirms at the industry level the trend towards diversification which, at the enterprise level, was identified by Channon (1973) and explains this general trend in terms, first, of the fall in relative costs of inter-industry resource allocation within the firms as opposed to through the market (see Coase 1937) and, second, of the informational advantages possessed by established firms as compared with new firms in the exploitation of new investment opportunities (see Alchian and Demsetz 1972).

The determinants of the inter-industry patterns of diversification are inferred from a theory which assumes that the objective of the firm is to maximise shareholder wealth. Hence diversification depends upon the expected return and systematic risk (that part of the variance of return which is correlated with fluctuations in overall returns) in outside industries as compared with the firm's primary industry (Grant 1977, pp.86-88). The identification of

risk and expected return as the goals of diversification is scarcely novel. The principal contribution of this analysis is in specifying a measure of risk which is securely grounded in modern financial theory and which avoids two major problems inherent in the more generalised analysis of diversification in the face of risk (e.g. Fisher 1961; Smith and Schreiner 1969): first, that diversification directed towards minimising the variance of the firm's overall return is difficult to reconcile with portfolio diversification by individual investors, second, that the amount of diversification by individual firms depends upon the extent of risk aversion by each firm's management.

Relating the expected profitability of diversification to structural variables at the firm and industry level presents greater difficulties. Probably the most satisfactory approach is through the "specific asset" concept used by Gorecki (1975a) and derived from Caves' theory of multinational enterprise (Caves 1971). Where the firm possesses specific assets which can be exploited in more than one industry, it might be expected that imperfections in the markets for the services yielded by these assets, would encourage the firm to exploit these assets directly through diversification. The imperfections identified by Gorecki include

- the absence of a market because of the difficulty of enforcing exclusion,
- non-transferability of the asset,
- high transactions costs,
- externalities arising from the specific asset which complicate the conclusion of a contract between buyer and seller.

(Gorecki 1975a, p.132).

But despite the differences in the theoretical basis from which different authors have approached the analysis of diversification, what is striking is that all have outlined similar predictions concerning the structural determinants of diversification. For example, Sutton adopting a behavioural theory of satisficing and limited search (Sutton 1973), Hassid's examination of the productivity and adaptability of diversifying firms (Hassid 1975, pp14 and 32), Gorecki's specific asset concept (Gorecki 1975a, pp.137-139) and my own discussion of the ability of diversifying firms to breach conventional barriers to entry (Grant 1977, p.89), all point to research and advertising intensities as likely influences on the extent of diversification.

4.2. Measurement of diversification

One of the principal problems which has beset empirical work in the UK on business diversification has been the unsatisfactory measures of diversification which are available using Census of Production data. The severest limitation is that data is only available for industry groups and not for individual enterprises. Hence the detailed enterprise level studies undertaken in the US by Gort, using specially authorised access to Census data for individual enterprises, and by Berry, using Fortune's Plant and Product Directory, has not been possible in the UK. Using diversification measures which are averages for individual industries implicitly assumes the homogeneity of firms within each industry and enables only industry-level variables to be employed as determinants of diversification behaviour. The problems of industry level data

are compounded by different industry basis of UK diversification statistics between the periods 1958-63 and 1963-68 and by the large number of industries for which diversification data were not disclosed due to the over-rigorous application of confidentiality requirements.

The statistical measures of diversification employed by different writers have varied according to the choice of static or dynamic definitions of diversification and whether numbers of industries or amount of output or employment have been used as the basis for measurement. Gorecki, Hassid and, more recently, Utton (1979) have followed Amey in using static measures of diversification:- the numbers of industries in which a firm produces and the ratio of its output or employment in "secondary" industries to that in its "primary" industry. Such measures of diversification, I have argued (Grant 1977, p.84), relate to diversity rather than diversification; diversification refers to the growth in the diversity of a firm's activities.⁵ Furthermore, to the extent that a firm's degree of diversity depends upon decisions made by the firm throughout the whole of its history, it appears inappropriate to relate empirically the degree of diversity to current values of industry variables.

More awkward is the choice between the number of industries entered or the increase in the ratio of secondary to primary output (or employment) as the measure of diversification.

The correlation between the two measures tends to be low and some authors have adopted composite measures of diversification.

The three leading candidates for a composite measure of enterprise diversification are:

$$\text{Berry (1975)} \quad 1 - \sum_{i=1}^n p_i^2 \quad (\text{i.e. a Herfindahl-type index})$$

$$\text{Ash (1965)} \quad \sum_{i=1}^n p_i \log \left(\frac{1}{p_i} \right)$$

$$\text{Utton (1979)} \quad 2 \sum_{i=1}^n (i p_i) - 1 \quad (\text{where the } i \text{ industries are ranked in descending order according to the proportions of the firms output or employment}).$$

Where p_i is the proportion of the firm's output or employment in industry i ($i = 1, 2, 3, \dots, n$)

Of these the Utton index would appear to possess the most desirable characteristics. The index conveniently takes a value of n for a firm whose activities are distributed equally between n different industries. Also the index is more sensitive than the Berry-Herfindahl index to changes in the number of industries in which a firm operates which do not involve large scale reallocation of output (Utton 1979, pp.15-17).

However, though useful indicators of changes in the degree of diversity over time, the composite indices are not entirely appropriate for empirical work into the determinants of diversification. For this purpose it would appear desirable to work with separate

diversification measures for the number of industries in which the firm operates and the ratio of secondary to primary output. The reason is that decisions in relation to these two types of diversification involve separate considerations and are likely to be influenced by different industry structure variables. Thus, diversification which involves an increase in the number of industries in which a firm operates is influenced by the level of entry barriers, the competitive reactions from established firms and the risks inherent in investment in a new activity. Diversification which involves an increase in the relative importance of secondary activities does not necessarily involve new entry and is likely to be influenced primarily by the relative growth and profit rates between different industries and the scope for resource reallocation within the firm. My own approach was to use different measures of diversification for examining different questions. Thus, for examining the determinants of the inter-industry direction of diversification, the increase in the number of industries in which the firm operated was used; while for examining the efficiency of diversification as a means of resource allocation, changes in the ratio of secondary to primary output was used (Grant 1977, p.90).

Apart from differences in time periods and levels of aggregation, a major difference in the measures of diversification employed by Gorecki and Hassid on the one hand and myself on the other, relates to my measurement of diversification between pairs of industries and into destination industries, my approach being to

analyse diversification from each i industry into each j industry ($i \neq j$).

This latter approach possessed two advantages: first, it greatly increased the number of observations available. While Hassid using the same data was limited to 17 observations for each SIC Order, thus excluding the possibility of multiple regression analysis of the determinants of diversification, use of the full diversification matrix increased the number of observations to 192. Second, the analysis of diversification between pairs of industries enabled not only the simultaneous testing of the influence of the structure of both "source" and "receiving" industries, but also enabled the introduction of variables representing complementarities between the two industries in terms of technological and marketing similarities.

4.3. The determinants of the pattern of diversification in UK manufacturing industry

In comparing the results of the different studies (see Table 4.1.), the first comparison to be made is between the explanatory value of the estimating equations as indicated by the R^2 values. The Gorecki studies show remarkably high R^2 s in view of the aggregated nature of the data, the absence of firm level variables and the lack of any strong theoretical model upon which to base the empirical tests. The Hassid study too gives rise to some surprisingly high R^2 considering that the tests are mainly separate simple regressions.⁶ In contrast, the explanatory power of my own estimating equations was substantially lower, which was surprising in view of the more

Table 4.1. A comparison of empirical studies of the determinants of diversification in the UK manufacturing industry 1958-68

AUTHOR	DIVERSIFICATION MEASURE	DATE	SIGNIFICANT VARIABLES (pos.-positive impact; neg.-negative impact)	R ²
Gorecki (1975a)	$\frac{\text{non-primary employment}}{\text{total employment}}$	1963	advertising (neg.); R&D (pos.)-particularly in producer goods industries.	0.37
	$\frac{\text{diversified firms}}{\text{all firms}}$	1963	as above; plus concentration ratio (pos.).	0.43
Gorecki (1975b)	$\Delta \frac{\text{no. of outside firms present in the industry}}{\text{total no. of outside firms present in the industry}}$	1958 - 63	growth of sales (pos.)	0.47
Hassid (1974)	$\frac{\text{non-primary net output}}{\text{total net output}}$	1963, 1968	R&D (pos.); concentration ratio (pos.).	simple regression only
	$\Delta \frac{\text{outside firms' net output in industry}}{\text{industry net output}}$	1963 - 68	profitability (neg.); profitability (pos.); variance of profits (neg.); advertising (neg.); advertising (pos.);	" "
Grant (1977)	$\Delta \frac{\text{no. of firms in industry i with operations in industry j}}{\text{total no. firms in industry i}}$	1963 - 68	R&D in source industry (pos.); similarity in R&D intensity in source and destination industries (pos.); profitability of source industry (pos.); systematic risk of source industry (pos.); rate of growth of destination industry (pos.).	0.18

theoretically satisfactory measure of diversification and the inclusion of more independent variables (particularly risk). In comparison with the Gorecki study (1975a; 1975b), the low R^2 s are probably partially accounted for by the more aggregated data (17 SIC orders compared to 51 industry groups).

In terms of the factors which were found to influence the amount and direction of diversification, there exists substantial consistency between the results of the different studies. This is both pleasing and surprising in view of the different diversification measures and study periods, and the generally low levels of statistical significance which characterise cross-sectional studies in the economics of industrial organisation. Furthermore, most of the findings support those of Amey (1963).

The principal findings which were common to more than one study were:

- (a) diversification from an industry was positively related to research intensity (all studies strong and significant), and to seller concentration (weak and sometimes insignificant, and negatively related to advertising intensity (comparatively small influence, frequently insignificant). Conversely, growth of sales and the rate of profit were generally insignificant with varying signs;
- (b) diversification into an industry was positively related to the growth of sales in the receiving industry.

4.4. Diversification and the efficiency of resource allocation

Most of the discussion of the impact of diversification upon economic

performance has been concerned with the competitive effects of diversification, particularly of conglomerate merger.⁷ Certainly, any effects of diversification upon competition in individual markets has implications for the efficiency of resource allocation. However, the more direct impact of diversification upon performance concerns the efficiency of diversification as a mechanism for resource allocation. In so far as diversification is a means of allocating resources between industries which lies outside the market mechanism, our primary concern is with the efficiency of the "visible hand" in comparison with the "invisible hand". Two criteria may be postulated for determining the efficiency of inter-industry resource allocation

- (a) the extent to which resources are reallocated from low productivity to high productivity use, and
- (b) the speed of such reallocation.

The evidence here is that the overall performance of the UK industrial sector with regard to the inter-industry allocation of resources is remarkably poor. Utilising statistics on the adjustment of the industrial structures of the Western European countries collected by the United Nations Economic Commission for Europe (1981), I have shown that not only has the UK manufacturing sector experienced a comparative lack of change in the industrial composition of output and employment since 1968, but that changes in the pattern of the UK's industrial specialism have involved resource reallocation towards industries which, on a European basis, are declining. These industries include textiles, clothing, rubber goods, footwear, tobacco products, leather goods and printing

(Grant 1983). Part of the problem would appear to be the lack of mobility in the labour market both geographically and occupationally together with a generally low level of labour skills. An indication of labour market immobility is shown by the exceptionally low level of structural change in the industrial composition of employment between 1968 and 1972 (see Grant 1983, table 10.).⁸

The extent to which diversification reallocates resources from declining to expanding industries is difficult to assess from the empirical studies surveyed. My own study showed that diversifying entry was positively related to industry growth and also that the shifts in output between industries *i* and *j* were positively (though insignificantly) related to the difference in the rate of growth between industries *i* and *j* (Grant 1977, p.93). The comparative efficiency of diversification as a means of resource allocation was also supported by Gorecki's finding that entry by diversifying enterprises was more strongly related to the rate of growth of the entered industry than was entry by specialist industries (Gorecki 1975 b, p.144).

The second influence of diversification on the efficiency of resource allocation is through the effect of diversification upon the level of competition in industry. Here the a priori arguments are conflicting: diversification may be regarded as stimulating competition through the ability of diversifying firms to breakdown barriers to entry into concentrated industries and upset established patterns of coordinated pricing behaviour. On the other hand, increasing

aggregate concentration associated with diversification by large firms has been declared potentially anti-competitive as a result of potential for predatory competition through cross-subsidisation, "reciprocity" and "mutual forbearance" (see Scherer 1980, pp335-348, and Utton 1979, pp57-76).

Most of the evidence on the direction and nature of diversification tends to be consistent with the competitive nature of large firm diversification and gives little support to any monopolistic effects. Thus Gorecki (1975b) found no evidence of diversifying firms being deterred by scale economy or product differentiation barriers, while Utton (1979 pp92-93) found that the largest firms "were not deterred from entering industries because of the existing structure". Utton also found no tendency for diversifying entry by large firms to lead to any substantial increase in seller concentration in the entered industry.

4.5. Adjustment to long-run equilibrium: preliminary remarks

As has been discussed above, allocation of capital between industries is through two mechanisms: allocation of finance between firms by the capital market and allocation within the firm through diversification. Capital market allocation occurs both through the expansion and contraction of established firms in response to the growth and decline of market demand, and through the entry and exit of firms. The relative importance of these two processes of capital market allocation depends upon a number of factors, in particular the shape of the long run average cost curve. In industries where

average costs are approximately constant over a broad range of firm sizes, then industry adjustment will occur principally through changes in firm sizes. Where a well-defined optimal firm size exists, then adjustment will involve changes in the population of firms.

Long-run equilibrium occurs where factor proportions and overall industrial capacity are optimally adjusted to the level of demand and state of technology, and is indicated by profit rates across all industries being equated to the "normal" level. However, both the time path towards the long run and the final equilibrium point reached is dependent upon the adjustment mechanism. First, the length of time in reaching equilibrium depends upon the barriers to capital mobility and, second, different adjustment mechanisms involve different decision makers whose objectives may differ resulting in different equilibrium positions being attained.

It has been suggested by Grant (1977, pp93-94) and Gorecki (1975b, p140) that resource allocation by diversification may be less subject to mobility barriers than resource allocation through the market mechanism. In examining barriers to inter-industry allocation by the capital market it is important to distinguish between reallocation arising from the expansion and contraction of established firms and that arising from the entry of new firms and exit (through liquidation and bankruptcy) of existing firms. Mobility barriers are likely to occur primarily in relation to the latter. Whether we are considering diversification in terms of the reallocation of resources between existing product divisions of the firm or the diversifying expansion into new industries, barriers to resource

reallocation might be expected to be lower than the corresponding market processes. In the case of reallocation of capital between product divisions within the same firm, immobilities arising from the costs of using the capital market and the delays inherent in decision making by financial institutions are avoided. In the case of diversifying entry into new industries most barriers to entry are likely to be less effective than against new firms and, similarly, barriers to exit in withdrawing from industries may be lower.

Differences in the objectives guiding capital investment decisions may arise as between the capital market and corporate diversification as a result of company management pursuing objectives which diverge from the wealth maximisation goal of investors. The literature on managerial motivation is vast and no attempt will be made to survey it here. Suffice to say that, even if management objectives are in conflict with maximisation of owners' wealth, freedom to pursue such goals is constrained by competition in product and capital markets and the operation of the market for corporate control. Evidence on the operation of these constraints is far from clear-cut.⁹ In relation to the objectives guiding diversification, a major source of evidence concerns the performance of US conglomerate firms. Studies have found either inferior performance of conglomerate firms in relation either to non-conglomerates or equity portfolios (Reid 1968, Mason and Goudzwaard 1975) or that no significant performance difference would be detected (Weston and Mansinghka 1971, Haugen and Langetieg 1975).

In the absence of any discrepancies between the objectives of investors and company management (that is, assuming either that

managements operate in their shareholders' interests or that the constraints on the pursuit of managerial objectives are binding) and if we assume that in the long run barriers to entry are ineffective, then under static conditions adjustment to a long-run equilibrium in the economy can be predicted. In the introductory textbooks such an equilibrium is identified with the "normal" rate of profit - that which is just sufficient to remunerate and maintain capital. However once risk is introduced then, as long as investors are not indifferent to risk, long-run equilibrium requires differences in the rate of return on capital across industries corresponding to differential degrees of risk.

4.6. The relationship between risk and rate of return in long-run equilibrium

This relationship between risk and rate of return on capital in long run equilibrium is the subject of an empirical study reported in Grant (1981a). While the determinants of industry rates of profits (or price-cost margins) have been a central theme of empirical research in industrial economics for over two decades, such work has tended to focus upon a short-run theoretical framework where seller concentration has been assumed to play a leading role. Despite the widespread presumption, supported by considerable empirical evidence, of risk aversion by investors and managers, comparatively little evidence exists as to the relationship across industries between return on capital and risk.

Most approaches to the analysis of risk-return relationship are based either upon the presumption of innate risk aversion by human

beings or on a Friedman - Savage utility function where risk aversion is a consequence of the diminishing marginal utility of income. Adopting the latter approach, Fisher and Hall (1969) postulate a utility function for the firm where

$$U = U(P + W)$$

$$\frac{dU}{d(P+W)} > 0$$

$$\frac{d^2 U}{d(P+W)^2} < 0$$

where P is profit and W is net worth

Fisher and Hall then show that where return is a random variable, utility may be related to the first three moments of the probability distribution of returns: thus utility varies positively with expected value of the return, negatively with variance of the return's probability distribution, and positively with the degree of positive skew of the return's probability distribution. Since in long run equilibrium the utility from investments in different industries would tend to equality, it would be expected that differences in return on capital between industries would depend upon risk premia as determined by the standard deviation and skewness of the probability distributions of returns for the different industries. ¹⁰

Regressing rate of return on net worth of firms over 1950 to 1964 on the standard deviation and skewness of the return, the coefficients of the independent variables were found to be significant and to have the correct signs. However the explanatory power was low ($R^2 = 0.4936$).

One of the assumptions of this analysis is that the probability distributions of return facing each firm and industry are determined exogenously. This assumption of exogenous risk is questioned by Caves and Yamey (1971) who argue that the relationship between risk and return which Fisher and Hall observe may be due less to the adjustment towards equilibrium rates of return in the face of independently determined risk, as a consequence of oligopoly price behaviour in concentrated industries. Thus, differences in inter-industry rates of return are likely to reflect differences in market power. Hence the tendency for high rates of return on capital to be associated with high risk may ^{be} because both are a consequence of collusive pricing behaviour in concentrated industries. The elevation of the level of prices and profits in concentrated industries also increases the inter-temporal variability of profits because of the likelihood of a breakdown in oligopolistic coordination (these tendencies have been discussed in chapter 2).

In their response to Caves and Yamey, Fisher and Hall attempt to take account of this point, and they broaden their analysis by including a number of structural and performance variables in their analysis, including firm size, price-earnings ratio, growth of sales, market size and concentration ratio. Of the additional variables only market size and growth are significant, however the R^2 increases to 0.785 (Fisher and Hall 1971).

The simple addition of further variables does not, however, appear to be an adequate response to the problem. What is needed is a more careful analysis of the separate determinants of risk and rate of

return which can then provide the basis for a properly formulated structural model and more valid econometric testing.

Even if risk is treated as exogenously determined, a further problem is that ex ante risk (the standard deviation of the anticipated probability distribution of future returns) does not necessarily correspond to ex post risk (the standard deviation of observed returns). Indeed ex post risk may be measured in two ways - either the standard deviation of returns over time, or the standard deviation of firms' returns within an industry during the same time period. Fisher and Hall's main analysis uses time series measures of risk, while in a similar study Conrad and Plotkin (1968) utilise the cross-sectional risk measure. The problem of this latter measure is that the variance may reflect stable inter-firm differences in efficiency or the heterogeneity of the industry's output rather than random factors. The problem of using ex post data to measure ex ante risk is one which has bedevilled most work in this field, particularly empirical tests of the capital asset pricing model.

Further analysis of the influence of market structure upon the degree of risk is provided by Winn (1977) and Sullivan (1978). Winn's results give strong support to the Caves and Yamey thesis by showing that the standard deviation of firm's return on capital is positively and significantly related to seller concentration ratios.

However, Sullivan using a different theoretical framework and a different data set provides seemingly contradictory results. The objective of his analysis is to relate the cost of capital of the firm to its market power. Since cost of capital depends, under

competitive capital markets, upon the degree of risk which lenders perceive, the study was essentially attempting to relate risk to market power. Using a capital asset pricing model approach to the determination and measurement of the perceived risk of a firm's equity, the study regressed equity risk (both adjusted for the degree of debt/equity leverage and unadjusted) on seller concentration ratio and firm size. Both seller concentration and firm size were found to be significantly negatively related to risk.

One explanation for the different findings between Winn and Sullivan lies in the measures of risk used. Sullivan's risk measure was based upon the capital asset pricing model and assumed the holding of diversified portfolios by investors. Hence, investors are concerned, not with the total variance of the returns from a firm, but only with that part of the variance in return that is correlated with overall market fluctuations, i.e. the systematic risk. On the basis of the Caves and Yamey thesis, it could be argued that the instability of oligopoly coordination represents a random and hence a diversifiable risk that does not influence systematic risk. A further complication concerns the direction of causation. The presumption so far has been that seller concentration and its consequences for pricing behaviour influence the degree of risk. However causation may flow in the opposite direction: as Yale Brozen has suggested (Brozen 1974), high concentration may be response to high levels of exogenous risk.

My own study (Grant 1981) follows the Fisher and Hall approach in attempting to identify the effect of risk upon rate of return on capital at the firm and the industry level. In order to focus upon

rate of return on capital at the firm and the industry level. In order to focus upon the effects of risk and to exclude the impact of market power on return on capital, only competitively structured industries were included - thus industries with high concentration or barriers to entry were excluded along with industries where products were highly differentiated. Within the "competitive" industries, very large firms and certain highly specialised firms were excluded because of the risk of market power in particular market segments. The exclusion of potentially uncompetitive industries offered further advantages. First, the endogenous risk identified by Caves and Yamey which arose from the fragility of oligopolistic coordination was eliminated. Second, the assumption of firms pursuing shareholder interests is more valid in competitive product markets where the pursuit of managerial objectives is likely to be severely constrained.

The measure of risk employed is similar to Sullivan's (1978): the risk to the firm is the risk perceived by investors in the firm's securities and, in relation to equity, this is the systematic risk coefficient identified by the capital asset pricing model. Certain refinements of the risk concept are made in my paper - notably corporate debt is not considered homogeneous and risk free. However, as far as the firm as a whole is concerned, the risk measure is basically systematic risk on equity adjusted to remove the equity risk which arises, not from the risk inherent in the firm's earnings, but from gearing through the debt/equity ratio. Within the limitations of the data used, the results of the study were highly satisfactory. For the period 1971-75, risk explained over 71 per cent of

differences in the rate of return on capital earned by firms in competitively-structured UK industries.

4.7. Applications to the identification of monopoly profit and the regulation of prices and profits

One of the most potentially useful applications of research into competitive rates of profit is to the work of government agencies in evaluating the price and profit performance of market dominating firms and in regulating prices and profits. Both in the UK and the US considerable experience has been gained in the evaluation and regulation of prices and profits with surprisingly little guidance being offered by economic theory or empirical research. Some significant differences exist between the direction of UK and US work in this field. In the UK, the major policy interest has been the identification by competition authorities of the exploitation of market power as indicated by monopoly rates of profit. Regulation of profits and prices has sometimes been the result of monopoly policy and, more generally, has been associated with the price control functions of the National Board for Prices and Incomes (1964-70), the Price Commission (1972-79) and the Review Board for Government Contracts. In the US the determination of "fair" rates of return has been associated primarily with the work of commissions responsible for the regulation of public utilities and other natural monopolies.

My discussion here of the measurement of competitive rates of profit is chiefly within the British context and relates to the object of identifying monopoly rates of profit. Such a restriction enables

me to avoid the additional theoretical and practical issues involved in the regulation of prices and profits, such as the "Averch - Johnson effect" (Averch and Johnson 1964).

The approach of the Monopolies Commission to the problem of identifying the exercise of market power by dominant enterprises has been to use a variety of relativities including comparison of the investigated firm's prices with those of competitors, comparison of price increases with movements in costs and movements in wholesale and retail price indices, comparisons of profitability (in relation to sales and capital employed) with that of other firms in the same industry or sector and in the industrial sector as a whole. Among these various comparisons, the one which has been used most frequently, and to which the Commission has attached most weight, is the rate of return on capital employed for the investigated firm in relation to the rate for manufacturing industry as a whole.

The problems of inferring monopolistic pricing from such a comparison of rates of return on capital are many and great. As a result the Commission has always exercised extreme caution in the interpretation of these comparisons and has not used them in the mechanistic manner implied by Rowley (1969) and Bello (1977).¹¹ In my commentary upon Bello's article (Grant 1978), the cautions expressed by the Commission are emphasised and the methods used by the Commission to minimise the problems of comparing returns on capital are outlined.

Most attention has been devoted to the accounting problems which arise in the comparison of rates of return on capital, in particular

the unsatisfactory standard approaches to the valuation of capital and depreciation (particularly during periods of high inflation), differences in accounting conventions between firms and problems over the calculation of profit and capital employed for a single activity of a multi-product firm. Such problems, though complex, are in principle surmountable with sufficient investment in the collection and refinement of data. More intractable are the problems associated with the interpretation of comparative rates, of return on capital. In particular, does the average return on capital for all industry correspond to the competitive rate of profit and is monopoly pricing likely to be indicated by a rate of return on capital which exceeds the average?

The rate of return on capital, averaged across industry, diverges from the long run competitive rate of return for two principal reasons. First, the presence of market power in many industries tends to raise the average above the competitive rate. Second, the absence of long-run equilibrium in the industrial sector means that the average rate of return is dependent upon the position of the economy on the business cycle. For example, during the recession of the mid-1970s it was clear that real rates of return in UK manufacturing were considerably below the long-run competitive rate of return (see Flemming et al 1976).

The rate of return earned by a particular firm in relation to the average for industry depends not only upon the extent to which the firm exploits monopoly power, but also upon the relative efficiency of the firm and the degree of risk to which it is subject. Even in

the absence of these other factors, there is the possibility that monopoly profitability may become capitalised in the firm's assets through goodwill and the valuation of premises and natural resource reserves.¹²

In order to suggest improved methods for the identification of monopoly pricing, it is necessary to examine with some care what is meant by the competitive rate of return and how it is determined in a simple economic model. Assuming a perfectly competitive capital market in a riskless world where firms face an infinitely elastic supply of capital at the prevailing market rate of interest, then each firm invests to where the marginal rate of return equals the rate of interest. However the rate of return on the firm's assets as a whole may exceed the cost of borrowing - such a situation implying that the price the firm was receiving for its output exceeded average cost. Assuming no efficiency differences between firms, then new entry would reduce market price to average cost and long run equilibrium would be established where the rate of return on capital equalled the rate of interest.

If firms are subject to differential degrees of risk, then the cost of borrowing for the firms will differ in proportion to the degree of risk. If risk is exogeneous to the firm and is dependent solely upon the industry to which the firm belongs, then in long-run competitive equilibrium rates of return on capital are equated to cost of capital which varies in proportion to risk.¹³

Hence as an indicator of the competitive rate of returns on capital for an industry or firm, cost of capital provides a much more satisfactory guide than the average return on capital in industry. Not only does cost of capital take account of risk differences between firms and industries, it also indicates long run equilibrium return.

The principal problem in the use of cost of capital is that the cost of equity finance - the rate at which the stock market capitalises the expected return on a company's shares - is not directly observable. The capital asset pricing model predicts that investors' required rate of return on a firm's equity is a linear function of the undiversifiable risk associated with that return. This risk is conventionally measured by the beta coefficient of the return on equity.

As the Grant (1981a) paper shows, the overall cost of capital to a firm and, hence, the firm's competitive rate of return, can be directly related to the beta coefficient of the firm's equity and the debt/equity ratio. On the basis of the relationship identified it is possible to ascertain whether firms are earning risk in relation to their "adjusted risk" coefficient (Grant 1981a, p.207).

The principal merit of this approach is that it enables specific, quantitative account to be taken of risk in assessing the rate of return earned by a dominant enterprise. At the same time it provides no solution to the other problems associated with the interpretation of a firm's return on capital, notably the influence of efficiency and the absence of long-run equilibrium. Also the use of beta

coefficients as measures of risk give rise to additional problems such as the impossibility of measuring the ex-ante beta of the capital asset pricing model, the problems of instability of beta over time, and the possibility of inefficiency in security markets. These issues have been thoroughly debated in the finance literature.¹⁴

In the light of these various problems it is clear that stock market based measures of risk cannot be relied upon exclusively as the basis of the measurement of the "risk premia" to be assigned to monopolists' return on capital. Furthermore, because a monopoly enterprise may be privately owned or a subsidiary of a larger corporation and because the firm's activities may be spread between several markets, stock market risk coefficients may be either unavailable or inapplicable.¹⁵ The recommendation which arises therefore is, first, that a firm's cost of capital is, in principle, a more satisfactory indicator of competitive rate of return than the average for industry as a whole and, second, that equity beta coefficients (suitably adjusted for leverage) should be employed as an additional instrument in evaluating the return earned by a monopoly enterprise. Already considerable experience has been gained in the application of these concepts to the determination of fair rates of return. The theoretical and practical issues have been thoroughly explored in regulatory commission hearings in the United States and Australia.¹⁶

FOOTNOTES

1. Diversifying entry may take several forms: the acquisition of an existing firms (with or without the addition of new capacity), the establishment of new subsidiary or division by the diversifying firms, or a new company involving a joint venture by two or more diversifying firms.
2. Economists' preoccupation with the market mechanism and market equilibrium has largely precluded them from analysing resource allocation within the firm, which has been the preserve primarily of organisational and management thinkers. The complementary and competing roles of firms and markets in resource allocation was examined by Coase (1937), while the more recent reintroduction of management science and organisation theory into microeconomics has been principally associated with the work of Oliver Williamson (1964, 1970, 1975).
3. Though conventionally defined in terms of capital market equilibrium, long run equilibrium also implies equilibrium across other factor markets too - e.g. net advantages for labour being equalised across industries for each category of labour.
4. In addition to the studies mentioned more limited empirical investigations were undertaken by Sutton (1973) and Kelly (1974).
5. Equivalently the term "specialisation" refers to a reduction in the degree of diversity.
6. For example, simple regressions₂ of diversification on some of the technology variables gave R^2 of more than 0.5.
7. Emphasis on the relationship of diversification to competition reflects the general preoccupation of industrial economics with issues of market power. This emphasis seems misplaced in the current economic predicament of the mature industrial countries. Since 1974 the principal features of the manufacturing sectors of Britain and the other Western European economies have been strong import competition, excess capacity and low levels of profitability. In these circumstances the problem of monopoly is secondary to issues of low productivity growth and low rates of investment in plant and innovation.
8. Further evidence on the inadequacies of structural adjustment in UK manufacturing industry and the role of industrial policy is contained in the other two papers which make up the appendix to this submission. Peacock et al (1980, chapters 5 and 6) point to the inefficient maintenance of capacity in the UK shipbuilding industry and to the unbalanced development of the UK computer industry. My survey of appraisal techniques points to an over-emphasis in the conduct of British industrial policy on the short-term impact effects of subsidies (particularly in relation to employment) (Grant 1982b).
9. Evidence on take-overs in the UK shows that while acquired companies have a lower rate of profitability than acquiring companies, the probability of low profitability companies being acquired is low (particularly if they are larger), see Singh (1975) and Kuehn (1975).

10. A necessary condition for such an equilibrium which Fisher and Hall do not make explicit is that all firms possess identical utility functions.
11. The extent of this caution is indicated by the fact that out of nearly 50 monopoly reports up to 1980 only eight concluded that profits had been excessive (George and Joll 1981 pp203-204).
12. To avoid some of these problems it has been suggested that the measurement of dominant firms' profitability should look at the ex ante return on new investment rather than the ex post return on firms' existing stock of assets (see Turvey 1971).
13. The assumption here is that firms operate in a Modigliani - Miller world where risk and cost of capital are independent of debt/equity ratios, and also where risk is independent of market conduct variables.
14. For an introduction see Jensen (1972).
15. For a way round the problem see Gordon and Halpern (1974).
16. For a debate on the use of beta coefficients in setting public utility rates of return see Myers (1972a, 1972b) and Breen and Lerner (1972). An interesting Australian example concerned Shell's case to the Prices Justification Tribunal in 1979. (see Prices Justification Tribunal Reports, CCH Australia Ltd, 1979, pp 18,690-18,697)

CHAPTER 5

CONCLUSIONS AND DIRECTIONS FOR FUTURE RESEARCH

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As I have attempted to show in the foregoing chapters, the published papers which make up the core of this thesis represent significant steps in the analysis of the competitive process and the determinants of competitive behaviour. One of the principal merits of the work has been its orientation towards real world problems and phenomena which have been subject to either neglect or misinterpretation in the industrial economics literature. As a result, one consequence of my work has been its applicability to policy issues, notably in the field of competition policy. Thus, in the interpretation of price leadership patterns, the analysis of buying power and price discrimination, the investigation of diversification (particularly by merger), and the appraisal of rates of return earned by dominant firms, the attached papers make some useful contributions.

In common with most empirically-based research in economics, the work raises more questions than it answers. Indeed, the principal realization which I have drawn from this survey of my own and allied publications has been the limited scope of most of the analysis undertaken and the deficiencies of much of the empirical work. The main purpose of this concluding chapter, therefore, is to identify the potential for further development of the findings and directions of thought contained in my papers.

A central topic of my research concerns the determinants of oligopoly pricing behavior. My principal contribution here was showing how in the petrol market changes in pricing behaviour over time were a consequence of changes in market structure variables. Apart from the scope for improvements in the empirical analysis of petrol pricing behaviour through the addition of further structural variables to the estimating equations, there would appear to be considerable opportunities for longitudinal studies of pricing behaviour in other product markets - particularly those where both price and profit data are available. Such work could provide the basis for a refinement of the crude set of structure-conduct hypotheses that form the "theory of oligopoly" in my petrol paper (Grant 1982).

An important element in the analysis of industrial pricing behaviour which is capable of further development is the role of buyers in affecting oligopoly pricing. The principal contribution of Grant (1980) is to suggest a more realistic basis for the analysis of buying power than the collusive oligopsony approach that has provided the grounding for most empirical work on buyer concentration. Section 3.3 of chapter 3 provides some rudimentary empirical testing of my buying power model. Clearly more extensive empirical testing is called for, preferably in a form which is capable of comparing the predictive powers of alternative analyses of the impact of buyer market structure.

As regards public policy towards buying power and its principal manifestation, price discrimination between large and small buyers, the survey of recent legislation in overseas countries (Grant 1981b)

clearly illuminates the principal difficulties which have been encountered. Yet the existence of concentration on the buyer side of markets remains a pressing current problem for competition policy in the developed countries. While official reports both in Britain (MMC 1981) and the US (US Department of Justice 1977) point to the favourable impact of buying power on price competition in oligopolistic markets, the tendency for unrestricted buying power to encourage increased concentration of the retailing sector is an issue which calls for more thorough research into the welfare consequences of this trend.

The work on adjustment towards long-run equilibrium across industries discussed in chapter 4 combines several related threads and suggests further work in a number of directions. The investigation of diversification (Grant 1974, 1977) identifies a number of industry structure variables which influence the extent and the direction of diversification, but the principal limitation of this and parallel studies of diversification has been the use of industry level data. The importance of diversification as an element of corporate strategy and as a source of firm growth, and the divergent diversification patterns displayed by firms within the same industry, all suggest the need for empirical study of diversification behaviour at company level. Since most large-scale diversification occurs through acquisition, then one approach to the absence of diversification data at firm level would be to examine conglomerate mergers by industrial firms. Such an analysis would enable both industry and company level variables to be included.

The obvious direction for development of the work on risk-return relations in competitive equilibrium is a more general analysis of industry profit rates. The principal contribution of Grant (1981a) was the recognition of systematic risk as an important factor in determining industry profit rate - a factor that had been almost wholly neglected in UK research into the market structure determinants of profitability. In the light of chapters 3 and 4 of this thesis, a more comprehensive analysis of inter-industry differences in profitability could be undertaken incorporating, together with risk, the more typical market structure variables (e.g. capacity utilisation, entry barriers, seller and buyer concentration).

At a more general level the analysis of diversification gave rise to a consideration of the overall mechanism for resource allocation and the adjustment of industry structure (chapter 4, sections 4.4 and 4.5). An important feature of change in the structure of the manufacturing sector industry in Britain has been failure to achieve as rapid a rate of adjustment of output and employment between industries as other Western European economies. Moreover, the change in the pattern of ^{UK} industrial specialisation ^{has been towards} industries which, on a European basis, are declining. The reasons for the apparent structural rigidity of British industry and the failure to shift resources into the growth industries of the 1970s are an aspect of industrial performance which warrants further research.¹

A feature common to the whole area of research covered by my papers has been the importance of risk and the attitudes of firms towards

risk and uncertainty. This emerged most specifically in relation to diversification and inter-industry differences in return on capital, but was also a relevant factor in oligopoly price behaviour. Inclusion of risk and uncertainty into models of economic organisation and corporate behaviour has followed several directions. My own application of modern finance theory to diversification and long-run competitive equilibrium has been considerably extended into theories of the market behaviour of firms, one of the most general examples being that of Subrahmanyam and Thomadakis (1980). A second area has been the theory of economic organisation in the face of uncertainty arising from imperfect information (Alchian and Demsetz 1972; Williamson 1975). This approach has been most fully developed in relation to vertical integration (e.g. Perry 1982). Considerable scope remains for a more general integration of the role of risk and uncertainty within the theory of the firm.

FOOTNOTE

1. My own progress in this direction is indicated by the papers which make up the Appendix to this submission, and which concern aspects of structural adjustment in UK manufacturing industry and the impact of government industrial policies.

REFERENCES

- Adelman, M. A. (1959) A&P: a Study in Price-Cost Behaviour and Public Policy Harvard University Press, Cambridge, Mass. (references are to the 1966 reprinting).
- Alchian, A. and H. Demsetz (1972) Production, information costs and economic organisation, American Economic Review, vol.62, pp777-795.
- Amey, L. (1964), Diversified manufacturing business, Journal of the Royal Statistical Society (Series A) vol.127, part 2, pp251-290.
- Asch, P. and J.J. Seneca (1976) Is collusion profitable? Review of Economics and Statistics, vol.58, pp1-10.
- Ash, R. (1965) Information Theory, Interscience Publishers, New York.
- Averch, H. and L. L. Johnson (1962) Behaviour of the firm under regulatory constraint. American Economic Review, vol.52, pp1058-1059.
- Bain, J. S. (1945) The Economics of the Pacific Coast Petroleum Industry vol.2. University of California Press, Berkeley.
- Bain, J. S. (1950) Workable competition in oligopoly: theoretical considerations and some empirical evidence, American Economic Review, vol.40, pp35-47.
- Bain, J. S. (1956) Barriers to New Competition, Harvard University Press, Cambridge, Mass.
- Bain, J. S. (1959) Industrial Organisation, Wiley, New York.
- Barna, T. (1966) Exclusive dealing in petrol: a reply, Economica, vol. 33 (May), pp226-233.
- Baumol, W. J., J. C. Panzar and R. D. Willig (1982), Contestable Markets and the Theory of Industry Structure, Harcourt Brace Jovanovich, New York.
- Bello, O. A. (1977) The firm, investment, rate of return and the Monopolies Commission, Journal of Business Finance and Accounting vol.4, pp214-232.
- Berry, C. H. (1975), Corporate Growth and Diversification, Princeton University Press, Princeton.
- Bishop, R. L. (1960) Duopoly: collusion or warfare? American Economic Review vol.50, pp933-961.
- Blair, J. M. (1972) Economic Concentration Harcourt Brace Jovanovitch, New York.
- Breen, W. J. and E. M. Lerner (1972) On the use of β in regulatory proceedings, Bell Journal of Economics and Management Science, vol.3, pp612-621.
- Brooks, D. R. (1973) Buyer concentration: a forgotten element in market structure models, Industrial Organisation Review, vol.1, pp151-163.

- Brozen, Y (1974) Concentration and profits: does concentration matter? Antitrust Bulletin, vol.19, pp381-399.
- Cassady, R and W. L. Jones (1951) The Nature of Competition in Gasoline Distribution at the Retail Level. University of California Press, Berkeley.
- Caves, R. E. (1971) International corporations: the industrial economics of foreign investment, Economica, vol.38, pp1-27.
- Caves, R. E. and B. S. Yamey (1971) Risk and corporate rates of return: a comment, Quarterly Journal of Economics, vol.85, pp513-517.
- Chamberlain, E. H. (1933) The Theory of Monopolistic Competition, Harvard University Press, Cambridge, Mass.
- Chandler, A. D. (1962) Strategy and Structure: Chapters in the History of the Industrial Enterprise, M.I.T. Press, Cambridge, Mass.
- Clark, J. M. (1940) Towards a concept of workable competition, American Economic Review, vol.30, pp241-256.
- Coase, R. H. (1937) The nature of the firm, Economica vol.4, pp386-405.
- Cohen & Cyert (1965) Theory of the Firm: Resource Allocation in a Market Economy, Prentice-Hall, Englewood Cliffs, N.J.
- Conrad, G. R. and I. H. Plotkin (1968) Risk/return: U.S. industry pattern, Harvard Business Review, March-April, pp90-99.
- Cournot, A. (1963) Researches into the Mathematical Principles of the Theory of Wealth, translated by N. T. Bacon, Irwin, Homewood Illinois, (first published 1838).
- Courts, K., W. Godley and W. Norhaus (1978) Industrial Pricing in the United Kingdom, Cambridge University Press, Cambridge.
- Cowling, K. and M. Waterson, (1976) Price-cost margins and market structure, Economica, vol.43, pp267-274.
- Cyert, R. M. and M. H. DeGroot (1973) An analysis of cooperation and learning in a duopoly context, American Economic Review vol.63, pp24-37.
- De Chazeau, M. G. and A. E. Kahn (1959) Integration and Competition in the Petroleum Industry, Yale University Press, New Haven.
- Department of Prices and Consumer Protection (1976), Petrol Prices, HMSO, London.
- Dickson, V. A. (1982) Collusion and price-cost margins, Economica vol.49, pp39-42.
- Dixon, D. F. (1973) Economic effects of exclusive dealing and ownership control: the UK petrol case revisited. Antitrust Bulletin, vol.18, pp375-390.

- Edwards, C. D. (1955) Conglomerate bigness as a source of power, in National Bureau of Economic Research Business Concentration and Price Policy Princeton University Press, N.J., pp331-359.
- Everton, Ann R. (1976) Price Discrimination. A Comparative Study in Legal Control, MCB Monographs, Bradford.
- * Fisher, I. N. and G. R. Hall (1969) Risk and corporate rates of return, Quarterly Journal of Economics, vol.83, pp79-92.
- Fisher, I. N. and G. R. Hall (1971) Risk and corporate rates of return: reply, Quarterly Journal of Economics vol.85, pp518-522.
- Fisher, M. R. (1961) Towards a theory of diversification, Oxford Economic Papers, vol.76, pp293-311.
- Flemming, J. S., L. D. D. Price, S. A. Byers (1976) The cost of capital, finance and investment, Bank of England Quarterly Bulletin, vol.16, pp193-204.
- Fog, B. (1960) Industrial Pricing Policies: An Analysis of Pricing Policies, of Danish Manufacturers (translated I. E. Bailey), North-Holland, Amsterdam.
- Friedman, J. W. (1968) Reaction functions and the theory of duopoly, Review of Economic Studies, vol.35, pp201-208.
- Galbraith, J. K. (1980) American Capitalism. The Concept of Countervailing Power, Blackwell, Oxford (revised edition).
- Gaskins, D. W. (1971) Dynamic limit pricing: optimal pricing under threat of entry, Journal of Economic Theory, vol.3, pp306-322.
- George, K. D. and C. Joll (1981) Industrial Organisation. Competition, Growth and Structural Change, (3rd edition), George Allen and Unwin, London.
- Gerber, D. J. (1982) The German approach to price discrimination and other forms of business discrimination, The Antitrust Bulletin, vol.27, pp241-273.
- Gordon, M. J. and P. J. Halpern (1974) Cost of capital for a division of a firm, Journal of Finance, vol.29, pp1153-1163.
- Gorecki, P. K. (1975a) An interindustry analysis of diversification in UK manufacturing industry, Manchester School, vol.43, pp372-395.
- Gorecki, P. K. (1975b) The determinants of entry by new and diversifying enterprises in the UK manufacturing sector 1958-1963: some tentative results, Applied Economics, vol.7, pp139-147.
- Gort, M. (1962) Diversification and Integration in American Industry, Princeton University Press, Princeton, N.J.
- * Fellner, W. (1965) Competition Among the Few, Kelly, New York (originally published 1949)

- Grant, R. M. (1974) On the theory of diversification: a comment, Scottish Journal of Political Economy, vol.21 (no 1, February) pp77-83.
- Grant, R. M. (1977) The determinants of the inter-industry, pattern of diversification by UK manufacturing enterprises, Bulletin of Economic Research, vol.29 (November) pp84-95.
- Grant, R. M. (1978) The Monopolies Commission and the rate of return on capital: a comment Journal of Business Finance and Accounting, vol.5 (No 4, Winter), pp387-392.
- Grant, R. M. (1979) Discriminazione del prezzo al dettaglio e politica commerciale Commercio. Revista di Economia e Politica Commerciale, Anno I (no 3), pp25-46.
- Grant, R. M. (1980) The influence on price of large buyers and public policy towards price discrimination, City University Working Paper no.16 (English version of Grant 1979)
- Grant, R. M. (1981a) The relationship between risk and rate of return on capital in UK industry, Applied Economics, 13 (June), pp205-214.
- Grant, R. M. (1981b) Recent developments in the control of price discrimination in countries outside North America Antitrust Bulletin, vol.26, pp593-632.
- Grant, R. M. (1982) Pricing behaviour in the UK wholesale market for petrol 1970-80: a "structure-conduct" analysis, Journal of Industrial Economics vol.30, pp271-292.
- Grant, R. M. (1982b) Appraising selective financial assistance to industry: lessons from the recent experiences of the United Kingdom, Sweden and West Germany, City University Business School Working Paper No. 32 (forthcoming in revised form in the Journal of Public Policy).
- Grant, R. M. (1983) The impact of EEC membership on UK industrial performance, in Roy Jenkins (ed) Britain and the EEC, Macmillan, London.
- Guth, L. A., R. A. Schwartz and D. K. Whitcomb (1976) The use of buyer concentration ratios in tests of oligopoly models. Review of Economics and Statistics vol.58, pp488-492.
- Guth, L. A., R. A. Schwartz and D. K. Whitcomb (1977) Buyer concentration ratios, Journal of Industrial Economics, vol.25 (June), pp241-258.
- Hadjiaprtis, C.S. (1981) Competition in an oligopolistic industry: the UK cigarette industry 1955-1980. M.Phil. Thesis, The City University, London.
- Hague, D. C. (1971) Pricing in Business London.
- Hahn, F. H. (1962) The stability of the Cournot oligopoly solution, Review of Economic Studies, vol.29, pp329-331.
- Hall, R. and C. J. Hitch (1951) Price theory and business behaviour, in T. Wilson and P. W. S. Andrews (eds.), Oxford Studies in the Price Mechanism, Oxford University Press.

- Hart, P. E. and E. Morgan (1977) Market structure and economic performance in the U.K., Journal of Industrial Economics, vol.25, pp166-194.
- Hassid, J. (1975) Recent evidence on conglomerate diversification in UK manufacturing industry Manchester School, vol.43, pp372-395.
- Hassid, J. (1977) Diversification and the firm's rate of growth, Manchester School, vol.45, pp16-28.
- Haugen, R. A. and T. C. Langetieg (1975), An empirical test for synergism in merger, Journal of Finance, vol.30, pp1003-1014.
- Hay, D. A. and D. J. Morris (1979) Industrial Economics: Theory and Evidence Oxford University Press, Oxford.
- Hitiris, T. (1978) Effective protection and economic performance in UK manufacturing industry, Economic Journal, vol.88, pp107-120.
- Jensen, M. C. (1972) The foundations and current state of capital market theory, in M. C. Jensen (ed), Studies in the Theory of Capital Markets, Praeger, New York.
- Kamien, M. I. and N. L. Schwartz (1971) Limit pricing and uncertain entry, Econometrica, vol.39, pp441-454.
- Kaplan, A. D. H., J. B. Dirlam and R. F. Lanzillotti (1958), Pricing in Big Business, Brookings Institution, Washington.
- Kelly, M. P. (1974) The determinants of diversification in a simple profit maximising model. Centre for Industrial Economic and Business Research, University of Warwick, Paper No. 49.
- Koch, J. V. (1980) Industrial Organisation and Prices, 2nd ed, Prentice-Hall, New Jersey.
- Kuehn, D. A. (1975) Takeovers and the Theory of the Firm, Macmillan, London.
- Learned, E. P. and C. C. Ellsworth (1959) Gasoline Pricing in Ohio, Harvard University, Boston.
- Lowe, J. F. (1976) Competition in the UK retail petrol market 1960-73, Journal of Industrial Economics, vol.29, pp203-220.
- Lustgarten, S. H. (1975) The impact of buyer concentration in manufacturing industries, Review of Economics and Statistics, vol.57, pp125-132.
- Markham, J. W. (1951) The nature and significance of price leadership, American Economic Review, vol.41, pp891-905.
- Mason, E. S. (1939) The price and production policies of large scale enterprise, American Economic Review, vol.29, pp61-74.
- Mason, R. H. and M. B. Goudzwaard (1976) Performance of conglomerate firms, Journal of Finance, vol.31, pp39-48.

- McGuckin, R. and H. Chen (1976) Interactions between buyer and seller concentration and industry price-cost margins, Industrial Organisation Review, vol.4 pp123-132.
- McKinnon, R. I. (1966) Stigler's theory of oligopoly: a comment, Journal of Political Economy, vol.72, pp 44-61.
- Means, G. C. (1935) Industrial prices and their relative inflexibility. US Senate document 13, 74th Congress, 1st session.
- Means, G. C. (1972) The administered price thesis reconfirmed, American Economic Review, vol.62, pp292-306.
- Modigliani, F. (1958) New developments on the oligopoly front, Journal of Political Economy, vol.66, pp215-232.
- Monopolies Commission (1965) A Report on the Supply of Petrol to Retailers in the United Kingdom, HC 264, HMSO, London.
- * Monopolies and Mergers Commission (1976). Frozen Foodstuffs HC 674, HMSO, London.
- Monopolies and Mergers Commission (1977a) Flour and Bread HMSO, London.
- Monopolies and Mergers Commission (1977b) Cat and Dog Foods, HMSO, London.
- Monopolies and Mergers Commission (1978) Ceramic Sanitaryware, Cmnd, 7327, HMSO, London.
- Monopolies and Mergers Commission (1979a) Insulated Electric Wires and Cables, HMSO, London.
- Monopolies and Mergers Commission (1979b) Petrol, Cmnd, 7433, HMSO, London.
- Monopolies and Mergers Commission (1979c) Ice Cream and Water Ices, Cmnd 7632, HMSO, London.
- Monopolies and Mergers Commission (1979d) Electricity Supply Meters, Cmnd 7639, HMSO, London.
- Monopolies and Mergers Commission (1980a) Domestic Gas Appliances, HC 703, HMSO, London.
- Monopolies and Mergers Commission (1980b) Tampons, Cmnd 8049, HMSO, London.
- Monopolies and Mergers Commission (1981) Discounts to Retailers, HC 311, HMSO, London.
- Myers, S. C. (1972a) The application of finance theory to public utility rate cases, Bell Journal of Economics and Management Science, vol.3, pp58-97.
- Myers, S. C. (1972b) On the use of β in regulatory proceedings: a comment, Bell Journal of Economics and Management Science, vol.3, pp622-627.
- * Monopolies Commission (1970) Metal Containers, HC 6, HMSO, London,
 Monopolies Commission (1973) Contraceptive Sheaths, HC 25, HMSO, London

- Needham, D. (1978) The Economics of Industrial Structure, Conduct, and Performance, Holt, Rinehart and Winston, Eastbourne.
- Nickell, S. and D. Metcalf (1978) Monopolistic industries and monopoly profits or, are Kelloggs cornflakes overpriced? Economic Journal vol.88, pp 254-256.
- Okuguchi, K. (1970) Adaptive expectations in an oligopoly model, Review of Economic Studies, vol.37, pp233-237.
- O.E.C.D. (1981) Buying Power: the Exercise of Market Power by Dominant Buyers, OECD, Paris.
- Pass, C. L. and K. H. Hawkins (1972) Exclusive dealing, supplier ownership of outlets and the public interest: the petrol case, Antitrust Bulletin, vol.17, pp567-595.
- Peacock, A. T., R. M. Grant, M. Ricketts, G. K. Shaw and E. Wagner (1980) Structural Economic Policies in West Germany and the United Kingdom Anglo-German Foundation, London.
- Penrose, E. T. (1959) The Theory of the Growth of the Firm, Blackwell, Oxford.
- Perry, M. K. (1982) vertical integration by competition firms: uncertainty and diversification, Southern Economic Journal, vol.49 pp201-208.
- Porter, M. E. (1974) Consumer behaviour, retailer power and market performance in consumer goods industries, Review of Economics and Statistics vol. 56, pp 419-436.
- Price Commission (1978a) Imperial Tobacco Ltd-Cigarettes and Cigarillos HC 28, HMSO, London.
- Price Commission (1978b) General Paper and Box Manufacturing Company Ltd and Rizla Ltd - Cigarette Paper Booklets, Filter Tips and Accessories, HC 50, HMSO, London.
- Price Commission (1979a) Thermos Ltd - Vacuum Ware, HC 135, HMSO, London.
- Price Commission (1979b) Prices, Costs and Margins in the Manufacture and Distribution of Portable Electric Tools, HC 204, HMSO, London.
- Price Commission (1979c) Prices, Costs and Margins in the Manufacture of Floor and Furniture Polishes, HC 13, HMSO, London.
- Quandt, R. E. (1967) On the stability of price adjusting oligopoly, Southern Economic Journal, vol.33, pp332-336.
- Reid, S. R. (1968) Managers, Mergers and the Economy, New York.
- Robinson, E. A. G. (1958) The Structure of Competitive Industry, revised ed, University of Chicago Press, Chicago.
- Rowley, C. K. (1969) The Monopolies Commission and the rate of return on capital, Economic Journal, vol.79 (March) pp42-65.

- Rushdy, F. and P. Lund (1967) The effect of demand on prices in British manufacturing industry Review of Economic Studies, vol.34, pp361-374.
- Sawyer, M. C. (1981) The Economics of Industries and Firms, Croom-Helm, London.
- Sawyer, M. C. (1980) The influence of cost and demand changes on the rate of change of prices, University of York, I.S.E.R. Discussion Paper 56.
- Scherer, F. M. (1980) Industrial Market Structure and Economic Performance, 2nd edition, Rand-McNally, Chicago.
- Shaw, R. W. (1974) Price leadership and the effect of new entry on the UK retail petrol supply market, Journal of Industrial Economics, vol.23, pp65-79.
- Singh, A. (1975) Takeovers, economic natural selection and the theory of the firm, Economic Journal, vol.85, pp497-515.
- Smith, A. (1910) An Inquiry into the Nature and Causes of the Wealth of Nations, Dent, London (first published in 1776).
- Smith K. V. and J. C. Schreiner (1969) A portfolio analysis of conglomerate diversification, Journal of Finance, vol.23, pp413-427.
- Spence, M. (1977) Entry, capacity, investment and oligopolistic pricing. Bell Journal of Economics, vol.8, pp534-44.
- Stackelberg, H. (1952) The Theory of the Market Economy Oxford University Press, Oxford (translated by A. T. Peacock).
- Stigler, G. J. (1947) The kinky oligopoly demand curve and rigid prices, Journal of Political Economy, vol.55, pp444-464.
- Stigler, G. J. (1964) A theory of oligopoly, Journal of Political Economy, vol.72, pp44-61.
- Stigler, G. J. and J. K. Kindahl (1970) The Behaviour of Industrial Prices N.B.E.R., New York.
- Stigler, G. J. and J. K. Kindahl (1973) Industrial Prices as Administered by Dr Means, American Economic Review vol.63.
- Subrahmanyam, M. G. and S. B. Thomadakis (1980) Systematic risk and the theory of the firm, Quarterley Journal of Economics, vol.94, pp437-451.
- Sullivan, T. H. (1978) The cost of capital and the market power of firms, Review of Economics and Statistics, vol.66, pp209-216
- Sutton, C. J. (1973) management behaviour and a theory of diversification, Scottish Journal of Political Economy, vol.20, pp27-42.
- Sweezy, P. M. (1939) Demand under conditions of oligopoly, Journal of Political Economy, vol.47, pp568-573.
- Sylos-Labini, P. (1962) Oligopoly and Technical Progress Harvard University Press, Cambridge, Mass. (translated by Elizabeth Hendeson).

- Sylos-Labini, P. (1979) Industrial pricing in the United Kingdom, Cambridge Journal of Economics, vol.3, pp153-163.
- Theodoridis, R. (1960) On the stability of the Cournot solution of the oligopoly problem, Review of Economic Studies, vol.27, pp133-134.
- Townsend, H. L. (1965) Exclusive dealing in petrol: some comments, Economica, vol.33, pp410-423.
- Turvey, R. (1971) Rates of return, pricing and the public interest, Economic Journal, vol.81, pp489-501.
- United Nations Economic Commission for Europe (1981) Economic Survey of Europe in 1980, United Nations, New York.
- U.S. Department of Justice (1977) Report on the Robinson-Patman Act, Washington D.C.
- U.S. House of Representatives, (1948), Committee on Interstate and Foreign Commerce, Fuel Investigation, House Report 2342, 80th Congress, 2nd Session
- U.S. House of Representatives, (1953), Committee on Interstate and Foreign Commerce Petroleum Study Hearings, 83rd Congress, 1st. Session.
- U.S. House of Representatives (1955) Select Committee on Small Business, Subcommittee No.5, Alleged Coercive and Discriminatory Practices against Retail Gasoline Operators by Oil Company Suppliers, Interim Report, House Report No.1423, 84th Congress, 1st Session.
- U.S. House of Representatives (1957) Distribution Practices in the Petroleum Industry Interim Report, House Report No.1157, 85th Congress, 1st Session.
- U.S. Senate (1952) Select Committee on Small Business, The International Petroleum Cartel 82nd Congress, 2nd Session, Committee Print No.6, August 22.
- U.S. Senate (1953) Select Committee on Small Business, Petroleum Marketing Practices, Hearings, 83rd Congress, 1st Session.
- U.S. Senate (1956) Select Committee on Small Business, Gasoline Price War in New Jersey, Hearings, 84th Congress, 2nd Session, Report No.2810.
- Utton, M. (1977) Diversification and Competition Cambridge University Press, Cambridge.
- Waterson, M. (1980) Price-cost margins and successive market power, Quarterly Journal of Economics, vol.94, pp135-150.
- Weiss, L. W. (1977) Stigler, Kindahl and Means on administered prices, American Economic Review, vol.67, pp610-619.
- Wenders, J. T. (1971a) Excess capacity as a barrier to entry. Journal of Industrial Economics, vol.20, pp14-19.
- Wenders, J. T. (1971b) Collusion and entry, Journal of Political Economy, vol.79, pp1269-1277.

- Weston, J. F., S. Lustgarten and N. Grottke (1974), The administered-price thesis denied: a note, American Economic Review, vol.64, pp232-234.
- Weston, J. F. and S. K. Mansinghka (1971), Tests of the efficiency performance of conglomerate firms, Journal of Finance, vol.26, pp919-936.
- Williamson, O. E. (1964) The Economics of Discretionary Behaviour, Prentice-Hall, Englewood Cliffs, N.J.
- Williamson, O. E. (1970) Corporate Control and Buisness Behaviour Prentice-Hall, Englewood Cliffs, N.J.
- Williamson, O. E. (1975) Markets and Hierarchies, Macmillan, New York.
- Winn, D. N. (1977) On the relations between rates of return, risk and market structure, Quarterly Journal of Economics, vol.91, pp157-163.
- Yamey, B. S. (1972) Do monopoly and near monopoly matter? in M. Peston and B. Corry, Essays in Honour of Lord Robbins, Weidenfeld and Nicholson, London.

PART TWO

THE PUBLISHED PAPERS

PRICING BEHAVIOUR IN THE UK WHOLESALE MARKET
FOR PETROL 1970 – 80: A “STRUCTURE – CONDUCT”
ANALYSIS

R. M. GRANT*

INTRODUCTION

THE objective of this paper is to contribute to a better understanding of pricing in the markets for manufactured goods through a detailed examination of pricing behaviour in the UK wholesale market for petrol between 1970 and 1980.

The UK petrol market is particularly suitable as a case study in pricing behaviour because of the availability of information and the changes in pricing behaviour observed over the period. During the 1970s changes in market structure and supply conditions combined to force a breakdown in the long-established coordination of the major suppliers' wholesale prices, giving way to periods of intense price competition.

Earlier studies of competition in the industry have concentrated upon the pricing practices of the major suppliers [17] and on changes in market structure [6]. This paper extends and develops the examination of pricing behaviour, first, by concentrating upon a period characterised by unprecedentedly traumatic changes in market conditions and pricing behaviour and, second, by incorporating more comprehensive information on pricing drawn from industry sources and from reports by the Monopolies and Mergers Commission [9], Department of Prices and Consumer Protection [3] and Price Commission [11], [12], [13], [14]. The approach followed is to examine petrol pricing behaviour as an application of a simple “industrial organisation” model of oligopoly pricing. In the light of a structure-conduct analysis of pricing (section I), the principal structural features of the UK petrol market likely to influence pricing behaviour are identified (section II). Predictions are made concerning the nature of pricing behaviour in the industry and the changes in pricing behaviour which might be induced by structural change, (section III) and these predictions are tested out by an examination of pricing behaviour over the period (section IV).

I. A STRUCTURE-CONDUCT APPROACH TO THE THEORY OF OLIGOPOLY PRICE

The variety and predictive weakness of theories of oligopoly pricing are well-known:

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"It has been held that competition between two sellers will result in a monopoly price, a competitive price, a determinate price intermediate between them, a perpetually oscillating price, and no price at all because the problem is impossible." [1, p.30]

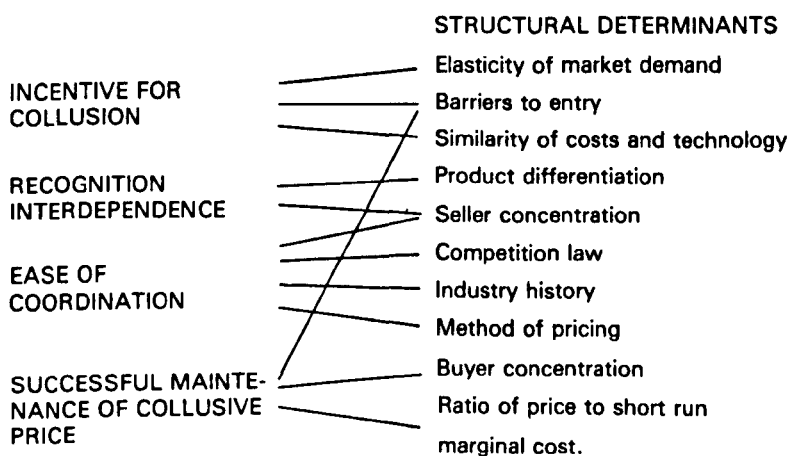
This range of predictions corresponds closely to the range of pricing behaviour which is observed in manufacturing industry. The essential weakness is that no single theory is powerful enough to explain the wide range of pricing behaviour observed both across different industries and in the same industry over time.

In response to the inadequacies of oligopoly theory, industrial economists have taken refuge in a less formal approach to the analysis of oligopoly pricing based upon plausible assumptions concerning corporate motivation and behaviour and the observation of patterns of pricing behaviour in a number of industries. The approach is informal in the sense that it does not seek to develop a determinate theory of the level of oligopoly price (as in the Cournot model for example), but concentrates upon the factors which influence the extent of collusion and competition and determine both the pattern of pricing behaviour and the level of industry price. Drawing upon the theories of oligopoly coordination [1, chap. 3], oligopoly collusion [18], price leadership [7] and limit pricing [20], and modern textbook expositions such as Scherer [16], the relationships between market structure and pricing conduct shown in Figure I may be hypothesised.

The extent to which price in an oligopoly exceeds the long run competitive level (i.e. the price-cost margin) depends upon the success of firms in coordinating their pricing decisions. Such coordination will depend upon the following factors:

- 1) *The incentives for collusive behaviour.* The incentive for avoiding price competition is the potential for monopoly profit which depends upon: the *price elasticity of market demand* (the lower is elasticity, the greater the increase in price resulting from output limitations); the *level of entry barriers* to the industry (the higher the barriers the greater the opportunity for earning monopoly profits in the long run); and the *similarity of costs and technology between firms* (the absence of any significant cost or technological advantage between firms will promote unanimity over the desirability of collusive pricing).
- 2) *The recognition of interdependence by firms.* The extent to which the benefits of coordinated pricing are recognised by firms will depend upon their perception of the interdependence of their price-output decision which is dependent upon *seller concentration* and the cross-elasticity of demand between the outputs of the oligopolists. The cross-elasticity of demand between firm depends (mainly) upon the *degree of product differentiation*.
- 3) *Ability to achieve coordination of pricing decisions.* The achievement of

LEVEL OF PRICE depends upon EXTENT OF OLIGOPOLY PRICE COORDINATION which depends upon: –



Supplementary predictions

- (1) Competitive pricing behaviour occurs predominantly in discounts and other allowances rather than in list prices.
- (2) Oligopoly prices tend to be unstable particularly where products are undifferentiated.

FIGURE 1
Market Structure and Oligopoly Pricing Behaviour.
Summary of Predictions.

successfully coordinated pricing decisions in an industry is essentially a problem of communication. Ease of communication depends upon

- the *number of firms* in the industry (the number of communication links between N firms is $(N-1)!$ which rises more than proportionately with increases in N) and their *size distribution* (the presence of a single large firm may encourage smaller firms to adopt a “follower” role);
 - the *history of past cooperation and communication* in the industry;
 - the *method of pricing* (where firms price by means of announced price lists, coordination of pricing decisions is easier than where prices are negotiated individually with customers or where tenders are submitted for individual orders).
- 4) *The successful maintenance of price above the competitive level.*
Assuming that the firms in an industry achieve effective coordination, the ability to raise and maintain prices above the competitive level depends upon their success in defending monopolistic price levels against

competitive initiatives from without and within. Protection from newcomers to the industry is afforded by *entry barriers*. Whether or not firms adopt limit-pricing behaviour, price in a collusive oligopoly cannot in the long run exceed the perfectly competitive price by more than the level of entry barriers to the industry. The incentive to competition from within arises from the incentive for each firm to undercut the oligopoly price and expand its profits, which, when pursued by all firms results in lower profits for all. Observation and analysis suggest that two factors are of particular importance in encouraging oligopolists to undercut industry price: first, the presence of *large buyers* in the market which will induce the offer of special discounts (for an analysis see [18], [4]) and, second, a fall in the *level of short run marginal costs* relative to average cost and industry price (typically caused by the emergence of excess capacity).

Two further implications of the foregoing analysis may be drawn. First, because of the desire of oligopolists to adjust prices to the different conditions operating in different sectors of the market and to avoid competitive price cutting where possible, price competition in oligopoly will typically take the form of discounts and allowances. Second, the balance of forces for coordination and competition in oligopoly is unlikely to result in a stable equilibrium. The tendency towards retaliation against the competitive initiative of any supplier leads to a process of cumulative price cutting which may degenerate into a price war. Since both the incentive to gain sales by reducing price and the propensity to retaliate are dependent upon the cross elasticity of demand (between the products of different suppliers), it is likely that the oligopoly price will be more unstable if the product is relatively homogeneous.

II. MARKET STRUCTURE AND STRUCTURAL CHANGE IN UK PETROL WHOLESALING

On the basis of the foregoing hypotheses, we proceed by examining the structural features of the UK wholesale market for petrol which are likely to influence pricing behaviour.

- 1) *Seller concentration*. Market shares over the period by numbers of outlets supplied are given in Table I and by gallonage supplied in Table II. Although moderately high in 1970, seller concentration declined substantially between 1970 and 1979: the five-firm concentration ratio declined on a gallonage basis from 81.9 per cent to 72.3 per cent and on a retail outlets basis from 81 per cent to 69 per cent. The Herfindahl index of concentration (on a gallonage basis) registered a steeper decline – from 0.232 in 1970 to 0.135 in 1979. The most important factors in the decline in seller concentration were the dissolution of the joint marketing company Shell-Mex and BP at the beginning of 1976 and the growth in the market shares of the “new majors” (integrated oil companies which

entered the UK market during the 1960s). The fall in seller concentration was associated with a reduction in the disparities between the market shares of the majors. Between 1970 and 1976 the number of suppliers with market shares exceeding 4 per cent increased from 4 to 7. This implies that problems of avoiding price competition are likely to have increased over the period, particularly when account is taken of the desire of most of the new majors to expand their market shares.

- 2) *Demand conditions (elasticity of market demand and product differentiation)*. Because the cost of petrol constitutes only about 20% of total motoring costs (*Petroleum Review*, March 1980, p.53) and because of the absence of substitutes, its price elasticity of demand tends to be low. For example, between the beginning of 1974 and the end of 1975 the

TABLE I
WHOLESALE SUPPLIERS' SHARES OF THE UK RETAIL MARKET FOR PETROL (BY % OF TOTAL RETAIL OUTLETS AT EACH YEAR END)

	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970
Esso	20.1	21.0	21.4	22.0	21.8	22.0	23.0	22.5	22.0	22.5
Shell	16.9	19.2	21.9	22.9	40.8	40.2	38.5	38.3	40.5	41.9
BP	19.4	18.0	18.0	17.4	—	—	—	—	—	—
Texaco	8.0	7.6	7.6	7.7	8.0	8.9	9.1	8.7	8.8	8.9
Mobil	4.8	4.7	4.5	4.4	4.3	4.3	4.4	4.3	4.2	4.0
Petrofina	3.8	3.8	3.6	3.7	3.8	3.6	3.8	3.8	3.7	3.6
Burmah	3.2	3.1	3.0	2.9	2.7	2.6	2.7	2.9	2.9	3.0
Total	3.0	3.0	3.1	3.1	3.0	3.7	2.4	2.3	2.2	2.2
Atlantic Richfield	—	—	—	—	—	—	1.3	1.4	1.3	1.1
Elf	2.1	2.0	1.9	1.8	—	—	—	—	—	—
V.I.P.	—	—	—	—	1.7	1.6	1.8	2.1	2.1	2.0
Conoco	3.1	2.9	2.8	2.6	2.6	2.5	2.5	2.7	2.5	2.4
I.C.I.	1.7	1.6	1.5	1.4	1.3	1.1	1.1	0.9	0.7	0.5
Ultramar	1.6	1.4	1.2	1.2	1.2	1.0	0.9	0.7	0.6	0.4
Murco	1.2	1.2	1.2	1.0	1.1	1.1	1.1	1.0	1.0	1.6
Amoco	1.1	1.1	1.1	1.1	1.0	1.0	1.1	1.0	1.0	1.0
Gulf	1.2	1.1	1.1	1.0	0.9	1.1	1.1	0.9	0.8	0.7
McMullans	1.0	1.01	0.9	0.9	0.9	0.8	0.8	0.6	0.6	0.5
Chevron	0.8	0.8	0.7	0.6	0.7	0.7	0.6	0.6	0.5	0.4
Globe	0.7	0.8	0.6	0.6	0.6	0.5	0.6	1.4	1.3	1.1
Pace	1.1	0.6	0.6	0.5	0.4	0.3	0.2	0.1	—	—
Nafta	0.5	0.5	0.5	0.4	0.4	0.4	0.5	0.8	0.7	0.7
Sheaf	0.3	0.5	—	—	—	—	—	0.2	0.1	0.1
Roberts	0.5	0.5	0.3	0.2	0.2	—	—	—	—	—
Thames	0.1	0.4	0.5	0.2	0.2	—	—	—	—	—
Mansfield	—	—	—	0.3	0.3	0.2	0.4	0.3	0.3	0.2
Thrust	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.1
Rix	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.3
Trident	—	—	—	—	—	—	—	0.6	0.5	0.4
Avia	0.6	0.4	—	—	—	—	—	—	—	—
Total no. of retail outlets (,000's)	26.5	28.3	29.4	30.5	31.4	32.7	33.0	34.5	35.9	37.1

Source: Institute of Petroleum

TABLE II
WHOLESALE SHARERS' SHARES OF THE UK RETAIL MARKET FOR PETROL (BY GALLONAGE)

Company	Market Share (%)							
	1964	1970	1974	1975	1976	1977	1979	1980*
SHELL-MEX AND BP LIMITED	45.0	39.6	38.1	35.0	—	—	—	—
Munster Sims & Company Limited	—	—	—	—	—	—	—	—
SHELL UK LIMITED	—	—	—	—	19.3	19.5	21.3	22.6
ESSO PETROLEUM COMPANY LIMITED	27.4	23.4	21.2	19.2	18.7	19.3	19.3	19.6
Agip Limited	0.2	—	—	—	—	—	—	—
BP OIL LIMITED	—	—	—	—	14.7	14.6	15.1	15.1
TEXACO LIMITED	—	8.0	9.3	9.4	9.1	9.2	8.2	8.2
Regent Oil Company Limited	11.1	—	—	—	—	—	—	—
MOBIL OIL COMPANY LIMITED	5.9	7.1	6.8	6.6	7.0	7.1	8.4	7.1
Bowen Petroleum Limited	0.1	—	—	—	—	—	—	—
CONOCO LIMITED	—	3.8	3.1	4.1	4.2	4.6	4.9	5.4
Jet Petroleum Limited	3.5	—	—	—	—	—	—	—
TOTAL OIL GREAT BRITAIN LIMITED	1.1	3.1	4.7	4.8	4.5	4.6	2.4	2.8
Gainsborough Petroleum Company Limited	0.2	—	—	—	—	—	—	—
Aero Petroleum Company Limited	0.2	—	—	—	—	—	—	—
ELF OIL GREAT BRITAIN LIMITED	—	—	—	—	2.8	2.9	2.4	2.8
Isherwoods Petrol Company Limited	0.8	—	—	—	—	—	—	—
VIP Petroleum Limited	—	2.1	1.9	2.3	—	—	—	—
PETROFINA UK LTD	2.5	2.4	2.8	2.8	2.9	2.8	2.1	2.2
BURMAH OIL TRADING LIMITED	—	2.6	2.3	2.9	3.1	2.6	2.5	1.6
Lobitos Oilfields Limited	—	—	—	—	—	—	—	—
Curfew Petroleum Limited	0.8	—	—	—	—	—	—	—
Major & Company Limited	—	—	—	—	—	—	—	—
IMPERIAL CHEMICAL INDUSTRIES LTD	—	0.9	1.7	2.6	2.7	2.5	3.1	2.7
GULF OIL (GREAT BRITAIN) LIMITED	0.2	1.0	1.8	1.9	2.5	2.5	2.6	2.5
AMOCO (UK) LIMITED	—	1.2	1.3	1.8	1.8	1.7	2.1	2.5
CHEVRON OIL (UK) LIMITED	—	0.7	1.0	1.1	1.1	1.1	1.0	0.7
MURCO PETROLEUM LIMITED	0.3	1.7	1.3	1.3	1.3	1.1	1.0	1.0
OTHERS	0.5	2.4	2.7	4.3	4.4	3.9	3.5	3.4
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes

1. Figures for 1964-77 are from the Monopolies and Mergers Commission (1979), figures for 1979 and 1980 are based on samples and are from the Motorists' Diary Panel.

2. Companies whose names are shown in lower case type were taken over during the period.

Source: Monopolies and Mergers Commission [9].

* To 4 October.

retail price of petrol rose by about 75% yet consumption in 1975 was only 0.6% lower than in 1974. Such a low short run price elasticity discourages price reductions as a means of increasing industry sales and makes collusive pricing behaviour attractive. At the brand level, however, motorist's demand is likely to be much more price elastic due to the physical homogeneity of supplier's petrol. The perceived homogeneity has increased since the beginning of our period due largely to the star grading of petrol by octane level (introduced in 1968).¹

¹ The reduction of advertising expenditure on petrol from £3.2m in 1968 to £1.4m in 1971 also indicates the recognition by the majors of the futility of attempting to differentiate petrol.

If the retailers were free to purchase from any wholesaler, it would be expected that retailers' demand from individual wholesalers would be highly price elastic. However, the price elasticity of the demand facing each wholesaler is reduced by forward integration by wholesalers both by ownership of retail outlets and by exclusive supply contracts with retailers ("solus agreements"). Thus, at any point of time few retailers are able to change their suppliers: in addition to the 8 per cent of retailers (in 1977) without solus agreements [8], an average of about 1 per cent of retailers will terminate their solus agreements in any one month.

- 3) *Entry barriers.* Forward integration by the majors also constitutes the main source of entry barriers to petrol wholesaling. A significant trend during the period was the increasing ownership of retail outlets by petrol wholesalers. By 1979 72.2 per cent of retail sales were through wholesaler-owned outlets which meant that the great majority of the market was permanently foreclosed from new entrants. Vertical integration by the majors also restricts the availability of petrol supplies to new entrants – because virtually all UK refining capacity is owned by the majors, it is difficult for the new entrant to obtain secure supplies of petrol.

During the 1960s entry to the UK market had taken place on a substantial scale. The entrants were primarily integrated oil companies which already had refining capacity and were able to establish retail distribution either through the acquisition of independent wholesaling companies (Table II shows the major acquisitions of independent wholesalers since 1964) or the purchase of independent retailers. By 1970 however almost all of the potential entrants from the ranks of the international oil companies had entered the UK market and wholesale entrants during the 1970s were (with the exception of Elf) small, non-refining petrol distributors. Some were specialist petrol wholesalers, other diversified into petrol wholesaling from the distribution of other petroleum products. Such small scale entry was facilitated by the contraction in the numbers of retail outlets during the 1970s. The increasing unwillingness of the majors to supply low-volume retailers of doubtful long term viability meant that there were always a number of small, often poorly-located, retail sites available to the independent wholesaler. The ability of independent wholesalers to enter and prosper depended critically on the availability of petrol supplies at a reasonable price. The independent wholesalers obtained their petrol from two sources: long-term contracts with UK majors and spot purchases on the Rotterdam market. In the case of the former, purchase arrangements offered security of supply but, because the price tended to be related to the majors' scheduled wholesale price, gave little scope for price cutting. In the case of the Rotterdam market, during periods of surplus supply it

was possible for the independent wholesaler to earn substantial profits from distributing low-priced spot purchases to the UK market, while in periods of shortage such operations were quickly curtailed. Thus, during the periods 1972-74 and 1978-79 when Rotterdam prices were high and supplies short many independent wholesalers went out of business or withdrew from the market. During the period of low prices and plentiful supply between late 1974 and 1977 there was a substantial increase in the numbers and market share of the independents.

One entrant to the UK market which deserves special mention is ICI which operated in the UK petrol market as a small wholesaler despite being one of the largest UK manufacturing companies. ICI began supplying branded petrol in 1965 and during the period 1970-75 quadrupled its market share by expanding its marketing area from the North East of England to the North, the Midlands and Scotland.

- 4) *Similarity of costs and technology.* Although the problem of allocating joint-product costs means that it is extremely difficult to identify the cost of production of petrol, the similarity between the majors of production and distribution methods and crude oil costs means that no company is likely to perceive an absolute cost advantage over the others. Indeed, the tightening of the OPEC cartel during the early 1970s would have tended to reduce the variability of crude oil costs between companies. The only companies with a substantially different cost structure were the independent wholesalers whose costs depended primarily on the Rotterdam price for bulk petrol.
- 5) *Industry history.* The main feature of the development of the world petroleum industry relevant to competitive behaviour in the UK petrol market is the long period of co-existence of the major multinational oil companies in a variety of different activities, product markets and countries. Cooperation between the companies had taken the form of joint exploration and exploitation of crude oil, joint ownership of refineries and product exchange arrangements aimed at minimising the costs of distributing refined products. This background is conducive to the development of understanding between the majors and is likely to discourage aggressively competitive initiatives in any market for fear of retaliation in some other market. The lack of price competition in the industry was noted by the Monopolies Commission in its first report [8, p.139] and was emphasised by Professor Barna in his note of dissent [*ibid.*, pp.171-81].
- 6) *Buyer concentration.* Apart from the major oil companies, which are by far the largest retailers of petrol², petrol retailing has otherwise always

² Most supplier-owned retail outlets are operated by tenants and licensees. During the 1970s however, an increasing number of these company-owned outlets became directly operated by their suppliers often through a subsidiary company – e.g. Dart Oil Co. Ltd (Esso), City Petroleum Co. Ltd (Shell), Stations Supreme Ltd. (Texaco).

been an especially unconcentrated area of retail trade, with a high proportion of small, single-outlet businesses. During the 1970s the structure of petrol retailing was altered by the emergence of a number of particularly large petrol retailers. Some of these were specialist service station chains such as Heron, Alan Pond and Telegraph Garages, others were entrants into petrol retailing from the grocery trade – most notably ASDA (Associated Dairies), and on a smaller scale Carrefour, Fine Fare and Sainsbury. Although none of these companies achieved more than a very small share of the national petrol market, the volume and growth of their sales and their efficiency in retailing made them particularly attractive customers for the majors, and, as a result, conferred upon the retailers a substantial measure of bargaining power, particularly in times of plentiful supply of petrol.

- 7) *The ratio of average to marginal cost.* The importance of excess capacity resulting in low levels of short run marginal cost in encouraging the breakdown of oligopolistic collusion is well documented in many capital intensive industries.³ In the case of petrol, however, the problem of joint costs means that there is no simple way of estimating marginal supply cost. An alternative approach is to take the Rotterdam spot price as the short run marginal opportunity cost of ex-refinery petrol. Although the UK majors have tended to minimise the importance of Rotterdam (a “marginal” market where published prices are “unrepresentative”) it is effectively the only alternative market for refined petrol used by the UK majors, and it is notable that Esso uses the Rotterdam price as its internal transfer price for ex-refinery petrol when assessing the profitability of new retail business [12, p.26]. When the Rotterdam price for petrol is low relative to average cost (and to the UK wholesale price) the recognition of the low marginal opportunity cost of petrol is likely to increase the incentive to each supplier to increase sales and profits by undercutting the industry price level.
- 8) *Pricing method.* The wholesale prices of the majors are announced on the basis of a “scheduled” price to retail buyers. The published prices allow for differentials between geographical zones and for surcharges for part-load deliveries. While zonal differentials in principle reflect differences in delivery costs, in practice the national suppliers of petrol have almost identical zonal boundaries, irrespective of the location of each company’s distribution points, and zonal price differentials have remained unchanged since 1952. Retailer-owned outlets are generally given a rebate (“solus rebate”) which is negotiated as part of the exclusive supply agreement with the wholesaler. Any other discounts are generally also offered on a selective basis and are temporary. Terms of supply relate not only to price but include credit arrangements, low interest loans and the provision of maintenance services by suppliers. As has been

³ See for example the study by Swann *et al* [19].

noted above, published list prices facilitate coordination of prices between suppliers. Such coordination is far more difficult in individually negotiated rebates and discounts and, as has been observed in other industries,⁴ it would be expected that these would be the principal media for price competition in the industry.

III. PREDICTIONS FOR PETROL PRICING

The implications of this analysis of industry structure for pricing behaviour in the UK wholesale market for petrol are as follows:

- (i) The combination of low price elasticity of market demand, a high degree of brand substitutability, similarity of costs between suppliers and a background of past cooperation would have encouraged coordinated pricing behaviour, particularly in the early part of the period when seller concentration was high.
- (ii) Structural changes are likely to have increased the difficulties of coordinated pricing and increased the incentives for greater price competition. The principal long term change was the fall in seller concentration arising from the dissolution of Shell-Mex and BP and the gains in market shares by the new majors. The dismembering of Shell-Mex and BP also had the effect of depriving the industry of a natural price leader. The emergence and growth of a number of large retailing groups would have tended to accentuate the impact of falling seller concentration on price coordination – though it should be noted that buyer concentration in the petrol market is still much lower than in most sections of retail trade.
- (iii) Over the shorter term, the principal factors promoting more competitive pricing are likely to have been new entry, the ability of small independent wholesalers to undercut the scheduled prices of the majors, and the inducement to individual majors to depart from scheduled prices when short run marginal costs are relatively low. All three of these competitive factors are strongly influenced by a single variable – the level of the Rotterdam bulk petrol price in relation to the UK wholesale price. Hence our analysis suggests an influential role for the Rotterdam market as a source of competitive initiatives in the UK wholesale market. Moreover, because of the high degree of brand substitutability, price cutting, even when initiated by quite small suppliers, can have a quite dramatic effect on the stability of the industry price level. This was demonstrated in the previous decade by the retaliatory price cuts by the majors in response to the cut-price strategy of Jet [17].

⁴ See for instance reports by the Monopolies and Mergers Commission on Ceramic Sanitaryware (1978), Insulated Electric Wires and Cables (1979), Frozen Foodstuffs (1976), Ice Cream and Water Ices (1979).

TABLE III
INNER ZONE SCHEDULED WHOLESALE PRICES FOR 4 STAR MOTOR SPIRIT

DATE	SHELL	ESSO	TEXACO	MOBIL	DATE	SHELL	ESSO	TEXACO	MOBIL
16.1.70	6/0	6/0	6/0	6/0	27.10.77				14.65
31.7.70	6/0½	6/0½	6/0½	6/0½	1.12.77		14.14		
6.11.70	6/1¼	6/1¼	6/1¼	6/1¼	8.2.79	14.97			
21.2.70	31.75				12.2.79				15.21
22.2.71		31.75	31.75	31.75	16.2.79	15.08	15.17	15.08	
28.4.72				32.15	6.4.79		15.82	16.08	15.82
29.4.72	32.15				9.4.79	15.73			
1.5.72		32.15	32.15		26.5.79			18.58	18.42
9.9.72	32.65				12.6.79	18.45			
11.9.72		32.65	32.65	32.65	18.6.79		18.43		
29.4.73	33.65	33.65		33.65	2.7.79		19.60		
15.5.73			33.65		3.7.79	19.81			
4.10.73	34.65	34.65	34.65	34.65	4.7.79			20.08	
15.12.73	37.35	37.35	37.35	37.35	5.7.79				20.41
12.2.74	45.25	45.30	45.25	45.27	29.11.79	20.20			
18.12.74	52.20	52.15	52.20	52.20	28.12.79		20.30		
2.12.75	55.00				29.12.79			20.50	
3.12.75		55.00		55.02	1.1.80				20.41
8.12.75			55.00		17.1.80	21.08		21.20	21.20
*9.4.76	13.74	13.745	13.74	13.75	18.1.80		21.07		
29.10.76	14.51				19.2.80	21.85	21.64		
30.10.76			14.63		20.2.80			21.84	21.85
3.11.76				14.52	26.3.80*	23.75	23.54	23.74	23.75
6.11.76		14.51			17.5.80				24.35
21.12.76				14.74	21.5.80			24.29	
1.1.77			14.76		23.5.80	24.13			
10.1.77		14.73			24.5.80		23.92		
*29.3.77	15.61	14.83	15.86	15.84	3.6.80	24.66			
26.4.77	16.08				7.6.80		24.61	24.63	24.66
27.4.77			16.08		5.7.80	24.28	24.23		
29.4.77		16.08		16.08	9.7.80			24.28	
8.7.77	15.49				13.8.80				23.90
*8.8.77	14.39	14.95	14.98	14.98					

Notes 1. 1970 prices in shillings and old pence per gallon; 1971-75 prices per gallon; 1976-80 prices in pence per litre.

2. Asterisks show changes in excise tax.

3. Prices include duty, exclude VAT.

Source: Petroleum Times.

- (iv) In common with other oligopoly industries, it is likely that the forces for coordinated and competitive pricing would be dichotomised between list prices and the various discounts and allowances – list (scheduled) prices typically showing a pattern of price leadership and discounts and rebates, because of their flexibility and confidentiality, providing the focal point for competitive activity.

In the following section we examine the behaviour, first, of scheduled prices and, second, discounts and rebates.

IV. PRICING BEHAVIOUR 1970-80

(a) Scheduled prices

Previous studies of petrol prices have regarded the scheduled prices of the

majors as following a pattern of conscious parallelism. Shaw [17] identified collusive price leadership led by Shell-Mex and BP, and occasionally by Esso, where the level of prices was set, not so as to exclude new entry, but to limit the market share of the newer entrants.

Table III shows changes in scheduled prices by four major suppliers between 1970 and 1980. The period is divisible into two. Between 1970 and the end of 1973 there was a continuation of the parallel pricing which had characterised the previous decade: the majors charged identical prices and changed price by the same amounts. Six price changes occurred simultaneously, two were led by Shell-Mex and BP and one by Mobil. In the period from February 1974 to December 1980 no price changes took place simultaneously, only once were the majors' prices identical, and no price leader was evident (although Shell still initiated price changes more frequently than any other supplier). To begin with differences in scheduled prices were very small – they did not exceed 1% until 1977. Between 1977 and 1980 price differences widened. The trend towards greater competition in scheduled prices is also indicated by the price reductions which occurred between July and December 1977 and in July 1980.

Most studies of administered pricing identify changes in variable costs as the chief cause of price changes [2] [5]. In the supply of petrol the principal cost item is crude oil. To test the proposition that changes in the scheduled wholesale price of petrol are determined by changes in costs rather than by demand or competition, percentage changes in the before-tax UK scheduled wholesale price (W_i) were regressed on percentage changes in the Sterling price of Saudi Arabian marker crude (C_i) during the previous five week period. The result was as follows:

$$W_i = 6.286 + 0.3554 C_i \quad (R^2 = 0.4230) \\ (t = 4.016)$$

The regression coefficient was highly significant and a value of less than unity was to be expected in view of the other costs of producing petrol. The low value of the R^2 may partly reflect the variable lag between changes in crude oil prices and changes in scheduled price which resulted from the government price controls which were in operation for much of the period.

To test the influence on scheduled prices of changes in demand, percentage changes in the Rotterdam barge price for premium petrol (in £ Sterling) during the four weeks prior to wholesale price changes were added to the regression equation. The justification for using changes in the Rotterdam price as an indicator of changes in demand is that, in such a competitive market, price is determined by supply and demand. Short-term price changes are likely to be largely demand determined since, as a joint product, the short-run price elasticity of supply of petrol tends to be low.

The estimated coefficient of the Rotterdam price variable was close to zero and quite insignificant and the R^2 of the regression equation increased only

marginally. However a study of the residuals from the first regression did provide some weak evidence of more competitive influences on pricing behaviour during the latter part of the period. A predominance of negative residuals after 1974 suggested that after this date the oil companies became less willing or able to pass on increases in the price of crude through increases in the price of petrol.

(b) Rebates and discounts and the price wars of 1975-78 and 1980

While scheduled prices clearly show a breakdown of price coordination during the period, the primary media for price competition were discounts and rebates. During the early part of the period when scheduled prices were characterised by well-orchestrated parallelism, competition in rebates to gain *solus* agreements with independent retailers was active. However, the most notable feature in the development of price competition during the period was the introduction and growth of temporary discounts during period 1975-78. The vigour of competition in discounts (and other allowances) was such that the period has been described as a "price war" and it warrants detailed study.

During the latter part of 1974, the shortage of petroleum products which had followed the Arab-Israeli War of 1973 quickly turned into surplus as supplies of crude oil at greatly increased prices were resumed to an industrial world moving steadily into recession. Although higher prices and lower levels of real disposable income caused only a small decline in the demand for petrol, recession in the petrochemical industry resulted in an excess supply of naphtha which was increasingly converted to petrol [3, p.3]. Between March and December 1974 the Rotterdam petrol price (in Sterling) fell by about 40% encouraging new entrants into the UK wholesale market and enabling established small wholesalers to expand sales by undercutting the majors. The rise in the market shares of the non-refining wholesalers in 1974 and 1975 can be seen from Tables I and II and more clearly from Figure 2.⁵

The smaller wholesalers were not the sole source of price cutting. Higher rebates paid by the majors to some large retailers combined with their low-margin high-volume retail pricing policy increased price competition at the retail level. A key influence was ASDA, a supermarket chain which received a very favourable rebate from Mobil. In September 1975 ASDA's retail petrol price was 62p at a time when the majors' scheduled wholesale price was 65.25p.

⁵ Two special factors deserve mention in increasing the competition offered by the smaller wholesalers to the majors. First, the opportunity for smaller wholesalers to undercut the majors' prices were increased in December 1974 by the agreement of the major oil companies to the request of the British government to load the major part of the increased cost of crude oil on to the price of petrol. Second, was the particularly large margin by which ICI undercut the prices of the majors for a short period. Between 1970 and 1974 ICI had steadily expanded its petrol sales by maintaining a price differential of about 5 per cent below the scheduled prices of the majors. However between 18 December 1974 and 10 January ICI's wholesale price was 9.23p (18%) below the scheduled prices of the majors, and for the remainder of 1975 the differential was 5p (9.6%). Table II shows the substantial increase in ICI's market share between 1974 and 1975.



Source Motorists' Diary Panel

Note "Cheap" brands comprise the brands supplied by non-refining wholesalers and also brands which in 1974 sold at prices below those of the majors (ICI, Jet, VIP/Elf).

FIGURE 2
The Retail Market Share of "Cheap" Brands of Petrol,
April 1974 to December and January 1979 to October 1980.

A notable feature of the price competition was its concentration in urban and suburban areas of the Midlands and the North of England. These areas coincided with the distribution areas of a number of cut-price wholesalers (including ICI) and the locations of a number of low-margin retailers (notably ASDA).

The response of the majors to falling market shares and the threat to the continued existence of many of their solus retailers was to reduce prices selectively and differentially through the offer of temporary discounts to retailers suffering the severest competitive pressures. In December 1974 Conoco led the way by introducing discounts to some of its retailers. In February several other new majors introduced temporary discounts, they were followed by Mobil in March, by Texaco in May and, finally, by Shell-Mex and BP and Esso in September.

The form of the discount schemes and their limited coverage indicates that they were intended, not as a competitive initiative, but as a means of defending market share and protecting the viability of each supplier's retail outlets. In most cases the amount of discount was calculated to enable the retailer to meet local price competition, but not to undercut it. Moreover, the established majors made several attempts to withdraw temporary discounts during the course of the price war: on 31 October 1975 Shell-Mex and BP, Esso and Texaco withdrew their support measures but the failure of the new majors to follow led Esso to re-introduce discounts. At the end of May 1976, Shell announced its withdrawal of discounts and was again followed by the leading majors, in the summer however Shell led a re-introduction of discounts.

The inability of the leading majors to contain and eliminate price competition is further indicated by the expansion in the geographical coverage of temporary discount schemes. While initially the schemes were limited to the marketing areas of certain cut-price wholesalers and retailers, there was a constant tendency for the areas of price competition to grow, and during 1977 selective discounts were extended throughout much of the South of England. The culmination of this widening of the area of price competition was the reduction in scheduled wholesale price by Shell in July 1977. The continued momentum of price competition between the majors is further indicated by the persistent growth of discounts and other price support measured during the first half of 1978, when no external factors promoting such price competition can be identified.

A combination of factors brought about an abrupt end to the price war. A shortage of petrol in the summer of 1978 caused by industrial action by tanker drivers was followed by a rapid escalation in the spot prices for crude oil and petroleum products caused by the Iranian revolution (see Figure 3). On November 2 1978 Mobil announced its intention of eliminating temporary discounts to retailers on November 6. Shell followed by initially withdrawing discounts from 1,300 of its 1,600 subsidised retailers in the first instance. On November 10 Petrofina withdrew temporary support and on November 13 Esso

announced its withdrawal of discounts – which at the time were being paid to about 20% of its retailers.⁶

The shortage of crude oil intensified during the early months of 1978 and between March and August all the majors rationed supplies of petrol to their retail outlets.⁷ One of the principal results of the petrol shortage was substantially reduced price competition at the retail level. Retail prices became more uniform and retail margins rose to their highest levels of the decade. Scheduled prices were increased four times between February and early July 1979.

The termination of price competition proved to be only temporary however. Market conditions during late 1979 and early 1980 resembled those of late 1974 when, against a background of falling Rotterdam spot prices for petrol, UK scheduled wholesale prices were increased (see Figure 3). Competitive pressure was further increased by the desire of many wholesalers to increase their share of the UK market: Shell, BP and Esso desired higher gallonage sales through their large, company-owned sites, while Conoco, Esso, Total and Amoco wished to expand their market bases in anticipation of increased production capacity arising from investments in refineries and catalytic crackers.

While the 1975-78 price war was precipitated primarily by the competitive tactics of smaller wholesalers with the majors introducing discounts largely as a defensive measure, the outbreak of discounting in 1980 appears to have been initiated by the majors. No substantial price cutting by smaller wholesalers is apparent during early 1980, and there is no evidence of their gaining any significant increase in market share during these months (see Figure 2).

Competitive initiatives were first taken at the retail level. In an effort to bring down the high levels of retail margin which had arisen during the period of petrol shortage, Shell and Esso used their control over retail prices at their owned retail outlets to absorb some of the increase in the wholesale price between December 1979 and March 1980.⁸ Temporary discounts to retailers in competitive areas were first introduced by Shell at the end of March 1980 and in July 1980 Shell and Esso led with a reduction in scheduled prices. In August Esso introduced a 0.33 pence per litre discount to all retailers which was followed by the other majors. In September an additional temporary discount was offered by Esso, but only to retailers in the competitive areas. A week later Conoco followed. Conoco then increased its temporary discount from 0.4 to 0.7 per litre (Sept. 22). In October Shell introduced its "terminal area price support scheme" – discounts varied between each distribution area from 0.44

⁶ See *Financial Times*, 11 November 1978 (p.3) and 14 November 1978 (p.7).

⁷ Rationing took the form of an allocation to each retailer which was a fixed proportion of his purchases in the same period during the previous year. In June 1978 these allocations ranged from 95% for Shell and BP, to 90% for Esso, down to 75% for Burmah.

⁸ Only a small minority of wholesaler – owned retail outlets are directly operated by the wholesalers. However, in addition to setting retail prices at these sites, the wholesalers can also effectively control retail prices at sites which were let on licence agreements (as opposed to tenancy agreements) to independent operators [9, chap.2].

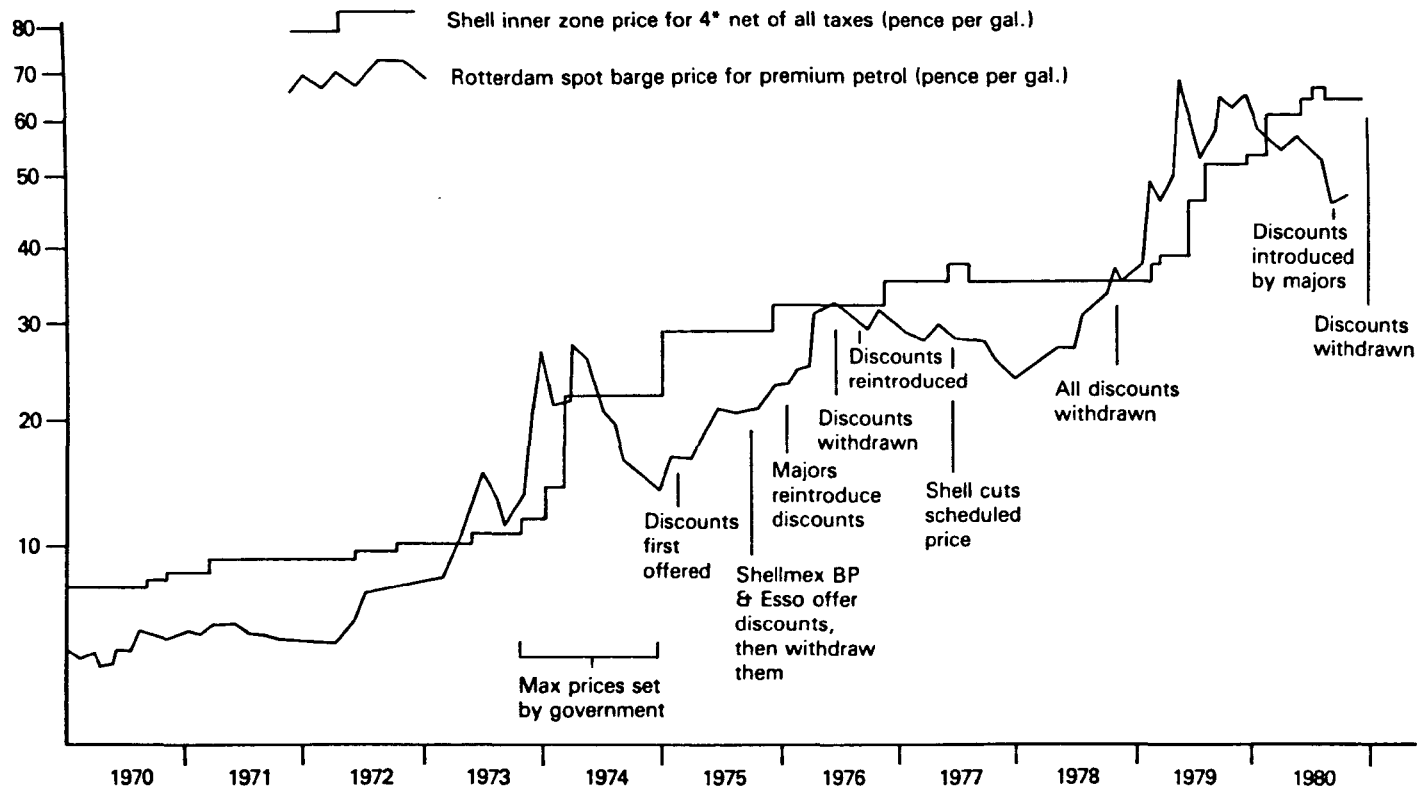


FIGURE 3
Movements in Petrol Prices: UK Scheduled Wholesale Price
and the Rotterdam Spot Price.

to 1.20p per litre, while within each area the same discount was received by all retailers. This renewed bout of price competition proved to be short lived however. Under pressure from poor profitability on downstream activities, the majors were anxious to take advantage of any upward trend in Rotterdam petrol prices. When BP announced on 8 December its withdrawal of temporary discounts, it was quickly followed by the other majors.⁹

While the fall in seller concentration in petrol wholesaling provided the background to this aggressive competition in discounts which characterised most of the latter half of the decade, the strongest force behind the introductions and withdrawals of discounts appears to have been the level of the Rotterdam spot petrol price in relation to the UK scheduled wholesale price. The relationship of the differential between UK and Rotterdam petrol prices to the introductions and withdrawals of temporary discounts is illustrated by Figure 3. Such a relationship fits in well with the earlier predictions that the level of the Rotterdam price in relation to the UK scheduled wholesale price would be a primary determinant of entry by smaller wholesalers, independent price cutting by established small wholesalers, and the incentive for the major wholesalers to undercut the "collusive" industry price.

To test more precisely the relationship between discounting and Rotterdam prices, the average level of wholesale discount in the UK was regressed on the differential between the UK and the Rotterdam price on a four weekly basis over the period 1971 to 1980. The two variables were calculated as follows:

- X_i – Shell scheduled inner zone 4* price per gallon in month i net of all taxes *minus* Rotterdam spot barge price for premium petrol per gallon (converted to Sterling)
- Y_i – average discount in month i was calculated as the Shell scheduled inner zone price for 4-star *minus* the average net wholesale 4-star price for the UK. The average net wholesale price was zone price for 4* *minus* the average net wholesale 4* price for the UK. The average net wholesale price was calculated by subtracting from the average UK retail price (source: Motorist's Diary Panel) estimates of average retail gross margins (sources: *Price Commission*, 1976, *Financial Times*, estimates supplied by retailers and wholesalers).

The data were subject to numerous shortcomings.

- (i) reported Rotterdam prices are sometimes unreliable as a guide to average transaction prices [15, pp.7 and 10]
- (ii) the figures for average retail prices are based on a representative sample of motorists and are subject to sampling error,
- (iii) the estimates for retailers' gross margins were compiled from a number of sources all of which were subject to error,
- (iv) the estimates of average discount (including solus rebate) on scheduled price are understated by the extent to which net wholesale prices are increased by zonal differential and part-load premia.

⁹ See *Financial Times* 9 December 1980, p.8.

Although the estimates of average discounts are subject to several sources of error, an independent check of the figures against the indices for scheduled prices and net wholesale prices for Shell, Esso and BP published by the Price Commission [12] [13], [14] for the period 1977 – 79 confirmed their validity.

The regression yielded the following result:

$$Y_i = 1.083 + 0.1512 X_{i,2} \quad (R^2 = 0.4146) \\ (t = 6.409)$$

Although the coefficient of independent variable is highly significant when lagged two months, less than half of the variability in the level of discount is explained. Two inadequacies of the regression analysis may be partly to blame: the first being errors in variables, the second being the omission of structural variables (such as changes in buyer and seller concentration) which might be expected to influence discounting behaviour over the longer term. The most likely explanation however is the lack of a stable relationship between discounting behaviour and industrial structure. Certainly the pattern of residuals did not suggest that the inclusion of seller concentration or any other single variable in the regression equation would substantially assist the explanation of discounting behaviour.

It has been noted that the influence of Rotterdam prices on competitive behaviour is through three sources: new entry, under-cutting by established small wholesalers, and the cohesiveness of the majors' pricing policies. Over the period the relative importance of the first two factors and the last factor changed. The introduction by the majors of temporary discounts and their expansion in 1975 and 1976 can be seen as the reluctant response of the majors to loss of market share to small wholesalers. However, the growth of discounting during 1977 and early 1978 and the reintroduction of discounts in 1980 seems to reflect the forces of competition between the majors rather than competition from outside. Thus, during 1977 and 1978 the growth in the average level of discounts was principally due to the extension of temporary discounts to areas where cut-price small wholesalers were not a significant force. Similarly the re-emergence of the discount war in 1980 did not appear to be accompanied by any substantial surge in the market share of cheap brands (see Figure 2).

A further factor promoting an unstable relationship between discounting and the Rotterdam price is the cumulative nature of the price competition once oligopolistic price coordination had been lost. The growth of average discounts in the face of rising Rotterdam prices in 1978 demonstrated the self-perpetuating effect of oligopolistic price competition.

V. CONCLUSIONS

The objective of this paper has been to apply an informal "structure-conduct"

approach to the theory of oligopoly pricing to predict and explain pricing behaviour in the UK petrol market during the period 1970-80. While there are a number of features of this industry which are atypical – notably the joint production of petroleum products and the high degree of vertical integration in the industry – the main finding of the paper is that the structural features of the industry and the market which were hypothesised as influencing pricing behaviour go a substantial way in explaining the pricing behaviour observed in the wholesaling of petrol.

Low market and high brand price elasticity of demand, a past history of cooperative arrangements between suppliers, high seller concentration, and the similar costs and technology of the majors combined to produce close parallelism of schedule prices during the early part of the period. During the later part of the period the fall in seller concentration resulted in a breakdown in price parallelism, but still movements in scheduled prices were closely related to changes in costs.

The principal medium for price competition was in discounts and other allowances, as has been observed in other oligopolistic industries. This reflects the flexibility of discounts in meeting market circumstances on a localised basis and the lower risk of retaliatory across-the-board price cuts than would be likely from more obvious reductions in scheduled prices. The behaviour of the majors in offering temporary discounts was found to be related to new entry, to competitive price cutting by small wholesalers and to the margin between scheduled prices and the marginal costs of the majors. All these factors were reflected in the differential between UK scheduled prices and the Rotterdam spot price. A statistical analysis showed the latter differential to be highly significant in determining the level of discounts.

But in spite of the success of the informal theory of oligopoly in predicting and explaining most of the principal features of pricing behaviour over the period, in terms of offering precise predictions as to the level of prices and timing of competitive initiatives the theory was of limited value. Both our approach to oligopoly pricing and our observations of the petrol market suggest that pricing behaviour is influenced by a large number of structural variables (past behaviour in the industry may be regarded as a "structural" variable). Moreover, the possibility of modelling the relationships is reduced by changes over time in the relationships and their relative importances. This instability in the relationship between structural variables and pricing behaviour reflects, first, the instability of collusive price equilibrium in a homogeneous product oligopoly and, secondly, changes in market strategies of the companies. Between 1976 and 1977 Shell and Esso appeared to give up their roles as stabilising forces in the petrol market and adopted more competitive approaches to maintaining and expanding their market shares – price leadership changed from a collusive to a barometric kind. While these changes in market strategy can be related to structural factors – such as falling seller concentration and excess capacity – the resulting complexity of the structure-

conduct relationship makes accurate modelling extremely difficult.

There is a further limitation of the study which must also be recognised. Our theory of competitive behaviour in oligopoly relates both to the *pattern* of pricing behaviour (in terms of independent pricing initiatives by firms) and the *level* of industry prices in relation to the competitive and monopoly levels. The level of price is measured by the excess of price over average cost (including normal profit adjusted for risk) and is normally expressed as a percentage of sales revenue or capital employed. However, our analysis of pricing behaviour in the petrol market has been concerned only with the pattern of pricing behaviour and has been unable to consider the level of prices in relation to the competitive level except in terms of the relationship of scheduled prices to the Rotterdam price. The problem here is that the usual indicator of the level of price over cost, profit, is not available for petrol wholesaling because of the virtual impossibility of allocating joint costs in any economically meaningful way.

Even in view of these deficiencies of the study and the imprecision of the analysis, the results of the study offer some cause for optimism. Despite the complexity of oligopoly pricing behaviour, relatively simple approaches to its analysis based upon straightforward profit objectives are capable of yielding useful predictions and cogent explanations. Moreover, the approach does succeed in reconciling aspects of pricing behaviour which have often been regarded as conflicting: competition, collusion, cost-plus pricing and the influence of demand.

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REFERENCES

- [1] CHAMBERLAIN, E. H., *The Theory of Monopolistic Competition* (Harvard University Press, Cambridge, Mass., 1933).
- [2] COUTTS, K., GODLEY, W. and NORDHAUS, W., *Industrial Pricing in the United Kingdom* (Cambridge University Press, Cambridge, 1978).
- [3] DEPARTMENT OF PRICES AND CONSUMER PROTECTION *Petrol Prices*. (HMSO, London, 1976).
- [4] GRANT, R. M., "The influence of large buyers on price and public policy towards price discrimination" *City University Business School Working Paper* no. 16. 1980.
- [5] HALL, R. L. and HITCH, C. J., "Price theory and business behaviour" *Oxford Economic Papers* 2, (May 1939) pp.12-45.
- [6] LOWE, J. F., "Competition in the UK retail petrol market 1960-73" *Journal of Industrial Economics* 24, (March 1976) pp.203-20.
- [7] MARKHAM, J., "The nature and significance of price leadership" *American Economic Review* 41 (December 1951) pp.891-905.
- [8] MONOPOLIES COMMISSION, *A Report on the Supply of Petrol to Retailers in the United Kingdom*, HC 264 (HMSO, London, 1965).
- [9] MONOPOLIES AND MERGERS COMMISSION, *A Report on the Supply of Petrol in the United Kingdom by Wholesale*. Cmnd. 7433. (HMSO, London, 1979).

- [10] OFFICE OF FAIR TRADING, *Competition in Petrol Retailing. Statement by Gordon Borrie, Director General of Fair Trading*. 1980.
- [11] PRICE COMMISSION, *Motor Fuel Retailers' Margins. Final Report*. (HMSO, London, 1975).
- [12] ——— *Esso Petroleum Company Ltd. Oil and Petroleum Products*. HC 88. (HMSO, London, 1979).
- [13] ——— *BP Oil Ltd - Oil and Petroleum Products*. HC 87 (HMSO, London, 1979).
- [14] ——— *Shell UK Oil - Oil and Petroleum Products*. HC 178. (HMSO, London, 1979).
- [15] ROEBER, J., "The Rotterdam oil market" *Petroleum Economist* (April 1979) pp.2 - 15.
- [16] SCHERER, F. M., *Industrial Market Structure and Economic Performance* 2nd edition (Rand McNally, Chicago, 1980).
- [17] SHAW, R. W., "Price leadership and the effect of new entry on the UK retail petrol supply market" *Journal of Industrial Economics* 22 (September 1974) pp.87-101.
- [18] STIGLER, G., "A theory of oligopoly." *Journal of Political Economy* 72, (February 1964) pp.44-61.
- [19] SWANN, D., O'BRIEN, D. P., MAUNDER, W. P. J., and HOWE, W. S., *Competition in British Industry: Case Studies of the Effects of Restrictive Practices Legislation*. (Loughborough University of Technology, 1973).
- [20] SYLOS-LABINI, P., *Oligopoly and Technical Progress* (Harvard University Press, Cambridge, Mass. 1962).

DISCRIMINAZIONE DEL PREZZO
AL DETTAGLIO E POLITICA COMMERCIALE

di Robert M. Grant*

1. Legislazione sulla concorrenza e discriminazione del prezzo

La discriminazione del prezzo è stata tradizionalmente considerata, tanto dagli economisti quanto dalla legislazione sulla concorrenza, come un aspetto del comportamento monopolistico. L'analisi economica del monopolio discriminato dimostra come la discriminazione del prezzo aumenterà i profitti del monopolista al di sopra di quello che potrebbe essere guadagnato con una politica di prezzo uniforme; l'effetto della discriminazione del prezzo sul prodotto del monopolista è invece ambiguo (1). In base alle leggi sulla concorrenza vigenti nella maggior parte dei paesi europei, i singoli casi di discriminazione del prezzo che comportano l'utilizzazione o l'estensione del potere di mercato da parte di una impresa dominante possono essere affrontati con riferimento alla legislazione anti-monopolistica. Il Fair Trading Act del Regno Unito, la legge del 1957 contro le restrizioni della concorrenza della Repubblica Federale Tedesca e l'articolo 86 del Trattato di Roma consentono alle autorità competenti di proibire la discriminazione del prezzo quando venga praticata da una impresa dominante il mercato (2).

E' stata di recente riscontrata una crescita di interesse verso la discriminazione del prezzo che non è apparentemente legata allo sfruttamento monopolistico, ma è il risultato della capacità dei grandi acquirenti di negoziare con i propri fornitori prezzi più favorevoli di quanto non

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1. Per una discussione sugli effetti sul benessere della discriminazione monopolistica del prezzo si veda M. Howe, *Policies towards Market Power and Price Discrimination* in George e Joll (1975).

2. Un caso interessante di applicazione dell'articolo 86 riguardo alla discriminazione del prezzo è il caso United Brands (Common Market Law Report, 1978).

Commercio, n. 3, 1979.

possano fare quelli piccoli. L'attenzione generale si è concentrata sulla capacità dei grandi dettaglianti e distributori di ottenere prezzi favorevoli; questi sconti e riduzioni sono stati considerati, per lo meno dai piccoli dettaglianti, come elemento che avrebbe condotto ad una concorrenza sleale nel settore al dettaglio. In molti paesi europei è stata introdotta una legislazione volta ad abolire le differenze di prezzo non derivanti da differenze nei costi di rifornimento, o comunque quelle che producano effetti negativi sulla concorrenza. In Irlanda sono state create norme specifiche in seno al Restrictive Practices Act per impedire la discriminazione del prezzo nel settore dei generi di drogheria (1973), della benzina (1961, 1972 e 1975), e di certi altri prodotti. In Francia la "Loi Royer" del 1973 ha introdotto severe penalità contro la discriminazione del prezzo. In Australia la Legge Federale dal 29 giugno 1977 ha completato la Legge sui Cartelli per consentire al Tribunale competente di proibire l'offerta di condizioni differenziali ai dettaglianti in assenza di una giustificazione rilevante. Tutti questi provvedimenti presentano delle strette somiglianze con il Robinson - Patman Act approvato nel 1935 negli Stati Uniti.

Sia in Europa che nell'America del Nord, la legislazione volta a proibire una discriminazione del prezzo sleale e contraria ad un corretto comportamento concorrenziale ha fatto seguito a periodi di rapido mutamento strutturale nel commercio al dettaglio, che avevano comportato aumenti nella concentrazione dei venditori e la sostituzione dei piccoli punti di vendita con unità molto più grandi. Gli anni trenta hanno visto l'introduzione dei supermercati nell'America del Nord e la rapida espansione delle catene di negozi, sviluppi che si sarebbero verificati in Europa durante gli anni cinquanta e sessanta, e che continuano ancor oggi. In entrambi i continenti la legislazione è stata sostenuta con decisione dai piccoli dettaglianti e, parebbe, i provvedimenti adottati si sono occupati più della protezione degli interessi di questa categoria che del perseguimento di una più attiva concorrenza o di migliori performance.

Secondo l'opinione della maggior parte degli osservatori competenti, l'aver proibito la discriminazione del prezzo nell'America del Nord ha avuto effetti restrittivi sulla concorrenza piuttosto che favorirla. Nella sua analisi del funzionamento del Robinson-Patman Act, il Ministero della Giustizia degli Stati Uniti è giunto alla conclusione che tale Legge "incoraggia i prezzi alti, aumenta le difficoltà di entrata nel mercato e l'inefficienza nella distribuzione delle merci; essa ha favorito l'adozione di politiche illegali di prezzo fra produttori concorrenti" (Ministero della Giustizia degli Stati Uniti, 1977, p. 260).

Poiché la legislazione volta a proibire la discriminazione del prezzo è stata motivata in primo luogo da fattori politici, una precisa analisi delle cause, delle circostanze di applicazione e degli effetti della discriminazione del prezzo a favore degli acquirenti dotati di potere contrattuale è stata in gran misura assente dal dibattito politico.

Questo articolo analizza brevemente le cause dei prezzi preferenziali a favore dei grandi acquirenti, e procede esaminando le implicazioni sul benessere di questo tipo di discriminazione del prezzo. Sotto questo aspetto, vengono tratte alcune conclusioni sulla desiderabilità di una legislazione che vieti la discriminazione del prezzo.

2. Analisi economica dell'influenza degli acquirenti sul prezzo

L'analisi della struttura e del comportamento degli acquirenti ha ricevuto poca attenzione nella letteratura economica. La struttura degli acquirenti viene generalmente ipotizzata dai mercati come perfettamente concorrenziale, una supposizione che è ragionevole soltanto nel caso in cui un'impresa venda direttamente alle famiglie. I tentativi di elaborare considerazioni circa la struttura degli acquirenti sono stati condotti in termini di modelli di semplice monopsonio o di oligopsonio, equivalenti ai modelli elementari di monopolio e di oligopolio. Il monopsonista puro userà il proprio potere sul prezzo di mercato per acquistare una quantità più piccola ad un prezzo più basso di quello praticato in presenza di un settore acquirente perfettamente concorrenziale.

Solo di recente è stata prestata attenzione alla influenza degli acquirenti concentrati sul prezzo. Indagini condotte da Brooks (1974) e da Lustgarten (1975) (3) mostrano che l'inclusione degli indici di concentrazione degli acquirenti nelle equazioni di regressione che mettono in relazione la profittabilità del settore con la struttura del mercato migliora il valore esplicativo delle equazioni, e che la concentrazione degli acquirenti ha di per se stessa un effetto negativo sulla profittabilità del settore venditore. Le spiegazioni di questa capacità degli acquirenti di abbassare il prezzo di una merce al di sotto di quello pagato in presenza di un settore d'acquisto concorrenziale, si basano sulla supposizione che gli acquirenti concentrati, così come i venditori concentrati, coordinano il proprio comportamento d'acquisto allo scopo di esercitare un

3. I risultati di Lustgarten sono stati contraddetti da quelli di Guth *et al.* (1976), che ha solo una misura diversa degli acquirenti ed un numero molto più piccolo di osservazioni.

potere monopsonistico sul prezzo. "L'oligopsonio, analogamente all'oligopolio, renderebbe gli acquirenti consapevoli dell'impatto potenziale delle proprie offerte d'acquisto sulle offerte degli altri acquirenti. Ci si potrebbe aspettare che questa interdipendenza produca collusione fra gli acquirenti" (Lustgarten 1975, p. 126).

La tesi dell'"oligopsonio collusivo" non è però plausibile per due motivi:

- a. dal momento che i prezzi relativi alla maggior parte dei prodotti industriali vengono stabiliti dai venditori, la capacità degli acquirenti di riconoscere la propria interdipendenza è limitata (4) e soltanto nei mercati in cui gli acquirenti sono impegnati in offerte in concorrenza, la loro interdipendenza sarà riconoscibile e la loro coordinazione sarà fattibile (5);
- b. nella maggior parte dei mercati il livello di concentrazione degli acquirenti è basso, inferiore al corrispondente livello di concentrazione dei venditori; la concentrazione degli acquirenti è esigua in quasi tutte le branche del commercio al dettaglio nei paesi europei (6). Inoltre, la tesi dell'oligopsonio collusivo afferma che il potere dell'acquirente avrà come conseguenza per il prodotto, un prezzo di mercato più basso ma il fattore principale che distingue l'influenza degli acquirenti sul prezzo è che le concessioni di prezzo vengono ottenute dai singoli acquirenti.

E' perciò necessario, per esaminare le differenze di prezzo fra gli acquirenti, analizzare l'influenza del singolo acquirente sul prezzo dei propri acquisti e il comportamento dei fornitori nella politica di prezzo verso i singoli clienti. "Il potere dell'acquirente" – la capacità dei

4. Baner e Yamey (1952) hanno dimostrato che i prezzi di mercato delle noci in Nigeria superavano raramente il prezzo minimo ufficiale dei produttori nelle zone in cui operavano soltanto due società d'acquisto, mentre in quelle zone dove la quantità degli acquirenti era più grande, i premi al di sopra del prezzo minimo erano comuni. Un'indagine di Mead (1966) sui prezzi d'asta per l'abete Douglas ha dimostrato, che il rapporto tra prezzi d'asta e prezzi dei produttori è direttamente proporzionale alla quantità degli acquirenti. Le indagini di Mac Avoy (1962) e di Mead (1967) sui prezzi delle concessioni per lo sfruttamento del petrolio e del gas naturale, hanno dimostrato che i prezzi diminuiscono in modo significativo quando la quantità dei partecipanti ad un'asta diventa molto piccolo.

5. Una indagine di Atkin e Skinner (1975) sui metodi di determinazione del prezzo usati da 220 società nel Regno Unito, ha dimostrato che il 55 per cento operava con listini prezzi pubblicati, il 47 per cento aveva listini prezzi interni, il 53 per cento negoziava i prezzi individualmente con i clienti; e il 43 per cento stabiliva i prezzi con offerte formali.

6. Per 53 settori negli Stati Uniti Guth *et al* (1977) hanno dimostrato che soltanto in 6 la concentrazione degli acquirenti ha superato la concentrazione dei venditori.

grandi acquirenti di ottenere concessioni di prezzo dai fornitori — non si basa quindi sul convenzionale potere di mercato, ma sul potere di contrattazione verso i singoli venditori.

Si sostiene frequentemente che la fonte del maggior potere contrattuale degli acquirenti di grandi dimensioni vada ricercata nei costi che essi possono risparmiare ad un fornitore ritirando una parte sostanziale del suo giro d'affari. Così, se il fornitore opera al livello ottimale della capacità produttiva o ad un livello inferiore, la minaccia di perdere un grande volume di vendita può essere sufficiente ad indurlo a negoziare un prezzo che copra i costi marginali ma non i costi medi. Questa analisi, però, non spiega ma assume soltanto la discriminazione da parte del fornitore fra acquirenti grandi e piccoli. Per un fornitore minacciato da perdite di clientela e di fronte ad eccesso di capacità, potrebbe essere vantaggioso offrire ad ogni cliente, grande o piccolo, un prezzo che copra i costi marginali. Il problema rilevante è per quale ragione i fornitori siano disposti a trattare come clienti marginali i grandi acquirenti, ma non quelli piccoli.

E' comunque possibile fare a meno della nozione di potere d'acquisto, e spiegare la discriminazione del prezzo fra acquirenti grandi e piccoli in termini di comportamento dei venditori nel determinare il prezzo. La discriminazione del prezzo richiede che i venditori posseggano una qualche misura di potere di mercato — allo stesso tempo gli acquirenti di grandi dimensioni possono ottenere delle concessioni di prezzo anche se non possiedono potere di mercato — perciò la discriminazione del prezzo fra gli acquirenti può essere considerata come un aspetto di comportamento oligopolistico. Si suggerisce in questa sede che i prezzi differenziali fra gli acquirenti di grandi e piccole dimensioni riflettano due fattori: primo, le differenze nel livello delle barriere all'entrata nel rifornimento dei grandi e piccoli acquirenti; secondo, la maggior difficoltà di mantenere una coordinazione oligopolistica di prezzo in presenza dei grandi acquirenti.

3. Il livello delle barriere all'entrata nel rifornimento degli acquirenti di grandi e piccole dimensioni

Si suppone che gli oligopolisti industriali si comportino tipicamente in modo collusivo e che mirino ad un 'Limit Pricing' facendo pagare il prezzo più alto che consenta loro di escludere i nuovi concorrenti dal mercato. Se le barriere all'entrata nel settore variano in altezza secondo le dimensioni del cliente che l'impresa che tenta di entrare rifornisce,

allora la politica del Limit Pricing implica che le imprese affermate discriminino fra le diverse dimensioni dei clienti. E' possibile sostenere numerose argomentazioni per spiegare come mai le barriere all'entrata saranno più basse per le imprese che tentano di entrare cercando di rifornire acquirenti grandi, piuttosto che per quelle che cercano di rifornire acquirenti piccoli.

3.1. Minori costi unitari di vendita e distribuzione nel rifornimento dei clienti di grandi dimensioni

I costi di marketing e di distribuzione diminuiscono rapidamente con l'aumento delle vendite ad un singolo cliente quando i livelli di vendita sono alti, mentre il decremento è più moderato per bassi livelli di vendita. Così le imprese che entrano nel mercato, che possono inizialmente aspettarsi soltanto una piccola quota degli acquisti di ogni cliente, si troveranno di fronte ad un svantaggio di costo maggiore nei confronti dei produttori affermati nel rifornimento dei piccoli acquirenti piuttosto che di quelli grandi. Il risultato è che i produttori affermati possono guadagnare un più alto margine sulle vendite ai piccoli acquirenti che non a quelli di grandi dimensioni.

3.2. Una maggiore elasticità della domanda da parte dei grandi acquirenti piuttosto che di quelli piccoli

La tendenza per cui differenze nei costi di vendita e di distribuzione portano ad un più alto Limit Price nel rifornimento dei piccoli acquirenti rispetto a quelli grandi, sarà accentuata qualora la domanda proveniente dagli acquirenti più piccoli sia meno elastica di quella dei grandi acquirenti. Nel commercio al dettaglio, per esempio, la sopravvivenza dei piccoli dettaglianti è stata dovuta in parte alla loro capacità di differenziare i propri servizi — per es. per mezzo di orari d'apertura flessibili, dello stoccaggio di beni particolari, della disponibilità a rifornire in loco piccole comunità. A causa di questa differenziazione e della tendenza a servirsi dei piccoli dettaglianti per acquisti di basso valore, l'elasticità della domanda relativa al piccolo dettagliante è probabilmente più bassa di quella relativa al dettagliante di grandi dimensioni. Di conseguenza, la domanda dei piccoli dettaglianti nei confronti del produttore sarà meno elastica di quella dei grandi dettaglianti.

3.3. *La capacità delle grandi imprese operanti nel settore distributivo di gestire il marketing dei beni di consumo*

Nei settori dei beni di consumo una più importante barriera all'entrata è data dalla condizione di svantaggio in cui si trova una marca sconosciuta in mercati dominati da prodotti differenziati già affermati. Per favorire il successo del proprio prodotto sul mercato, il nuovo venuto deve o spendere fondi sproporzionatamente elevati in pubblicità o promozione, oppure offrire il proprio prodotto ad un prezzo scontato in modo sostanziale. E' comunque possibile, per il grande distributore all'ingrosso o al dettaglio, abbattere le barriere all'entrata derivanti dalla differenziazione del prodotto attuata dai produttori affermati offrendo i prodotti dei nuovi entrati sotto il proprio marchio commerciale. L'aumento della concentrazione in molte branche del commercio al dettaglio che ha incoraggiato l'introduzione di marche private dei dettaglianti, ha comportato un trasferimento della funzione di marketing dal produttore al distributore, e ha colpito proprio al cuore il potere di mercato dei fornitori oligopolistici di beni di consumo di marca.

3.4. *L'incoraggiamento all'entrata proveniente dagli acquirenti di grandi dimensioni*

Anche se le imprese che entrano non risentono di alcuno svantaggio di maggior costo nel competere con i produttori affermati, un'impresa che cerchi di entrare in un mercato e guadagnare quota di mercato a spese dei concorrenti deve considerare il proprio investimento come un'avventura rischiosa. Questo è particolarmente vero nei settori oligopolistici dove le reazioni concorrenziali delle imprese affermate verso un nuovo fornitore sono incerte. Gli acquirenti di grandi dimensioni possono esercitare un ruolo importante nella riduzione del rischio assicurando alla potenziale impresa che entra un certo livello di attività. Esempio rilevante è stato l'incoraggiamento dato dalla Pet-Foods Ltd. alla Reads Ltd. affinché entrasse nel mercato delle lattine metalliche open-top del Regno Unito in concorrenza con la Metal Box (Monopolies Commission, 1970, pp. 88-141).

3.5. Le opportunità di integrazione a monte che si offrono agli acquirenti di grandi dimensioni

Le barriere all'entrata sono inefficaci nel proteggere le vendite dagli acquirenti di grandi dimensioni a causa della capacità di questi ultimi di integrarsi a monte nel settore di rifornimento. Il mercato delle lattine metalliche fornisce un esempio interessante. Le favorevoli condizioni offerte dalla Metal Box ai propri principali clienti del Regno Unito ne riflettevano la capacità di produrre gli input loro necessari (Monopolies Commission, 1970, prg. 247 e 248). La propensione dei grandi trasformatori di generi alimentari ad integrarsi a monte nella produzione delle lattine è stata dimostrata negli Stati Uniti tra il 1950 e 1960, quando molti trasformatori di alimentari cominciarono a produrre lattine in proprio in risposta alla cessazione delle condizioni d'acquisto loro favorevoli che sembravano violare il Robinson-Patman Act (Adams, 1967, p. 314). La capacità dei produttori di veicoli di esercitare un forte potere contrattuale verso i fornitori di componenti monopolistici ed oligopolistici, si basa fondamentalmente sulla provata possibilità per i produttori dei veicoli di fabbricare da sé i componenti loro necessari; il potere di mercato dei fornitori di componenti viene così in effetti esercitato solamente nel commercio dei pezzi di ricambio. Il risultato è un differenziale notevole tra i prezzi che vengono fatti pagare ai produttori dei veicoli e il prezzo all'ingrosso standard addebitato alle autofficine ed ai distributori di componenti (7).

7. Esempi di differenziale di prezzo per alcuni componenti per veicoli.

	<i>Prezzo al dettaglio</i>	<i>Prezzo all'ingrosso</i>	<i>Prezzo per i pro- duttori del veicolo</i>
Candele champion	25p	14-18p	meno di 2 1/2p 160p (equipag- giamento iniziale)
Frizione da 6"	605p	approx. 450p	320p (sostituzione)

Fonte: Monopolies Commission, 1963, Monopolies Commission, 1968.

Comunque deve essere notato che un altro motivo di differenziali di prezzo è l'importante complementarità tra il mercato degli equipaggiamenti iniziali ed il mercato di pezzi di ricambio; così un prezzo può essere diverso anche per lo stesso acquirente a seconda che si tratti del componente l'equipaggiamento iniziale o di un ricambio.

4. La difficoltà di mantenere prezzi collusivi di fronte ad acquirenti di grandi dimensioni

La tendenza dei settori oligopolistici ad accordare prezzi preferenziali ai grandi acquirenti risulterà non soltanto dal comportamento del settore volto a massimizzare il profitto, ma anche dalle difficoltà di coordinare i prezzi nei confronti degli acquirenti di grandi dimensioni, e quindi di mantenere i prezzi sopra i loro livelli concorrenziali (8).

La difficoltà di ottenere una coordinazione di prezzo oligopolistica di fronte a grandi acquirenti deriva principalmente dall'eterogeneità delle transazioni con simili operatori. Nel caso in cui il prodotto di un settore sia sostanzialmente uniforme e i metodi di marketing e di distribuzione siano uguali, allora i costi di rifornire diversi clienti saranno simili, ed un unico prezzo di listino, pur con aggiustamenti riguardo alla localizzazione del cliente ed alla dimensione della sua ordinazione, potrà essere offerto a tutti i clienti. Una tale semplicità nel determinare il prezzo facilita di molto il parallelismo di prezzo fra gli oligopolisti. Le transazioni tenderanno ad essere omogenee tra piccoli acquirenti, poiché il modesto volume degli acquisti di ogni compratore rende costose le singole variazioni nel prodotto, nell'imballaggio o nel metodo di consegna. I grandi produttori d'altra parte possono aver bisogno di componenti di misura non standard e molte catene di dettaglianti possono richiedere ai propri fornitori accordi speciali circa il trasporto della merce e le consegne (vedi Blois, 1972).

Questa maggiore eterogeneità delle transazioni con i grandi acquirenti significa che le variazioni nei costi e di conseguenza nei prezzi offerti ai grandi acquirenti tendono ad essere negoziate individualmente. Il parallelismo del prezzo, o in verità qualsiasi forma di coordinamento del prezzo tra i fornitori oligopolistici, è estremamente difficile quando i prezzi vengono negoziati individualmente con i clienti, poiché un coordinamento efficace richiede che i singoli fornitori conducano le proprie trattative contemporaneamente e che essi siano in comunicazione fra di loro per assicurare la coerenza delle condizioni.

8. La teoria di Stigler sull'oligopolio (1962) si occupa di questo problema, e dimostra, che gli oligopolisti collusivi offrivano sconti di prezzi segreti fino al limite dove i loro guadagni nella quota di mercato rendano la loro politica di sconto evidente agli altri fornitori. L'analisi di Stigler afferma che gli sconti di prezzo segreti saranno offerti agli acquirenti grandi piuttosto che ai piccoli. Comunque la teoria è applicabile esclusivamente nei confronti di quelli oligopolisti legati da un accordo di determinazione del prezzo che comporti un'azione disciplinare da parte del settore se vengono scoperti scartellamenti di singole imprese.

5. Le differenze di costi fra i fornitori

Il mantenimento di qualsiasi parallelismo di prezzo fra oligopolisti richiede in qualche misura un accordo circa il livello di prezzo ottimale per il settore. Un accordo richiede somiglianza nelle condizioni di costo tra i fornitori. Comunque, anche se i diversi fornitori hanno dei costi simili, è probabile che le singole imprese, quando negoziano condizioni speciali con i clienti di grandi dimensioni, percepiscano in modo piuttosto diverso i costi comportati dal rifornire i singoli clienti, che dipendono dalle convenzioni seguite dalle imprese nell'imputazione dei costi generali, e dalle loro stime circa le relazioni costo-valore. Così, mentre i fornitori sono in grado di accordarsi sul prezzo standard dei propri prodotti in base a qualche forma di cost-plus-pricing, un tale accordo è meno probabile nelle singole determinazioni del prezzo per gli acquirenti di grandi dimensioni.

La tendenza al divampare della concorrenza fra i fornitori che tentano di commerciare con grandi clienti, sarà incoraggiata dal comportamento degli acquirenti che cercano di ottenere delle quotazioni di prezzo dai fornitori e che si mantengono informati per quanto riguarda le condizioni di costo ed i fattori concorrenziali dei singoli fornitori. Una tale informazione ha un costo fisso, e la sua acquisizione può essere non economica per i piccoli acquirenti. Questa abilità di trovare affari è stata una importante spiegazione della capacità di "A and P" di approvvigionarsi a costi più bassi di quanto non facessero i suoi concorrenti, e ha costituito uno dei maggiori risparmi di costo nel suo passaggio dall'acquisto decentrato all'acquisto centralizzato (Adelman, 1953, p. 440). E' chiaro che questa capacità del grande acquirente di scovare gli affari ed avvantaggiarsi di ogni occasione di bassi prezzi che si presenta sul mercato, non ha niente a che fare con il potere d'acquisto, ma soltanto con la capacità di sfruttare delle imperfezioni del mercato.

6. La misura degli sconti concessi agli acquirenti di grandi dimensioni

Il livello degli sconti, delle riduzioni e delle altre concessioni di prezzo eccedenti i risparmi nei costi di rifornimento viene probabilmente influenzato *inter alia* da:

a. il livello di concentrazione del settore fornitore

La capacità dei grandi acquirenti di ottenere un prezzo preferenziale dipende dal fatto che prezzi praticati verso i piccoli acquirenti siano al di sopra del livello concorrenziale, così che sia disponibile un qualche margine per la trattativa. La possibilità che si verifichi un notevole differenziale di prezzo fra acquirenti grandi e piccoli tenderà ad aumentare quando il prezzo del prodotto cresce al di sopra il suo livello concorrenziale in seguito ad un aumento della concentrazione. Nello stesso tempo, l'aumento della concentrazione tenderà ad accrescere la capacità di collusione dei fornitori oligopolistici, non soltanto nei confronti di piccoli acquirenti ma, ad alti livelli di concentrazione, anche nei confronti di quelli grandi. Potremmo quindi supporre che il differenziale di prezzo tra acquirenti grandi e piccoli varii in modo inversamente proporzionale alla concentrazione dei venditori. A bassi livelli di concentrazione, gli acquirenti di grandi dimensioni non sono in grado di ottenere alcun vantaggio in quanto i prezzi sono comunque ai loro livelli concorrenziali (così catene di negozi non godono di grandi vantaggi nei confronti dei negozi indipendenti nell'acquisto di prodotti freschi, forniti in condizioni concorrenziali come la frutta, la verdura e la carne). I livelli di concentrazione molto alti, i differenziali di prezzo, si riducono di nuovo a causa della collusione oligopolistica e del potere monopolistico, che diventano efficaci nei confronti di tutti gli acquirenti. Nel Regno Unito e negli Stati Uniti, gli sconti concessi ai dettaglianti di grandi dimensioni sono particolarmente alti nei settori oligopolistici della trasformazione alimentare: il latte, il gelato ed i prodotti per la cucina negli Stati Uniti (cfr. Ftc 1966) ed il pane, gli alimentari surgelati ed il gelato nel Regno Unito (Monopolies Commission 1976 a, 1976). Comunque in alcuni settori particolarmente concentrati del Regno Unito quali la fabbricazione di intonaci e di mattoni (100 per cento monopoli) e di alimenti per animali, detersivi per la casa e colazioni a base di cereali (duopoli altamente differenziati), non esistevano concessioni di prezzo ai grandi clienti (Monopolies Commission 1968, 1970, 1977).

b. l'eccesso di capacità nel settore fornitore

La tendenza verso una guerra concorrenziale fra oligopolisti che tentano a clienti di grandi dimensioni sarà influenzata dal grado di eccesso di capacità nel settore. Qualora i costi variabili siano al di sotto dei

costi medi totali — e la differenza può essere considerevole nei settori con alti costi fissi —. I fornitori possono essere ancora disposti ad ottenere lavoro addizionale o a mantenere i grandi clienti esistenti anche a prezzi che coprono soltanto i costi variabili di fornitura. Nell'industria britannica del pane, l'uscita dal mercato di Spillers nel 1978, che ebbe l'effetto di ridurre l'eccesso di capacità come pure il numero dei maggiori fornitori da 3 a 2, è stata seguita da una significativa riduzione degli sconti ai grandi supermercati.

7. Le conseguenze di welfare della discriminazione del prezzo fra gli acquirenti

L'analisi ora condotta permette di affermare che la discriminazione del prezzo sarà una caratteristica generale qualora un settore oligopolistico rifornisca un altro settore composto di imprese di dimensioni eterogenee, a prescindere dal fatto che le imprese acquirenti possiedano o meno potere monopsonistico. Nei settori produttori di beni di consumo, questa discriminazione si verifica nella maggior parte dei casi attraverso l'imposizione di prezzi di listino da parte dei fornitori parallela all'offerta di sconti e riduzioni agli acquirenti di grandi dimensioni, sconti indipendenti o eccedenti i risparmi di costo derivanti dal rifornire questi acquirenti. Le condizioni favorevoli agli acquirenti di grandi dimensioni assumono anche la forma di sconti per la pubblicità, estensioni del credito, fornitura di servizi speciali (come il merchandising) e di qualche altro beneficio non collegato direttamente al prezzo.

Per esaminare le implicazioni di welfare di questo tipo di discriminazione del prezzo tra acquirenti di dimensioni diverse, confrontiamo una situazione oligopolistica in cui la discriminazione del prezzo è permessa ma nella quale i cartelli di fissazione del prezzo sono illegali, con una situazione in cui la discriminazione del prezzo è illegale (es. in base ad una legislazione tipo Robinson-Patman). Le variabili maggiormente rilevanti sono probabilmente due:

- a. l'effetto della discriminazione sul livello di prezzo del settore fornitore e, in definitiva, sul livello di prezzo per il consumatore finale. Qualora la discriminazione del prezzo tra acquirenti di dimensioni diverse faccia aumentare il livello medio del prezzo al di sopra di quanto si verificherebbe in presenza di una politica di prezzo uniforme, allora si avrà una perdita di benessere derivante da una allocazione sub-ottimale delle risorse al settore.

- b. l'effetto della discriminazione del prezzo consistente nell'alterare la concorrenza nel settore acquirente con il risultato che le imprese che operano in esso, saranno spinte a crescere oltre la dimensione efficiente, e che la concentrazione verrà aumentata.

Se i settori oligopolistici fornitori adottano delle strategie di limit pricing, allora il livello medio dei prezzi desiderato dai fornitori in regime di discriminazione di prezzo sarà al di sopra del livello medio derivante da una politica di prezzo uniforme. Qualora i fornitori oligopolisti desiderino impedire l'entrata saranno tuttavia costretti a far pagare un prezzo unico a tutti gli acquirenti, e allora il livello del prezzo sarà determinato dalle più basse barriere all'entrata in qualsiasi sub-settore del mercato. Se le barriere all'entrata sono inferiori per le forniture di grandi dimensioni, allora impedendo la discriminazione i prezzi praticati ai piccoli acquirenti saranno ridotti fino a raggiungere quelli pagati dagli acquirenti di grandi dimensioni.

Questo ragionamento trascura però il secondo fattore che contribuisce a determinare la discriminazione del prezzo a favore dei grandi acquirenti: il venir meno della collusione oligopolistica quando ci si trovi di fronte a grandi acquirenti. Questo fattore spinge nella direzione opposta: se la discriminazione del prezzo viene impedita, allora gli oligopolisti saranno di molto aiutati nel coordinare i propri prezzi al fine di evitare la concorrenza.

L'effetto netto risultante da queste forze opposte costituisce un argomento da indagare empiricamente. Non sono ancora state condotte rigorose ricerche empiriche circa gli effetti d'una legislazione anti-discriminazione sul comportamento dei prezzi. Si nota comunque, fra coloro che seguono il problema con attenzione, una virtuale unanimità di opinioni, basata sull'osservazione e sull'analisi a priori, sul fatto che l'effetto di proibire la discriminazione del prezzo consiste nell'aumentare il livello medio dei prezzi di vendita nei settori oligopolistici. Negli Stati Uniti l'influenza del Robinson-Patman Act nello scoraggiare la concorrenza di prezzo nei settori oligopolistici è stata particolarmente evidente. Corwin Edwards (1959, pp. 630-1), nella sua indagine sugli effetti del Robinson Patman Act è giunto alle seguenti conclusioni:

“E' probabile che nei settori oligopolistici l'aver vietato concessioni discriminatorie abbia ridotto il principale tipo di concorrenza di prezzo che ancora esisteva in condizioni di produzione e di vendita concentrata. E' probabile che in un settore che ha raggiunto una intesa mediante accordo diretto ... l'eliminazione degli sconti di prezzo non-sistematici abbia rimosso la principale debolezza dell'intesa”.

Questa opinione è stata ribadita dal Ministero della Giustizia degli Stati Uniti nella sua relazione sul Robinson Patman Act (US Department of Justice, 1977).

Nella sua analisi dell'Australian Trade Disputes Act (1974), il comitato nominato dal governo ha concluso che l'effetto principale della proibizione della discriminazione del prezzo non concorrenziale è stato un aumento generale nei prezzi medi (Trade Practices Act Review Committee, 1976). Questa conclusione è stata sostenuta in un'indagine empirica che ha scoperto come molte imprese industriali abbiano fatto uso delle clausole contro la discriminazione del prezzo contenute nel decreto per eliminare o per ridurre i loro livelli di sconto in modo di elevare i prezzi medi verso i prezzi di listino (Norman, 1976).

Le pressioni responsabili dell'attivazione della concorrenza di prezzo tra fornitori oligopolistici che cercano di instaurare rapporti d'affari con acquirenti di grandi dimensioni possono riversarsi in altri settori del mercato, e causare una diminuzione generale dei prezzi. Il processo è stato spiegato da un testimone del Domestic Council Review Group on Regulation Reform americano (cfr. Ministero di Giustizia degli Stati Uniti, 1977, p. 157):

“Quando un venditore desideroso di concludere affari decide di fare una concessione di prezzo, a chi la accorderà? Quasi inevitabilmente ad un cliente che ritiri ingenti quantitativi. Questa operazione garantisce un'elevata convenienza economica e quindi è probabile che il primo beneficiario di una rottura dei prezzi praticati in precedenza nel settore sia l'acquirente di grandi dimensioni. Supponiamo che il venditore n. 1 si sia assicurato un ottimo cliente ciò significa che qualcuno ha perso un buon cliente, ed in questo senso ora dispone di capacità in eccesso e deve cercarsi un altro acquirente. Vengono così moltiplicate le pressioni per un'altra concessione di prezzo.

Infatti, nella misura in cui percepisce di aver perso questo buon cliente, il secondo venditore è motivato, per ragioni varie a rispondere allo stesso modo, e forse ad insediare un cliente di grandi dimensioni del primo venditore. Ed il processo viene tipicamente generalizzato fino a quando questi prezzi off-list si diffondono nella maggior parte delle categorie al dettaglio. E' possibile che da ultimo il settore razionalizzi il processo di determinazione del prezzo con la creazione di nuovi prezzi di listino che riflettano il livello dei prezzi divenuto più basso e più vicino al costo reale”.

La tendenza verso la concessione di sconti a clienti selezionati al fine di espandersi all'interno di una situazione generale di concorrenza di prezzo è stata dimostrata dalla concorrenza di prezzo attuata nel

mercato britannico della benzina tra il 1975 e il 1977. Le notevoli riduzioni concesse ai dettaglianti di grandi dimensioni (come Asda) e l'introduzione di sconti selettivi per dettaglianti particolari in determinate zone da parte delle maggiori compagnie petrolifere hanno condotto ad una concorrenza di prezzo a livello generale, culminato nel ribasso di prezzo del listino all'ingrosso della Shell nel luglio 1977 (Monopolies Commission 1979). Comunque è il prezzo finale del prodotto al consumatore e non il prezzo nei mercati intermedi quello rilevante per il benessere economico. Assumendo che la misura degli sconti e delle concessioni di prezzo agli acquirenti di grandi dimensioni sia sufficiente per ridurre il prezzo medio pagato ai fornitori al di sotto di quello che deriverebbe da una politica di prezzo uniforme, ne deriverebbe forse un prezzo di vendita al consumatore più basso? Se il settore al dettaglio è concorrenziale e se, in particolare, c'è concorrenza tra i dettaglianti che si procurano i prezzi i più favorevoli, allora gli sconti e le concessioni di prezzo agli acquirenti di grandi dimensioni saranno trasmessi ai consumatori, e questi minori prezzi al dettaglio fisseranno anche i prezzi di vendita per i piccoli dettaglianti. Se, d'altra parte, il settore al dettaglio non è concorrenziale, allora i prezzi più bassi pagati dai grandi dettaglianti non devono essere trasmessi in avanti e, nel caso di una politica di prezzo collusiva fra i dettaglianti, i prezzi al dettaglio verranno probabilmente fissati come un margine di ricarico sui prezzi d'acquisto più alti.

La struttura del commercio al dettaglio di molti beni viene generalmente considerata concorrenziale: la concentrazione dei venditori e le barriere all'entrata sono normalmente basse in confronto ai settori industriali (benché nei mercati locali la concentrazione dei venditori possa essere abbastanza alta). Le più importanti limitazioni ad un comportamento competitivo nel settore al dettaglio sono probabilmente: a) la determinazione del prezzo al dettaglio in base a margini di ricarico consuetudinari per il commercio e, b) l'adesione dei dettaglianti ai prezzi al dettaglio consigliati dai produttori. In entrambi questi due casi le differenze nei prezzi d'acquisto tra i dettaglianti avranno come conseguenza probabile una politica di prezzo dei dettaglianti più indipendente e quindi più concorrenziale. Le differenze fra i prezzi di acquisto fra i dettaglianti in concorrenza rendono impossibile l'adesione a prezzi al dettaglio basati sull'applicazione di un margine di ricarico percentuale uniforme, mentre i prezzi più bassi caricati a certi dettaglianti di grandi dimensioni li spingeranno a ridurre i prezzi al di sotto di quelli consigliati dai fornitori allo scopo di aumentare il proprio volume di vendita (in parte allo scopo di ottenere vantaggi supplemen-

tari nelle condizioni d'acquisto).

L'evidenza empirica circa la misura in cui la concessione di prezzi più bassi ai dettaglianti di grandi dimensioni viene riflessa nei prezzi al dettaglio è limitata. L'indagine di Ward sul settore distributivo nel Regno Unito (Ward, 1973) ha fornito alcune prove circa la relazione fra gli sconti concessi ai dettaglianti e i margini distributivi sul finire degli anni '60 per sei gruppi di prodotti: tabacco, pasticceria, elettrodomestici, ferramenta, tappeti e prodotti farmaceutici. In tutti i gruppi di prodotti gli sconti e le concessioni di prezzo ai dettaglianti di grandi dimensioni sono aumentati durante il periodo; soltanto nel caso degli elettrodomestici e del tabacco è risultato evidente come essi venissero pienamente riflessi in bassi prezzi al dettaglio. Per gli altri prodotti, la mancanza di forte concorrenza sul prezzo al dettaglio può riflettere una mancanza di sensibilità al prezzo al consumo di questi beni. Quando i consumatori sono molto sensibili al prezzo, come nel caso degli alimentari, la concorrenza sul prezzo al dettaglio tenderà ad essere aspra, benché sia degno di nota come nel commercio di genere di drogheria nel Regno Unito le catene di dettaglianti abbiano guadagnato in media margini lordi e profitti netti più alti dei dettaglianti indipendenti (Development Analysis Ltd. 1977).

Gli effetti della discriminazione del prezzo sull'efficienza del settore d'acquisto sono meno ambigui. I prezzi più bassi praticati agli acquirenti di grandi dimensioni piuttosto che a quelli piccoli consentono alle grandi imprese di prendere il posto delle piccole (per mezzo della concorrenza sul prezzo o di attrazione di risorse delle piccole verso le grandi imprese prescindendo dall'efficienza relativa delle diverse dimensioni aziendali). La perdita di benessere derivante dalla distorsione nella distribuzione dimensionale delle imprese nel settore acquirente è pari al costo della maggiore quantità di risorse utilizzate nel settore d'acquisto per fornire lo stesso output. La perdita massima di benessere si verificherebbe qualora il differenziale di prezzo consentisse ad una dimensione aziendale inefficiente di controbilanciare il proprio svantaggio di costo nei confronti della dimensione più efficiente. Questo sarebbe pari alla dimensione del differenziale di prezzo per unità di input moltiplicata per il numero totale di inputs acquistati dal settore. La perdita minima di benessere sarebbe zero e si verificherebbe:

- a. qualora le differenze di prezzo tra imprese corrispondessero a differenze di efficienza tra imprese di diverse dimensioni;
- b. qualora le differenze di prezzo fossero insufficienti a controbilanciare le differenze di efficienza relative a dimensioni *aziendali*;

c. qualora l'efficienza in termini di costo non mutasse con la dimensione aziendale.

E' difficile valutare la misura in cui la discriminazione del prezzo in favore dei dettaglianti di grandi dimensioni ha avuto come risultato una distribuzione dimensionale inefficiente fra le imprese al dettaglio nel Regno Unito. Sembra probabile che gli sconti a favore dei dettaglianti di grandi dimensioni abbiano costituito un fattore significativo nel sostenere l'espansione della quota di mercato nel commercio al dettaglio relativa alle catene di negozi. Lo UK Committee of inquiry on Small Firms (1971, p. 292) ha notato:

"Esistono delle economie di scala nel commercio al dettaglio, ma sono relativamente piccole; di per sé stesse non possono essere responsabili della crescita delle grandi catene di supermercati che ha costituito lo sviluppo più drammatico nel commercio al dettaglio a partire dalla guerra. Secondo il nostro punto di vista, la causa principale del successo delle catene, anche per la relativa scarsa diffusione dei supermercati indipendenti, è la capacità delle catene di ottenere condizioni molto vantaggiose dai produttori di alimentari e da altri fornitori ... Il fatto è che i vantaggi concessi alle catene da questo livello di discriminazione del prezzo non possono essere superati con aumenti di efficienza da parte degli indipendenti".

La maggior parte delle indagini condotte nel Regno Unito sulla produttività nel settore distributivo non fornisce alcuna prova conclusiva sull'efficienza relativa delle diverse dimensioni aziendali. George (1966) ha scoperto che non esistevano differenze nella produttività del lavoro fra le catene di dettaglianti e gli indipendenti della stessa dimensione media. Ward (1973) ha scoperto che la performance dei negozi a catena in termini di crescita della produttività non è stata superiore a quella degli indipendenti. Così parrebbe che, mentre la discriminazione del prezzo ha costituito un importante fattore nell'incoraggiare la crescita delle dimensioni aziendali nel commercio al dettaglio, i suoi effetti sull'efficienza possono venire considerati neutrali.

Nel caso degli Stati Uniti non sembrerebbe che la legislazione contro la discriminazione del prezzo abbia condotto a risultati particolarmente positivi nella protezione dei dettaglianti più piccoli. Paragonando gli Stati Uniti al Canada, dove la legislazione sulla discriminazione del prezzo è stata in gran parte inefficace, si nota una proporzione fra negozi al dettaglio appartenenti a catene e indipendenti pressapoco uguale:

% dei punti di vendita appartenenti ad imprese con un solo punto di vendita

	<i>Usa (1967)</i>	<i>Canada (1966)</i>
Commercio al		
dettaglio in complesso	87,5	87,4
Drogherie	84,6	81,2
Drug stores	83,5	81,7

(Ministero della Giustizia degli Stati Uniti, 1977, p. 187)

Condizioni favorevoli per gli acquirenti di grandi dimensioni possono non solo causare l'espansione delle imprese al dettaglio che sono al di sopra della dimensione efficiente ottimale, ma questo incoraggiamento alla crescita delle dimensioni aziendali nel commercio al dettaglio può favorire lo sviluppo di posizioni monopolistiche in questo settore. Certamente la concentrazione dei venditori è cresciuta fino a livelli moderatamente elevati in alcuni tipi di commercio al dettaglio. E' stato stimato che, nel Regno Unito, le dieci maggiori imprese determinavano il 34 per cento delle vendite al dettaglio di generi di drogheria nel 1970. Un aumento della concentrazione del dettaglio accrescerà la capacità dei dettaglianti di grandi dimensioni di ottenere ingenti sconti dai loro fornitori, ma, nella misura in cui il potere di mercato dei grandi dettaglianti aumenta, si riduce la necessità di questi di trasferire al consumatore i più ampi sconti ottenuti. Nel Regno Unito, mentre è evidente che l'aumento della concentrazione in molti settori del commercio al dettaglio ha coinciso con una maggiore concorrenza di prezzo, la possibilità che l'aumento della concentrazione riduca alla fine la concorrenza al dettaglio deve essere considerata un rischio nel lungo periodo.

Per riassumere le tesi fin qui esposte: gli effetti della discriminazione del prezzo a favore degli acquirenti di grandi dimensioni sui prezzi medi di vendita ai clienti sono incerti. L'osservazione empirica suggerisce che tale discriminazione, lasciando libera la concorrenza di prezzo nei mercati oligopolistici, probabilmente abbasserà il prezzo medio di vendita del settore fornitore e, qualora la distribuzione al dettaglio sia competitiva, ciò condurrà a minori prezzi al consumo. Allo stesso tempo i prezzi d'acquisto differenziati condurranno probabilmente ad una distorsione della dimensione aziendale del settore acquirente che potrebbe accrescere i costi della distribuzione. In ogni trasferimento da un aumento dell'efficienza allocativa nel settore fornitore ad un au-

mento dei costi nel settore acquirente, è probabile che la perdita di benessere causata da quest'ultimo fenomeno, prevarrà sull'aumento di benessere derivante dal primo. Williamson (1968) dimostra che i guadagni di benessere che derivano da un aumento dell'efficienza nell'allocatione delle risorse conseguente ad una riduzione del livello dei prezzi monopolistici vengono più che compensati da aumenti anche minimi nei costi delle risorse. Comunque questa conclusione non considera altri fattori che modificano l'efficienza nei settori venditori ed acquirenti. L'aumento nella concorrenza sul prezzo favorito dalla concorrenza sul prezzo nel settore venditore, sarà probabilmente accompagnato da risparmi nei costi delle risorse utilizzate causati da una riduzione nell'efficienza "x". Crew & Rowley (1970) hanno dimostrato che le riduzioni nell'efficienza "x" costituiscono probabilmente un guadagno di benessere quantitativamente importante che deriva dalla maggiore concorrenza. Allo stesso tempo, prezzi differenziati nel settore distributivo incoraggeranno probabilmente una politica di prezzo indipendente e, quindi, più concorrenziale a livello di dettaglio. Essa può anche condurre a riduzioni dell'inefficienza.

8. Conclusioni ed implicazioni politiche

Gli effetti sul benessere economico della discriminazione del prezzo tra acquirenti di dimensioni diverse sono complessi. L'effetto netto della discriminazione del prezzo rispetto la politica di uniform pricing sul benessere economico, dipenderà dalla struttura e dal comportamento competitivo dei settori fornitori ed acquirenti e in particolare dalle seguenti circostanze:

1. se la tendenza all'aumento dei prezzi verso i piccoli acquirenti, favorita dalla discriminazione dei prezzi, sia più che compensata dall'attivazione della concorrenza di prezzo tra i fornitori oligopolisti stimolata anch'essa dalla discriminazione dei prezzi;
2. se il settore distributivo per i prodotti in questione è concorrenziale e, quindi, se i prezzi favorevoli per acquirenti di grandi dimensioni incideranno sui prezzi al dettaglio;
3. se l'incentivazione alla formazione competitiva dei prezzi favorita dalla differenziazione del prezzo incoraggia la eliminazione dell'inefficienza nel settore fornitore e/o acquirente;
4. fino a che punto la discriminazione del prezzo a favore delle imprese di grandi dimensioni favorisce la crescita delle dimensioni aziendali nel settore acquirente al di sopra del loro livello ottimale.

Questi fattori spingono in direzioni contrarie, e l'analisi economica non fornisce alcuna giustificazione per proibire la discriminazione del prezzo. Ogni legislazione contro la discriminazione del prezzo, quindi, deve essere basata su ulteriori considerazioni quali il desiderio di mantenere i piccoli commercianti come categoria o il bisogno di proteggere le piccole attività al dettaglio allo scopo di conservare vitalità economica nelle piccole città o nei paesi. L'analisi non sostiene nemmeno le dispute di molti economisti che hanno asserito che la legislazione contro la discriminazione del prezzo è intrinsecamente anti-competitiva e contraria agli interessi dei consumatori.

L'analisi ora condotta circa l'analisi di prezzi differenziati tra acquirenti di grandi e piccole dimensioni suggerisce anche che la legislazione contro la discriminazione del prezzo può costituire il migliore approccio a questo problema, anche quando, in casi particolari si ritiene che la discriminazione sia contraria all'interesse pubblico. Come ho mostrato, la discriminazione di prezzo a favore di acquirenti di grandi dimensioni può esistere soltanto nel caso in cui i fornitori possiedano almeno un certo potere di mercato. Nei paesi in cui la discriminazione del prezzo tra gli acquirenti viene considerata un grave problema, parrebbe possibile adottare provvedimenti efficaci applicando la legislazione esistente per controllare gli abusi di potere del mercato piuttosto che introducendo proibizioni speciali contro la discriminazione del prezzo o misure per reprimere il "potere d'acquisto". Il problema della discriminazione del prezzo consiste sostanzialmente nel fatto che i settori manifatturieri oligopolistici sono in grado di far pagare i prezzi monopolistici agli acquirenti di piccole dimensioni, ma sono costretti a far pagare prezzi concorrenziali a quelli di grandi dimensioni. Così, anche se il livello globale dei prezzi e dei profitti di un settore fornitore può non essere eccessivo, è possibile che, in relazione ai piccoli acquirenti, i prezzi ed i profitti guadagnati dai settori fornitori oligopolistici siano tali da giustificare una azione correttiva da parte delle autorità preposte al controllo della concorrenza.

Bibliografia

- Adams W. (ed) *The Structure of American Industry* Macmillan New York.
 Adelman M., Dirlam and Kahn. *The A & P Case Journal of Political Economy*, 1958, vol. LXI, October.
 Atkin B., Skinner R., *How British Industry Prices* Industrial Market Research Ltd. 1975, London.

- Bauer P., Yamey B.S., Competition and Prices: a study of Ground nut buying in Nigeria. *Economica*, 1952, vol. 19.
- Blois K.J., The Growing influence of large buyers, *Imra Journal*, 1972, vol. 8, n. 1, February.
- Brooks D.G., Buyer Concentration: a Forgotten Element in Market Structure Models. *Industrial Organisation Review*, 1974, vol. 1.
- Committee of Inquiry on Small Firms, *Report of the Committee of Inquiry* Hmso Cmnd 4811, 1971.
- Common Market Law Reports, *United Brands Company v Eec Commission*, 1978, vol. XXI, parts 129 e 130, 11th and 18th April.
- Crew M.A., C.K. Rowley, Anti-Trust Policy: Economics versus Management Science. Moorgate and Wall Street, 1970, Autumn.
- Development Analysis Limited, *A study of the evolution of concentration in the food distribution industry of the UK* Commission of the European Communities, 1977, October.
- Federal Trade Commission, *Economic Report on the Structure and Competitive Behaviour of the food industry*, 1966, Washington.
- George K.D., *Productivity in Distribution* University of Cambridge, Dept of Applied Economics Occasional Paper, 1966, n. 8.
- George K.D., C. Joll, *Competition Policy in the UK and the Eec cup*, 1975.
- Guth L.A., Schwartz R.A., Whitcomb D.K., The Use of Buyer Concentration Ratios in Tests of Oligopoly Models. *Review of Economics and Statistics*, 1976, vol. 58.
- , Buyer Concentration Ratios *Journal of Industrial Economics*, 1977, vol. 25, n. 4., June.
- Lustgarten S.H. The Impact of Buyer Concentration in Manufacturing Industries. *Review of Economics and Statistics*, 1975, vol. 57, n. 2, May.
- MacAvoy P., *Price Formation in Natural Gas Fields*, 1962.
- Mead W.J., *Competition and Oligopsony in the Douglas Fir Lumber Industry*, 1966.
- Mead W.J., The Competitive Significance of Joint Ventures. *Antitrust Bulletin*, 1967, vol. 12.
- Monopolies Commission, *Report on the Supply of Electrical Equipment for Mechanically Propelled Land Vehicles*, 1963, Hmso, London.
- Monopolies Commission, *Report on the Supply of Clutch Mechanisms for Road Vehicles*, 1968, Hmso.
- Monopolies Commission, *Report on the Supply of Metal Containers*, 1970, Hmso, London.
- Monopolies Commission, *Report on the Supply of Breakfast Cereals*, 1972, Hmso London.
- Monopolies Commission, *Report on the Supply in the United Kingdom of Frozen Foodstuffs for Human Consumption*, 1976, Hmso London.
- Monopolies Commission, *Report on the Supply of Flour and Bread*, 1977a, Hmso London.

- Monopolies Commission, *Report on the Supply in the United Kingdom of Cat and Dog Foods*, 1977b, HMSO London
- Monopolies Commission, *Report on the Supply of Petrol*, 1979, HMSO London.
- Norman N.R., Trade Practices Regulation. An Analysis. Australian Industries Development Association. Canberra, 1976.
- Stigler G.J., A Theory of Oligopoly. *Journal of Political Economy*, 1964, vol. 72, February.
- United States Dept. of Justice, *Report on the Robinson-Patman Act* Washington, 1977.
- Ward T.S., *The Distribution of Consumer goods Structure and Performance*, 1973, University of Cambridge Dept. of Applied Economics, Occasional Paper 38.
- Williams O.E. Economics as an Antitrust Defense, *American Economic Review*, 1968, vol. 58, pp. 18-36.
- Trade Practices Review Committee *Report to the Minister for Business and Commercial Affairs*, 1976, Commonwealth of Australia.

THE INFLUENCE ON PRICE OF LARGE BUYERS AND
PUBLIC POLICY TOWARDS PRICE DISCRIMINATION

by

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ABSTRACT

The treatment under competition law of price discrimination in favour of large buyers is a subject that has aroused considerable interest in a number of European countries. This paper analyses price discrimination between different sizes of buyer employing standard approaches to oligopoly pricing. The implications of this form of price discrimination for economic welfare are outlined and, in the light of this discussion, the desirability of legislation to prohibit price discrimination is considered.

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The Influence of Large Buyers on Price and
Public Policy towards Price Discrimination

Competition law and price discrimination

Price discrimination has traditionally been viewed, both by economists and by competition law, as an aspect of monopoly behaviour. The economic analysis of discriminating monopoly shows that price discrimination will increase the monopolist's profits above that which could be earned under uniform pricing, while the effect of price discrimination upon the monopolist's output is ambiguous.¹ Under the competition laws of most European countries individual cases of price discrimination which involve the exploitation or extension of market power by a dominant firm can be dealt with under anti-monopoly legislation. The Fair Trading Act of the United Kingdom, the 1957 Act Against Restraints of Competition of West Germany and Article 86 of the Treaty of Rome allow the relevant authorities to prohibit price discrimination where practiced by a market dominating firm.²

In recent years there has been a growth of interest in price discrimination which is not seemingly related to monopoly exploitation but is the result of the ability of large buyers to negotiate with their suppliers more favourable prices than are small buyers. The focus of attention has been the distributive trades where the ability of large retailers and distributors to obtain favourable prices, discounts and rebates has been regarded, at least by small retailers, as resulting in unfair and inefficient competition in the retail sector. In a number of European countries legislation has been introduced to outlaw price differences which are unrelated to differences in costs of supply or which have anti-competitive effects. In Ireland specific orders have been made under the Restrictive Practices Act to prohibit price discrimination in groceries (1973), petrol (1961, 1972 and 1975), and certain other products. In France the 'Loi Royer' of 1973 introduced harsh penalties for price discrimination. In Austria the Federal Law of 29 June 1977 supplemented the Cartels Act to allow the Cartels Court to prohibit the offer of differential terms to retailers without relevant justification. All these measures bear close resemblances to the 1935 Robinson - Patman Act of the United States.

In both Europe and North America legislation to prohibit unfair or uncompetitive price discrimination has followed periods of rapid structural change in retailing involving increases in seller concentration and the replacement of small retail establishments by much larger units. The 1930's saw the introduction of super-markets into North America and the rapid expansion of chain stores, developments which occurred in Europe during the 1950s and 60s and continue today.

In both continents legislation has been strongly backed by small retailers and, it would appear, the measures have been concerned more with protecting the interests of small retailers than with the pursuit of more active competition or improved industrial performance. Indeed the opinion of most economists and informed observers has been that the effect of prohibition of price discrimination in North America has been to restrict rather than to promote competition. In its review of the working of the Robinson-Patman Act, the U.S. Department of Justice concluded that the Act: "promotes high prices, restricted entry, and inefficiency in the distribution of goods; and it has encouraged the creation of illegal pricing exchanged by competing manufacturers". (US Department of Justice 1977 p.260).

Because legislation to prohibit price discrimination has been primarily politically motivated, thorough analysis of the causes, circumstances and effects of price discrimination in favour of powerful buyers has been largely absent from the policy debate. This paper briefly analyses the causes of preferential prices to large buyers and goes on to examine the welfare implications of this type of price discrimination. In the light of this, some conclusions on the desirability of legislation to prohibit price discrimination are drawn.

Economic analysis of the influence of buyers on price

The analysis of the structure and behaviour of buyers has received little attention in the economics literature. Buyer structure is generally assumed away by treating the purchasing side of markets as perfectly competitive, an assumption which is reasonable only where a firm sells direct to households. Attempts to introduce

buyer structure have been in terms of simple monopsony and oligopsony models which have corresponded to elementary models of monopoly and oligopoly. The pure monopsonist will use his power over market price to purchase a smaller quantity at a lower price than the perfectly competitive buying industry.

Recently attention has been devoted to the influence of concentrated buyers on price. Studies by Brooks (1974) and Lustgarten (1975)³ show that the inclusion of buyer concentration ratios into regression equations relating industry profitability to market structure improves the explanatory value of the equations, buyer concentration itself having a negative effect on the profitability of the supplying industry. Explanations for this ability of buyers to lower the price of a good below that paid by a competitive buying industry rest on the assumption that concentrated buyers, like concentrated sellers, coordinate their purchasing behaviour in order to exert monopsony power over price. "Oligopsony, analagous to oligopoly, would make buyers consciours of the potential impact of their own bids to purchase on the bids of other buyers. This interdependency might be expected to produce some collusion among buyers," (Lustgarten 1975, p.126).

The "collusive oligopsony" thesis is implausible for two reasons:

- (a) since the prices for most manufactured goods are set by sellers, the ability of buyers to recognise their interdependence is limited⁴, only in markets where buyers are engaged in competitive bidding will their interdependence be recognisable and their coordination feasible⁵
- (b) in most markets levels of buyer concentration are low and below the corresponding levels of seller concentration; buyer concentration is low in nearly all of the retail trades in European countries⁶.

Moreover, the collusive oligopsony thesis predicts that buyer power will result in a lower market price for the product, but the principal factor which distinguishes

the influence of buyers on price is that price concessions are gained by individual buyers.

herefore to examine price differences between buyers it is necessary to analyse the influence of the individual buyer on the price of his own purchases and the behaviour of suppliers in pricing to individual customers. "Buyer power" - the ability of large buyers to force price concessions from suppliers - is therefore founded not on conventional market power but on bargaining power vis-a-vis individual sellers. It is frequently suggested that the basis of the superior bargaining power of large buyers lies in the costs which they can impose upon a supplier by the withdrawing of a substantial proportion of his business. Thus if the supplier is operating at or below optimal capacity the threat of a loss of large volume may be sufficient to induce him to negotiate a price which covers marginal but not average costs. But this analysis does not predict but only assumes discrimination by the supplier between large and small buyers. Threatened with a withdrawal of custom and faced with excess capacity it would be profitable for a supplier to offer any customer, large or small, a price which covered marginal costs. The important question is why suppliers are willing to treat large but not small buyers as marginal customers?

It is possible, however, to dispense with the notion of buying power and explain price discrimination between large and small buyers in terms of the pricing behaviour of sellers. Price discrimination requires that sellers possess some measure of market power, at the same time large buyers can obtain price concessions even when they do not possess market power - thus price discrimination between buyers can be viewed as an aspect of oligopoly behaviour. It is suggested here that differential prices between large and small buyers reflect two factors: first differences in the level of entry barriers in supplying large and small buyers, second the greater difficulty of maintaining oligopolistic price coordination in the face of large buyers.

The level of barriers to entry in supplying large and small buyers

It is assumed that oligopolists typically behave in a cooperative manner and aim at 'limit pricing' - charging the highest price consistent with keeping new entrants out of the market. If entry barriers into the industry vary in height according to the size of customer which the entrant supplies, then limit pricing implies that established firms will discriminate between different sizes of customer. Several reasons may be given why barriers to entry, will be lower for new entrants seeking to supply large buyers than those seeking to supply small buyers:

1. Lower unit costs of selling and distribution in supplying large customers.

Costs of marketing and distribution fall sharply when sales are increasing from an initially low level, the fall is more moderate for high levels of sales. Thus entrants to the market which can initially only expect a small proportion of each customer's purchases will face a bigger cost disadvantage vis-a-vis established suppliers in supplying small buyers than in supplying large buyers. The result is that established suppliers can earn a higher margin on sales to small buyers than to large without attracting the entry of smaller suppliers.

2. A higher elasticity of demand from large than from small buyers.

The tendency for differences in costs of selling and distribution to lead to a higher limit price in the supply of small, as opposed to large, buyers will be reinforced if the demand of the smaller buyers is less elastic than that of large buyers. In the retail trade, for example, the survival of small retailers has been partly due to their ability to differentiate their services - e.g. by flexible opening hours, supplying speciality goods, offering local supply to small communities. Because of this differentiation and the tendency for small retailers to be used for low value purchases, the elasticity of demand facing the small retailer is probably lower than that facing the large retailer. As a result the derived demand of small retailers from the manufacturer will be less elastic than that of large retailers.

3. The ability of large firms in the distributive trades to undertake the marketing of consumer goods.

In consumer goods industries a major barrier to new entry is the handicap of an unknown brand in markets dominated by differentiated established products. To establish his product on the market the newcomer must either spend disproportionately heavily on advertising and promotion, or offer his product at a substantial price discount. It is possible, however, for the large wholesale or retail distributor to eliminate the entry barriers arising from product differentiation by established producers by supplying the products of new entrants under the distributor's own brand. The increase in concentration in many retail trades which has encouraged the introduction of retailers' private brands has involved a transfer of the marketing function from manufacturer to distributor and has struck at the very heart of the market power of oligopoly suppliers of branded consumer goods.

4. Encouragement by large buyers of new entry.

Even if new entrants do not suffer any major cost disadvantages in competing with established manufacturers, a firm seeking to enter a market and win market share from established firms must view his investment as a risky venture. This is particularly so in oligopoly industries where the competitive reactions of established firms to a new supplier are uncertain. Large buyers can exercise an important role in reducing risk by guaranteeing the potential entrant some level of business. A notable example was the encouragement given by Pet-foods Ltd to Reads Ltd to enter the UK open-top metal can market in competition with Metal Box (Monopolies Commission 1970, paragraphs 88 and 141).

5. The opportunities for backward integration by large buyers.

In the last resort barriers to entry are ineffective in protecting the sales to large buyers because of the ability of large buyers to integrate backwards into the supplying industry. The market for metal cans provides an interesting example. The favourable terms offered by Metal Box to its major UK customers reflected their ability to manufacture their own requirements (Monopolies

Commission, 1970, paragraphs 247 and 248). The propensity for large food processors to integrate backwards into can manufacturer was demonstrated in the US between 1950 and 1960 when many food processors began self manufacture in response to a withdrawal of their favourable purchase terms which seemed likely to infringe the Robinson-Patman Act (Adams 1967, p314). The ability of vehicle manufacturers to exert strong bargaining power against monopoly and oligopoly component suppliers rests fundamentally on the vehicle manufacturers proven ability to manufacture their own components. Thus the market power of component suppliers is only effectively utilised in the replacement parts trade. The result is a substantial differential between the prices charged to vehicle manufacturers and the standard wholesale price to garages and component distributors.⁷

The difficulty of maintaining collusive prices against large buyers

The tendency for oligopoly industries to quote preferential prices to large buyers will result not just from profit maximising behaviour by the industry, but also from the difficulty of coordinating their prices to large buyers and so maintaining prices above their competitive levels.⁸

The difficulty of achieving oligopolistic price coordination in the face of large buyers arises principally from the heterogeneity of transactions with large buyers. Where an industry's product is basically uniform and the methods of marketing and distribution the same, then the costs of supplying different customers will be similar and a single list price with adjustments for the location of the customer and size of his order can be quoted to all customers. Such simplicity in pricing greatly facilitates price parallelism among oligopolists. Transactions will tend to be homogeneous between small customers since the small volume of each customers purchases make individual variations in product, packaging or delivery method costly. Large manufacturers on the other hand may require components of non-standard gauges and many chain retailers demand special stock carrying and delivery arrangements from their suppliers (see Blois 1972).

This greater heterogeneity of the transactions with large buyers means variations in costs and consequently prices charged to large buyers tend to be individually negotiated. Price parallelism, or indeed any form of price coordination between oligopoly suppliers is extremely difficult when prices are individually negotiated with customers since effective coordination requires that individual suppliers conduct their negotiations at the same moments of time and they maintain communication with one another to ensure consistency of terms.

Cost differences between suppliers.

The maintenance of any price parallelism between oligopolists requires some measure of agreement as to the optimal price for the industry. Agreement requires a similarity of cost conditions between suppliers. However, even if the different suppliers have similar costs, when negotiating special terms with large customers, it is likely that individual firms will have quite different perceptions of the costs involved in supplying individual customers depending upon firms' conventions regarding the treatment of overheads and their estimates of cost/volume relationships. Thus while suppliers may be able to agree on the standard price for their product of some form of cost-plus pricing, such consensus is less likely in individual quotations to large buyers.

The tendency for competition to break out between suppliers in seeking the business of large customers will be encouraged by the behaviour of buyers in seeking price quotations from suppliers and keeping informed as to the cost conditions and competitive factors affecting individual suppliers. Such information has a fixed cost and its acquisition may be uneconomic for the small buyers. This ability to seek out bargains was an important explanation of A and P's ability to purchase at lower costs than its competitors and was one of the major cost savings in its switch from local to central buying (Adelman 1953 p.440). This tendency of the large buyer to seek out and take advantage of any low prices available in the market is an economy of large scale buying and has nothing to do with power in the market.

The size of discounts to large buyers

The level of discounts, rebates and other price concessions in excess of savings in supply costs is likely to be influenced inter alia by:

1. the level of concentration in the supplying industry.

The ability of large buyers to obtain a preferential price depends upon prices to small buyers being above their competitive level so that some margin for negotiation is available. The opportunity for a substantial price differential to emerge between large and small buyers will tend to increase as the price of the product increases above its competitive level with increased concentration. At the same time increased concentration will tend to increase the collusive ability of oligopoly suppliers not only against small buyers but, at high levels of concentration, against large buyers too. Therefore we might expect the price differential between large and small buyers to vary with seller concentration in the form of an inverted U. At low levels of concentration large buyers are unable to gain any advantage because prices are at their competitive levels in anyway (thus chain stores do not have great advantages over independent shops in the purchase of competitively supplied fresh produce such as fruit, vegetables and meat). At very high levels of concentration price differentials again close as oligopoly collusion and monopoly power become effective against all buyers. In the UK and the USA discounts to large retailers are particularly high in oligopolistic food processing industries: fluid milk, ice cream and cookery products in the USA (see FTC 1966) and bread, frozen foods and ice cream in the UK (Monopolies Commission 1976a, 1976). In some particularly concentrated UK industries however such as plasterboard and fletton brick manufacture (100% monopolies) and pet food, household detergents and breakfast cereals (highly product differentiated duopolies) the price concessions to large customers were noticeably absent (Monopolies Commission 1968, 1970, 1977).

2. excess capacity in the supplying industry. The tendency for competition to

break out between oligopolists in seeking the business of large customers will be influenced by the degree of excess capacity in the industry. Where variable costs are below average total costs - and the difference may be considerable in industries with high fixed costs - then suppliers may be willing to gain additional business or hold on to existing large customers at prices that only cover the variable costs of supply. In the UK bread industry, the exit of Spillers from the market in 1978, which had the effect of reducing excess capacity as well as reducing the number of major suppliers from three to two, was followed by a significant reduction of discounts to large supermarkets.

The welfare consequences of price discrimination between buyers

The above analysis predicts that price discrimination will be a general feature of markets where an oligopoly industry supplies an industry where firm size varies, whether or not the buying firms possess monopsony power. In consumer goods industries this discrimination occurs most commonly through the maintenance of parallel list prices by suppliers with the offer of discounts and rebates to large buyers which are unrelated to or exceed the costs savings in supplying these buyers. Favourable terms to large buyers also take the form of promotional allowances, extended credit, the provision of special services (such as merchandising) or some other benefit not directly linked to price.

To examine the welfare implications of this type of price discrimination between buyers of different sizes we compare a situation of oligopolistic competition where price discrimination is allowed but price fixing agreements are illegal with a situation where price discrimination is illegal (e.g. by some kind of Robinson-Patman-type legislation). Two effects are likely to be of particular importance:

- (a) the effect of price discrimination on the level of price of the supplying industry and, ultimately, on the level of price to the final consumer.
- If price discrimination between buyers of different sizes raises the average level of price above that which would occur under uniform pricing,

then the welfare loss arising from a sub-optimal allocation of resources to the industry will occur.

- (b) the effect of price discrimination in distorting competition in the buying industry with the result that firms in the buying industry are encouraged to grow beyond their most efficient scale and concentration is increased.

If oligopoly supplying industries adopt limit pricing strategies then the average level of prices under price discrimination desired by suppliers will be above the average level under uniform pricing. If oligopoly suppliers wish to forestall entry yet are constrained to charge a single price to all buyers then the price level will be set by the lowest entry barriers in any sub-sector of the market. If entry barriers are lower to large than to small suppliers then by preventing price discrimination prices to small buyers will be reduced to those which are received by large buyers.

However, this prediction ignores the second factor which causes price discrimination in favour of large buyers: the breakdown of oligopolistic collusion in the face of large buyers. This factor operates in the opposite direction: if price discrimination is prevented then oligopolists are greatly assisted in co-ordinating their prices so as to avoid competition. The result will be that prices to large buyers will tend to be raised towards the collusive prices charged to small buyers.

The net effect of these opposing forces is a matter for empirical investigation. There is an absence of rigorous empirical research into the effects of anti-discrimination legislation on pricing behaviour. However, based on observation and a priori analysis, there is virtual unanimity in the opinions of informed observers that the effect of banning price discrimination is to raise to average level of selling prices in oligopolistic industries. In the United States the influence of the Robinson-Patman Act in discouraging price rivalry in oligopolistic industries has been particularly evident. Corwin Edwards (1959 pp630-1)

concluded in his study of the effects of the Robinson-Patman Act:

"It is probable that in oligopolistic industries the outlawing of discriminatory concessions has reduced the principle kind of price competition that still existed under conditions of concentrated production and sale. It is probable that in an industry that has achieved conspiracy by direct agreement..... the elimination of unsystematic price cuts has removed the principle weakness of the conspiracy."

This view is amplified by the US Department of Justice in its Report on the Robinson Patman Act (US Department of Justice 1977).

In its review of the Australian Trade Disputes Act (1974), the government appointed committee found that the principle effect of the section prohibiting uncompetitive price discrimination was to generally increase average prices (Trade Practices Act Review Committee 1976). This conclusion was borne out in an empirical study which found that many manufacturing enterprises had used the anti-price discrimination clauses of the Act to either eliminate or to reduce their levels of discount so as to move average prices towards list prices (Norman 1976).

The pressures which are responsible for the outbreak of price competition between oligopoly suppliers in seeking the business of large buyers may spill over into other sectors of the market resulting in a general lowering of prices. The process was explained by a witness to the U.S. Domestic Council Review Group on Regulatory Reform (see U.S. Dept. of Justice 1977, p.157):

"When a seller hungry for business decides to make a price concession, to whom will he make a concession? Almost inevitably to effect the large sale. There is more payoff in it, and therefore it is more likely than not that the first beneficiary of a break from the prevailing prices in such an industry will be to a large buyer.

Assuming that Seller No.1 has gained a large buyer, someone has lost a good customer, and in that sense now has excess capacity and has to go looking for some other buyer. So, the pressures are magnified for another price concession.

Indeed, to the extent he finds out how he lost this good customer, the second seller is motivated for a variety of reasons to respond in kind, and perhaps attack a large customer of the first seller. And the process is typically generalized until these off-list prices filter down through most of the retail categories. Perhaps ultimately

the industry rationalizes its pricing process by printing new list prices which reflect the now somewhat lower level of prices and more nearly reflecting real cost".

The tendency for discounting to selected customers to expand into general price competition is shown by price competition in the U.K. petrol market between 1975 and 1977. Large rebates to large retailers (such as ASDA) and the introduction of selective discounts to particular retailers in particular areas by the major oil companies, expanded into general price competition which culminated in Shell reducing its scheduled wholesale price in July 1977. (Monopolies Commission 1979).

However it is the final price of the product to the consumer and not the price in intermediate markets which is relevant to economic welfare. If we accept that the size of discounts and price concessions to large buyers is sufficient to reduce the average price of the suppliers below that which would occur under uniform pricing, would this result in a lower average selling price to the consumer? If the retail sector is competitive and if, in particular, competition exists between the retailers which secure the most favourable prices, then discounts and price concessions to large buyers will be passed on to consumers, and these lower retail prices will set the selling prices for small retailers too. If, on the other hand, the retail sector is uncompetitive, then the lower prices received by large retailers need not be passed on and, in the event of retailers pricing collusively, retail prices are likely to be determined by a mark-up on the higher buying prices.

The structure of most retail trades is generally regarded as competitive: seller concentration and barriers to entry are usually low in relation to manufacturing industries (though in local markets seller concentration may be fairly high). The most important limitations on competitive behaviour in the retail sector are likely to be (a) retail pricing by reference to retail margins which are traditional to the trade and (b) the adherence by retailers to manufacturers' recommended retail prices. In both of these cases differences in buying prices between retailers are likely to result in more independent, and therefore more competitive, pricing by retailers.

Differences in buying prices between competing retailers make untenable the adherence to retail prices based on the application of uniform percentage mark-ups, while lower prices to certain large retailers will encourage them to reduce prices below those recommended by suppliers in order to increase their volume sales (partly in order to obtain further advantages in buying terms).

Empirical evidence on the extent to which lower prices to large retailers are reflected in retail prices is limited. Ward's study of the distributive sector in the U.K. (Ward 1973) provided some evidence on the relationship between discounts to retailers and distributive margins during the late 1960's for six product groups: tobacco, confectionery, domestic electrical appliances, hardware, carpets and pharmaceuticals. In all product groups discounts and price concessions to large retailers increased over the period but only in domestic electrical appliances and tobacco was there clear evidence of these lower prices being fully reflected in low retail prices. In the other products lack of strong retail price competition may reflect a lack of consumer price sensitivity for these goods. Where consumers are highly price sensitive, as in food, retail price competition will tend to be strong, although even in the UK grocery trade it is notable that chain retailers earned on average higher gross margins and net profits than independent retailers (Development Analysis Ltd 1977).

Less ambiguous are the effects of price discrimination between buyers on the efficiency of the buying industry. Lower prices to large rather than to small buyers enables large firms to replace small firms (by price competition or the attraction of resources by large from small firms) irrespective of the relative efficiencies of different sizes of firm. The welfare loss from the distortion in the size distribution of firms in the buying industry equals the cost of the increased quantity of resources employed in the buying industry for supplying the same output. The maximum welfare loss would occur where the price differential enabled an inefficient size of firm to just offset its cost disadvantage relative to the most efficient size of firm. This would be equal to the size of the price differential per unit of input multiplied by the total

number of inputs purchased by the industry. The minimum welfare loss would be zero and would occur

- (a) where price differences between firms corresponded with efficiency differences between firms of differing sizes,
- (b) where price differences were insufficient to offset the relative efficiency differences of different sizes of firm, or
- (c) where cost efficiencies were invariant with firm size.

The extent to which price discrimination in favour of large retailers has resulted in an inefficient size distribution of retailing firms in the U.K. is difficult to assess. It seems likely that favourable discounts to large retailers has been a significant factor encouraging the expansion in the share of retail trade accounted for by chainstores. The UK Committee of Inquiry on Small Firms (1971, p292) noted:

"There are economies of scale in retailing, but they are comparatively slight; in themselves they cannot account for the growth of the great supermarket chains, which has been the most dramatic development in retailing since the war. In our view one of the main reasons for the success of the chains, and for the comparative rarity of independent supermarkets, is the ability of the chains to exact highly advantageous terms from food manufacturers and other suppliers..... The point is that the advantages which price discrimination on this scale gives to the multiples cannot be overcome by increased efficiency on the part of the independents".

Most U.K. studies of productivity in the distributive sector provide no conclusive evidence of the relative efficiencies of different sizes of firm. George (1966) found that for multiple and independent retailers of the same average size of shop there was no difference in labour productivity. Ward (1973) found that the performance of multiples in terms of productivity growth was not superior to that of independents. Thus it would seem that, while price discrimination has been an important factor encouraging the growth of firm size in retailing, the efficiency effects have been broadly neutral.

For the United States it would appear that the law against price discrimination has not been particularly successful in preserving smaller retailers. Comparing the US with Canada, where the price discrimination law has been largely ineffective, the numbers of multiple and independent retail shops are in much the same ratios:

% of retail establishments operated by
single establishment retailers.

	USA (1967)	Canada (1966)
All retailing	87.5	87.4
Groceries	84.6	81.2
Drug stores	83.5	81.7

(US Department of Justice 1977 p.187).

Not only may favourable terms to large buyers cause the expansion of retail firms which are above optimal efficient size, this encouragement to growth of firm size in retailing may encourage the development of monopoly in retail trades. Certainly seller concentration has increased to moderately high levels in some retail trades. It has been estimated that in the United Kingdom ten largest companies accounted for 34% of retail grocery sales in 1970. Increased concentration of the retail will increase the ability of large retailers to obtain large discounts from their suppliers, but, to the extent that the market power of large retailers is increased, the necessity for large retailers to pass on larger discounts to the consumer is reduced. In the U.K., while there is evidence that increased concentration in many retail trades has coincided with increased price competition, the possibility that increased concentration will ultimately reduce retail competition must remain a long term risk.

To summarise so far; the effects of price discrimination in favour of large buyers on the average selling prices to customers is uncertain. Observation suggests that such discrimination, by unleashing price competition in oligopolistic markets is likely to lower the average selling price of the supplying industry and where retail distribution is competitive, will result in lower consumer prices. At the same time the differential buying prices are likely to lead to a distortion of the size of firms in the buying industry which may increase costs of distribution. In any trade-off between increased allocative efficiency in the supplying industry and increased costs in the buying industry, it is likely that the welfare loss from

the latter effect will outweigh the welfare gain from the former. Williamson (1968) shows that welfare gains arising from an increase in the efficiency of resource allocations from a reduction in the level of monopoly prices are outweighed by very small increases in resource costs. However, this conclusion ignores other factors affecting efficiency in the selling and the buying industry. The increase in price competition which is encouraged by price competition in the selling industry is likely to be accompanied by savings in resource costs due to a reduction in X-inefficiency. Crew & Rowley (1970) have argued that reductions in X-inefficiency are likely to be a quantitatively important welfare gain arising from increased competition. At the same time differential buying prices in the distributive trades is likely to encourage independent and, therefore, more competitive pricing at the retail level which may also result in reductions in inefficiency.

Conclusions and policy implications

The effects upon economic welfare of price discrimination between buyers of different sizes are complex. The net effect upon economic welfare of price discrimination as opposed to uniform pricing will depend upon the structure and competitive behaviour of the supplying and buying industries in particular on:

- (i) whether the tendency for price discrimination to raise prices to small buyers will be outweighed by the effect of price discrimination in encouraging price competition between oligopoly suppliers.
- (ii) whether the distribution sector for the products in question is competitive and, therefore, whether favourable prices to large buyers will be reflected in retail prices.
- (iii) whether the inducement to competitive pricing which price differentiation provides encourages the elimination of inefficiency in the supplying and/or the buying industry.
- (iv) how far price discrimination in favour of large firms encourages the growth of firm size in the buying industry above its optimal level.

These factors operate in opposing directions and economic analysis does not provide any case for a general prohibition of price discrimination. Any general legislation

against price discrimination must therefore be based on additional considerations such as the desire to maintain small traders as a class or the need to protect small retail businesses in order to maintain the economic life of small towns and villages. Neither does the analysis support the arguments of many economists who have claimed that legislation against price discrimination is inherently anti-competitive and contrary to the interests of consumers.

The above analysis of the causes of differential prices between large and small buyers also suggests that legislation against price discrimination may not be the best approach to this problem even where the discrimination is believed in particular cases to be contrary to the public interest. As has been shown, price discrimination in favour of large buyers can only exist where suppliers possess some measure of market power. In countries where price discrimination between buyers is considered a serious problem it would seem possible that effective action could be taken by applying existing legislation to control the abuse of market power rather than introduce special prohibitions of price discrimination or measures to curb "buying power". The problems of price discrimination is essentially that oligopoly manufacturing industries are able to charge monopoly prices to small buyers but are forced to charge competitive prices to large buyers. Thus, even though the overall level of prices and profits of a supplying industry may not be excessive, it is possible that, in relation to small buyers, prices and profits earned by oligopoly supplying industries are such as to warrant remedial action by the competition authorities.

REFERENCES

- Adams, W. (ed) The Structure of American Industry Macmillan. New York.
- Adelman, M. (1958) Dirlam and Kahn. The A & P Case Journal of Political Economy Vol. LXI October.
- Atkin, B. and Skinner, R. (1975) How British Industry Prices Industrial Market Research Ltd. London.
- Bauer, P. and Yamey, B.S. (1952) Competition and Prices: a study of ground nut buying in Nigeria. Economica Vol.19.
- Blois, K.J. (1972) The Growing Influence of Large Buyers IMRA Journal Vol.8 No.1. February.
- Brooks, D.G. (1974) Buyer Concentration: a Forgotten Element in Market Structure Models. Industrial Organisation Review Vol.1.
- Committee of Inquiry on Small Firms (1971) Report of the Committee of Inquiry HMSO. Cmd. 4811.
- Common Market Law Reports (1978) United Brands Company v EEC Commission Vol.XXI parts 129 & 130. 11th and 18th April
- Crew, M.A. and C.K. Rowley (1970) Anti-Trust Policy: Economics versus Management Science. Moorgate and Wall Street. Autumn.
- Development Analysis Limited (1977) A study of the evolution of concentration in the food distribution industry of the UK Commission of the European Communities. October.
- Federal Trade Commission (1966) Economic Report on the Structure and Competitive Behaviour of the Food Industry. Washington.
- George, K.D. (1966) Productivity in Distribution University of Cambridge, Dept of Applied Economics Occasional Paper No.8.
- George, K.D. and C. Joll (1975) Competition Policy in the UK and the EEC Cambridge University Press.
- Guth, L.A. Schwartz, R.A. Whitcomb, D.K. (1976) The Use of Buyer Concentration Ratios in Tests of Oligopoly Models. Review of Economics and Statistics. Vol.58.
- " " (1977) Buyer Concentration Ratios Journal of Industrial Economics Vol.25. No.4. June.
- Lustgarten, S.H. (1975) The Impact of Buyer Concentration in Manufacturing Industries. Review of Economics and Statistics. Vol.57 No.2. May.

MacAvoy, P.	(1962) <u>Price Formation in Natural Gas Fields</u> . Yale University Press.
Mead, W.J.	(1966) <u>Competition and Oligopoly in the Douglas Fir Lumber Industry</u> . Cambridge University Press.
Mead, W.J.	(1967) The Competitive Significance of Joint Ventures. <u>Antitrust Bulletin</u> Vol.12.
Monopolies Commission	(1963) <u>Report on the Supply of Electrical Equipment for Mechanically Propelled Land Vehicles</u> HMSO. London.
Monopolies Commission	(1968) <u>Report on the Supply of Clutch Mechanisms for Road Vehicles</u> . HMSO. London.
Monopolies Commission	(1970) <u>Report on the Supply of Metal Containers</u> . HMSO. London.
Monopolies Commission	(1972) <u>Report on the Supply of Breakfast Cereals</u> HMSO. London
Monopolies Commission	(1976) <u>Report on the Supply in the United Kingdom of Frozen Foodstuffs for Human Consumption</u> . HMSO. London.
Monopolies Commission	(1977a) <u>Report on the Supply of Flour and Bread</u> . HMSO. London.
Monopolies Commission	(1977b) <u>Report on the Supply in the United Kingdom of Cat and Dog Foods</u> . HMSO. London.
Monopolies Commission	(1979) <u>Report on the Supply of Petrol</u> . HMSO. London.
Norman, N.R.	(1976) <u>Trade Practices Regulation. An Analysis</u> . Australian Industries Development Association. Canberra.
Stigler, G. J.	(1964) A Theory of Oligopoly. <u>Journal of Political Economy</u> . Vol 72. February
Trade Practices Review Committee	(1976) <u>Report to the Minister for Business and Commercial Affairs</u> . Commonwealth of Australia. Canberra.
United States Dept. of Justice	(1977) <u>Report on the Robinson-Patman Act</u> . Washington D.C.
Ward, T. S.	(1973) <u>The Distribution of Consumer goods Structure and Performance</u> . University of Cambridge Dept. of Applied Economics. Occasional Paper 38.
Williams, O. E.	(1968) Economics as an Antitrust Defense <u>American Economic Review</u> Vol 58 pp18-36.

FOOTNOTES

1. For a discussion of the welfare effects of monopolistic price discrimination see M. Policies towards Market Power and Price Discrimination in George and Joll (1975)
2. An interesting case of the application of Article 86 to price discrimination is the United Brands case (Common Market Law Reports 1978).
3. Lustgarten's results were contradicted by those of Guth et al (1976) who used a different measure of buyer concentration and a much small number of observations.
4. Bauer and Yamey (1952) found that the market prices for Nigerian groundnuts rarely exceed the official minimum producer price in areas where only two purchasing companies operated, while in those areas where the number of buyers was larger, premiums over the minimum price were general. A study by Mead (1966) of the auction prices for Douglas fir timber found the ratio of auction prices to producers' reserve prices to be positively related to the number of buyers. Investigations by MacAvoy (1962) and Mead (1967) into the pricing of leases for the exploitation of oil and natural gas found that prices fall significantly as the number of bidders becomes very small.
5. A survey by Atkin and Skinner (1975) of methods of pricing used by 220 UK companies found that 55% operated published price lists, 47% had internal price lists, 53% negotiated prices individually with customers, and 43% priced through formal tender.
6. For 53 US industries Guth et al (1977) found that in only 6 did buyer concentration exceed seller concentration.
7. Examples of the price differential in certain vehicle components:-

	<u>Retail price</u>	<u>Wholesale price</u>	<u>Price to Vehicle Manufacturers</u>
Champion Spark plugs	25p	14-18p	less than 2½p
Automotive Products	605p	approx. 450p	160p
6" clutch.			(initial equipment)
			302p
			(replacements)

(Source Monopolies Commission 1963, Monopolies Commission 1968)

However it must be noted that a further reason for the price differential is the important complementarity between the initial equipment market and the replacement market. Thus a price may be different even to the same buyer according to whether the component is initial equipment or a replacement.

8. Stigler's theory of oligopoly (1962) addresses itself to this issue, and shows that colluding oligopolists will offer secret price cuts to the limit where their gains in market shares make their price cutting behaviour evident to fellow suppliers. Stigler's analysis predicts that secret price cuts will be offered to large rather than to small buyers. However the theory is applicable only to oligopolists with a price fixing agreement such that departures from the agreed price by individual firms will, if detected, result in disciplinary action by the industry.

Recent developments in the control of price discrimination in countries outside North America

BY R. M. GRANT*

A notable recent feature of the international development of competition policy has been renewed interest in the control of price discrimination. Legislative measures to prohibit certain forms of price discrimination have been introduced in Austria, Australia, France, Germany and Ireland. Current concern over price discrimination, particularly that arising from retail buying power, is also indicated by the U.K. Monopolies Commission inquiry into retail discounts and the investigations by the German Monopolies Commission and an OECD Working Party into buying power. As in other areas of antitrust policy, legislative developments in the industrialized countries outside North America have lagged by several decades behind those in the U.S.A. and Canada. While the U.S. Robinson-Patman Act and Canadian price discrimination law (section 498 of the Criminal Code) were introduced in the mid-1930's, the price discrimination measures of other countries have been features of the 1970's.

This article examines the experience of the four countries which introduced significant measures to control price dis-

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crimination between 1972 and 1974: Germany, Ireland, France and Australia. The measures introduced in the four countries differ considerably; the effects and effectiveness of the different approaches to price discrimination control are compared. The primary objective of this survey is to resolve some of the general issues concerning legislation toward price discrimination. Can such legislation be effective? Are the anticompetitive consequences of the cure worse than the disease itself? Are laws to prevent price discrimination the appropriate policy toward the basic problem? The answers to these questions are particularly relevant to the future of the U.S. Robinson-Patman Act. One of the principal weaknesses of the debate over the Act has been the failure to determine whether the problems of price discrimination control in the U.S.A. arise from the particular features of the Robinson-Patman Act and its interpretation or whether such problems are endemic to all attempts to control price discrimination.

The background to and objectives of price discrimination legislation

Competition policy, like other aspects of commercial and economic policy, will tend to reflect the economic conditions of the time. This section examines briefly the extent to which the measures to control price discrimination introduced in Western Europe and Australia during the 1970's have common objectives, reflecting similar economic conditions, and how similar these conditions are to those which gave rise to the 1936 Robinson-Patman Act.

It is generally agreed that the intent of the Robinson-Patman Act was not so much the promotion of competition as the protection of small business (especially small retailers) from unfair competition arising from the superior bargaining power of larger rivals.¹ The priority which Congress attached to this

¹ See, for example, U.S. Department of Justice, *Report on the Robinson-Patman Act*, Washington, D.C., 1977, pp. 101-113.

protective function of the legislation reflected the circumstances of the time: the acute depression of the 1930's together with particular pressure on small retailers from the rapid expansion of chain stores. Although the circumstances in which price discrimination legislation has been introduced into other countries were far less severe than those which engendered support for the Robinson-Patman Act, one close parallel between the two periods was the threat to small independent retailers posed by the expansion of chain retailers. Until the 1950's Western Europe and other industrialized countries were comparatively insulated from the two major innovations which had induced structural change in American retailing: the chain store and the supermarket. The superimposition of large scale, technically advanced forms of retailing on a traditional retail sector gave a powerful impetus to small retailers and, to a lesser extent, manufacturers to seek measures to curb the power of the big retailers. The table shows the growth of large scale retailing and the decline of independent retailers during the period 1962-1971.

It is notable that the three EEC countries that showed the greatest increase in the share of retail trade held by large-scale retailers and the greatest decline in the share of independents—

Share of Large-Scale Retailers* in Total Retail Trade

Change 1962-1971

	%	%	%
France	19.4	28.7	+ 9.3
Germany	23.4	32.6	+ 9.2
Ireland	12.7	21.7	+ 9.0
Italy	4.8	8.8	+ 4.0
Netherlands	24.2	29.1	+ 4.9
U.K.	45.5	50.3	+ 4.8

* "Large-scale retailers" are defined as multiple shop organisations, department and variety stores, consumer cooperative and mail order houses.

SOURCE: National Economic Development Office, *The Distributive Trades in the Common Market*, H.M.S.O. 1973.

France, Germany and Ireland—were the three EEC countries which introduced measures to control price discrimination during the early 1970's. In Italy, on the other hand, where the dominance of the independent retailers was unaffected by new developments in retailing (due primarily to restrictions on the establishment of large retail stores) pressure for control over price discrimination has been insignificant. In the U.K. the early introduction of chain stores and supermarkets resulted in a slower rate of structural change with more effective adaptation of the independent sector to the new circumstances.

Although ministerial statements tend to emphasize the pro-competitive rather than the protective objectives of proposed legislation, it is clear that the price discrimination measures introduced by governments have been oriented toward the maintenance of the small retailer. The price discrimination law of France is of particular note in this respect since, unlike the legislation of all other countries, the illegality of price discrimination is not dependent upon the discrimination causing injury to competition. Moreover the French price discrimination law (like that of Austria) forms a part of a more general law aimed at safeguarding the interests of small businesses. In Ireland emphasis was given to the need to maintain retail outlets in less populated areas. In Germany and Australia, on the other hand, price discrimination controls were introduced as part of more general legislation strengthening competition policy. In Australia in particular, considerable emphasis is placed on the limitation of the price discrimination law to cases where a substantial detriment to competition occurs. Even here, however, it is notable that an official review of Australian competition law regarded the primary aim of the price discrimination provisions to be "to advantage small business, especially small retailers."²

Thus in Western Europe and Australia, as in the United States, provisions against price discrimination occupy a special

² Trade Practices Review Committee, *Report to the Minister for Business and Commercial Affairs*, Commonwealth of Australia, Canberra, 1976, para. 7.2.

place within the body of competition law. While legislation to prevent cartels, monopolistic abuses and mergers are unambiguously directed toward the stimulation of competition with the consumer as the chief beneficiary, price discrimination laws are aimed at preventing unfair competition, the intended beneficiaries being primarily small businessmen.

Problems of applying general antitrust legislation to price discrimination

The need for special measures to deal with the problem of price discrimination arises from the inadequacies of general antitrust legislation in preventing unfair or uncompetitive price discrimination. The antitrust laws of most industrialized countries outside the U.S.A. focus upon two areas: restrictive business agreements and the abuse of dominant market positions. Under such legislation competition authorities can prevent price discrimination only where it is practiced by a cartel or a monopoly supplier. In Britain and the EEC, for example, discriminatory pricing by dominant suppliers has *attracted* particular attention from the competition authorities.³ This type of price discrimina-

³ In the U.K., dominant firm investigations by the Monopolies and Mergers Commission have resulted in the condemnation of price discrimination in a number of cases, including Rank-Xerox (*Report on the Supply of Indirect Reprographic Equipment*, HMSO, London, 1976), Birds Eye Frozen Foods (*Report on the Supply of Frozen Foodstuffs*, HMSO, London, 1976), Metal Box (*Report on the Supply of Metal Containers*, HMSO, London, 1970). Discriminatory discount terms were also criticized as anticompetitive and undesirable by the Price Commission before its disbanding in 1979 (see *Report on Cadbury-Schweppes Foods Ltd.*, HMSO, London, 1978). Legislative powers to control price discrimination by individual firms on a case-by-case basis have recently been extended in the U.K. by the introduction of the Competition Act, 1980, which provides *inter alia* for the investigation and prohibition of anticompetitive practices undertaken by a particular firm. In the European Community the principal case establishing the scope of article 86 against discriminatory pricing by a dominant supplier was the successful prosecution of United Brands in

tion approximates the textbook case of monopoly price discrimination involving either the *exploitation* of monopoly power through taking advantage of different demand elasticities in different markets or the *extension* of monopoly power through selectively predatory price cutting. However, it bears little relationship to the predominant form of price discrimination which gave rise to concern in North America during the 1930's and in Western Europe during the past two decades: that between large and small retailers in the purchase of manufactured foods. Here the source of the discrimination is not so much the market power of the supplier as the exercise of bargaining power by large purchasers. This would imply that legislation against restrictive agreements and dominant market positions should be applied not to price discrimination by suppliers but against the buying power of large purchasers. In practice, however, such approaches are not feasible: the share of total purchases in an industry which large retailers account for is seldom sufficient to bring them within the scope of monopoly policy,⁴ while buying groups tend to be formed by small buyers whose aim is only to match the bargaining power of large buyers.

The Australian price discrimination law: a "modified Robinson-Patman"

Of the countries that have introduced general prohibitions on price discrimination, that of Australia most closely resembles the

the Chiquita banana case (see "United Brands Company v. E. C. Commission," *Common Market Law Reports* Vol. XXI. 11 & 18, April 1978).

⁴ In the U.K., monopoly law applies equally to the buyer as to the seller side of the market, yet no cases of buyer monopoly have been referred to the Monopolies and Mergers Commission, partly because of the tendency for buyer concentration to be low relative to seller concentration. Article 86 of the Treaty of Rome covers the abuse of dominant market positions in the EEC. Only two cases have been brought involving market dominance by buyers: the Gema case (see O.J.L. 134 of 20 June 1971) and the Eurofirma case (see 3d Report on Competition Policy, May 1974).

Robinson-Patman Act of the U.S.A. While section 46 of the 1974 Trade Practices Act which deals with the abuse of market power by market dominating enterprises⁵ could be directed against price discrimination by a monopoly seller or the acquisition of preferential terms by a market dominating buyer, section 49 (reproduced in appendix 1) greatly extends the scope of competition law in relation to price discrimination by specifically prohibiting anticompetitive discrimination. The main features of section 49 are:

Discrimination between purchasers in prices, discounts, rebates, credit, payments or the provision of services is prohibited where it has "the effect of substantially lessening competition" in the primary or secondary markets.

The prohibition does not apply to discrimination which makes reasonable allowance for differences in the cost of supply or which results from the good faith meeting of competition; the onus of proof for these exemptions lying with the defending party.

It is illegal to induce, attempt to induce or knowingly receive a prohibited discrimination.

The similarities between section 49 and the U.S. Robinson-Patman Act both in structure and words are so many that one commentator described the section as "a modified Robinson-Patman Act."⁶ In applying to purchases of "like grade and quality" the section echoes Robinson-Patman, and there are close parallels in the exemptions given to cost justified price differentials and the "good faith" meeting of competition. The principal differences between section 49 and Robinson-Patman arise from the attempt by the Australian legislators to avoid some of the

⁵ Section 46 states: "A corporation that is in a position substantially to control a market for goods or services shall not take advantage of the power in relation to that market that it has by virtue of being in that position: (a) to eliminate or substantially damage a competitor . . . , (b) to prevent the entry of a person into that market or into another market, or (c) to deter or prevent a person from engaging in competitive behaviour in that market or in another market."

⁶ Ann R. Everton, *Price Discrimination, A Comparative Study in Legal Control*, MCB Monographs, Bradford, 1976.

problems which have been evident in over 40 years of U.S. experience with price discrimination law. In particular, there is a clear desire of the Australian government to avoid the rigidities and anticompetitive effects of Robinson-Patman. Thus, section 49 contains no absolute prohibitions against any discriminatory practices such as those which feature in sections 2(d) and (e) of the Robinson-Patman Act and also in France's price discrimination law (in relation to cash payments and gifts) and in the Irish Groceries Order (in relation to credit).

Section 49 is more orientated toward the promotion of competition than Robinson-Patman. In both section 49 and Robinson-Patman the illegality of price discrimination depends upon an adverse impact on competition. But while under Robinson-Patman it may be sufficient to show that a *single competitor* of the supplier or purchaser has been injured by the discrimination, section 49 requires "the effect of substantial lessening competition in a market." Furthermore, proscribed price discrimination under section 49 covers only discrimination "of . . . magnitude" or of a "recurring or systematic character"—the purpose being to exclude the unsystematic price dispersion that characterizes competitive pricing and is the usual result of dynamic market forces. The priority which section 49 attaches to the promotion of competition contrasts sharply with the price discrimination measures of the French and Irish governments.

The desire of the Australian authorities to avoid the confusion and differences of interpretation which have arisen in relation to Robinson-Patman is indicated by the more careful delimiting in section 49 of the type of discriminatory conduct which is prohibited and the scope of the exemptions. Thus it is stated that substantial lessening of competition must be in "a market in which the corporation supplies" (*i.e.*, the *primary* market) or the purchasers supply (*i.e.*, the *secondary* market). Similarly the cost differences which justify the discrimination are explained to be "in the cost or likely cost of manufacture, distribution, sale or delivery resulting from the differing places to which, methods by which or quantities in which the goods are supplied to the purchasers."

Yet despite the care taken in the framing of section 49 and the emphasis placed upon the promotion of competition, the initial results of the introduction of the price discrimination law appear to have been confusion among businessmen, hostility from industry and from economists, and a dampening of price and discount competition. Assessment of the effects of price discrimination law is difficult, partly because section 49 has not been enforced with any vigor by the Trade Practices Commission. In its annual report for 1974-1975 the Commission noted: "The price discrimination area is a particular area that the Commission has so far left to private action, although none has yet been brought." As a result little guidance was offered to industry with respect to the uncertainties inherent in the legislation. Among the issues requiring interpretation either by the Commission or by the courts were: Which costs are relevant? How closely should they be related to price differences? How great is a "substantial" lessening of competition? What constitutes a "good faith" meeting of competition?

In the absence of active enforcement either by the Commission or by private parties, the impact of section 49 has been largely through voluntary compliance. For a period of 4 months from October 1, 1974, when the Act was put into operation, the enforcement of the price discrimination provision was delayed to allow "a reasonable time for persons . . . to become familiar with the new limitations on the freedom to discriminate between customers" (Attorney-General of Australia, L. Murphy QC). During this period the pricing practices of much of Australian industry appear to have been extensively revised. The Australian Industries Development Association (AIDA) found that because of uncertainty over the law and fear of a rigid enforcement policy by the Trade Practices Commission, many companies abandoned all or part of their discount schemes, especially any "loyalty" discounts to larger buyers.⁷

⁷ N. R. Norman, *Trade Practices Regulation: An Analysis*, Australian Industries Development Association, Canberra, 1976.

The AIDA survey includes some interesting replies from companies on the effects of the 1974 Act. The section on price discrimination attracted the greatest number of criticisms. The general view was that while the competitive position of small buyers relative to large was improved, the major impact of section 49 was to raise the general level of prices in industry. The survey found that suppliers' sales staffs were greatly confused by the Act and that the main effect of section 49 was for discounts to be reduced to rates that could clearly be justified on cost grounds. The result was an increase in average net prices.

Following widespread criticism of the price discrimination law and concern over the operation of other sections of the Trade Practices Act, the change of government in 1975 was followed by the appointment in 1976 of the Swanson Committee to review the working of the Act. In its report the Committee was highly critical of the value of section 49 dealing with price discrimination. It was noted that in oligopolistic markets, selective price reductions to particular buyers may be the principal form of price competition. Such price cuts may "not only be a trigger to more competitive pricing in the particular market segment, but it may actually lead to an overall reduction of price levels in that market."⁸ The Committee supported its analysis by the suggestion that the introduction of section 49 was followed by a general increase in average prices. Its conclusion was that "in the Australian context of the conduct of a large buyer who is endeavouring to secure price cutting in his favour, whether it is discriminatory or not, may be more procompetitive than anti-competitive. Section 49 had substantially reduced price flexibility the detriment of which outweighed any benefits to small firms."⁹ The repeal of section 49 was recommended.

The government initially accepted the Swanson Committee's recommendation and an amendment bill including the repeal of

⁸ Trade Practices Review Committee, *Report to the Minister for Business and Consumer Affairs*, Canberra, 1976, p. 45.

⁹ *Ibid.*, pp. 45-46.

section 49 was introduced in December 1976. But following support for the retention of section 49 by small business organizations, the repeal of the section was dropped from the bill.

With the ending of uncertainty over the possible repeal of section 49, controversy over the section has diminished and it has been possible to identify more clearly the policy of the Trade Practices Commission in interpreting and enforcing the price discrimination law. The most obvious feature has been the absence of any court proceedings by the Commission. The Commission has preferred to operate through investigation, discussion and encouraging voluntary compliance. In the case of Pilkington, Australia's sole manufacturer of flat glass, a detailed investigation of complaints over discriminatory terms of supply was followed by Pilkington revising its pricing structure with the result that the Commission decided not to take proceedings against the company.¹⁰

The most important feature of the Commission's enforcement policy has been the strong emphasis given to the condition that illegal price discrimination must involve a substantial lessening of competition. Thus, despite over 180 complaints concerning alleged price discrimination up to mid-1979, many were found either not to involve any substantial lessening of competition and some "were really complaints about the presence of competition."¹¹ In the supply of petrol, a sector which has been the subject of considerable investigation by the Commission, it was found that the price discrimination that existed was primarily a reflection of active price competition and structural changes in the industry. Not only was competition not "substantially lessened," but increased discounting at the wholesale level was resulting in lower retail prices.¹² In attempting to identify price

¹⁰ Trade Practices Commission, *Fifth Annual Report. Year Ended 30 June 1979*, Canberra, 1979, pp. 129-139.

¹¹ *Ibid.*, p. 116.

¹² *Ibid.*, pp. 117-129.

discrimination which has anticompetitive effects the Commission has suggested that price discrimination likely to contravene section 49 is likely to have

at least some of the following elements:

a supplier with significant market power whose discrimination is substantial, recurring, and affects a large proportion of the trade

efficient resellers whose opportunity to compete effectively is put at risk by the discrimination against them

the resellers discriminated against having limited opportunity to look elsewhere for supplies on better terms

big buyers pressing for discrimination

alternative suppliers small or weak or facing entry barriers that may be erected or reinforced by discrimination foreclosing access to leading outlets.¹³

This attempt to limit the application of the law to instances where price discrimination has substantial anticompetitive effects distinguishes the Australian price discrimination law from that of other countries which have introduced general legislation against discrimination. In the Australian case there has been no attempt to regulate the price and discount structures of industry in general. At the same time, the overall impact of the legislation will depend mainly not on those few cases where the Commission has taken steps to enforce the price discrimination law, but upon the extent to which suppliers have voluntarily revised their terms of supply to comply with the law. It is possible that the uncompetitive and inflationary effects that were discerned when the legislation was introduced were the result of an overreaction by suppliers. Recent investigations, however, by the Trade Practices Commission into the grocery trade seem to support the view that the price discrimination law has had a general influence. It was generally agreed that section 49 had had some effect in limiting the power of large buyers and narrowing the dispersion of discount rates between large and small buyers.¹⁴ This result was confirmed by a survey by the U.K. Food and Drink Industries

¹³ *Ibid.*, p. 143.

¹⁴ *Ibid.*, p. 141.

Council: the majority of respondents felt that there had been some measure of compliance with section 49.¹⁵ To the extent that the price discrimination law has had a general influence on trading terms, it could be argued that it has inevitably had the effect of blunting price competition.

The general legislation prohibiting price discrimination —the case of France

Of the countries that have introduced special legislation to prohibit price discrimination the most extensive measures are those introduced by the French government. Until recently competition policy received a low priority in France due to the preference of the French government for planning backed by extensive state intervention as the basis of its economic strategy. The rigorous approach to price discrimination contrasts markedly with the much weaker policy toward restrictive agreements, monopolies and mergers. The reason is that the measures against price discrimination were viewed not so much as a weapon of competition policy but as a means of protecting small businessmen and an integral part of the system of price controls (which have only recently been dismantled). The basic price discrimination law of France is contained in the *Loi d'Orientation du Commerce et de l'Artisanat* (Act Regulating Trade and Crafts) of 1973—commonly known as the *Loi Royer* after M. Royer, the principal sponsor of the bill.¹⁶ The Act states:

Section 37 No producer, trader, manufacturer or craftsmen shall

1. apply discriminatory prices or conditions of sale which are not justified by corresponding differences in the price of articles or services applied.

¹⁵ Food and Drink Industries Council, *Results of FDIC Survey on Legislation to Control Discounts and Related Practices*, London, January 1979, "Australia," pp. 5-6.

¹⁶ Provisions against price discrimination have been in force since 1945 (article 37-1-a of Statute No. 45-1483 of 30 June 1945). The early measures, although strengthened in 1958, appear to have been of limited effectiveness.

2. circumvent subsection 1 above by directly or indirectly giving any re-seller gifts in kind or in cash or free services.

A producer must furnish any reseller who so requests with his price lists and his conditions of sale.

Section 38 No re-seller shall seek or knowingly accept from a supplier any benefits contravening section 37.

In addition, section 41 limits the credit which is extended to traders for purchases of perishable foodstuffs to 30 days following the end of the delivery month. The purpose is to prevent large traders from using their buying power to insure that their suppliers finance them. Section 45 allows individuals to initiate civil actions for damages by the victims of illegal practices. The most noticeable feature of the price discrimination sections is that all price differences unrelated to cost are prohibited. This is quite different from the laws of the United States, Canada, Australia or West Germany where some competitive harm must be shown. The absence of any reference to competition reflects the fact that the principal objective of the law was the protection of small and medium sized retailers. A notable aspect of the law is the desire to achieve transparency in pricing through the requirement that prices and conditions of sale must be made available to any reseller. Circumvention of the published terms is prevented by the prohibition of gifts and cash payments to resellers and by control of credit terms under section 41.

It is interesting to compare the simplicity and clarity of the French antidiscrimination law with the complexity of other countries' legislation (particularly the antidiscrimination provisions in the Irish Groceries Orders). Because the French law makes no concessions to the need for flexibility of trading terms and takes no account of the restriction of price competition which such inflexibility might cause, the definition of illegal price discrimination is greatly facilitated.

To explain the price discrimination law in greater detail, the *Circular of 10 January 1979 Concerning Commercial Relations*

between Enterprises (the "Circulaire Scrivener") was issued.¹⁷ Such circulars do not have any legal force and in principle are only administrative guidelines. However, since they represent the government's interpretation of the law and its intentions for implementation, they are very influential upon business. The circular explains the purpose of the antidiscrimination sections and carefully defines the terms "discrimination," "supplier," "justified by a corresponding difference in the cost of supply," and other terms included in the Act. The circular goes into considerable detail over the trading practices which may contravene the price discrimination sections and how they should be altered in order to insure compliance. Thus, the circular notes that discriminatory prices and conditions may involve not only discounts and rebates but delivery conditions, credit terms, and payments for services not actually rendered by the purchaser. In the case of price differentials between the goods which a manufacturer supplies under his own brand and goods which the manufacturer supplies under his customers' house brands, these differentials must be justified, *e.g.*, by reference to savings in production and marketing costs.

It is difficult to assess the effectiveness of the price discrimination provisions of the Loi Royer. The number of cases of discrimination falling within the terms of the law which have been reported by the competition authorities points to active enforcement. Between 1976 and 1978 the numbers of offenses notified under sections 37 and 38 rose from 196 to over 600.¹⁸ The great majority have been under section 37, only about 12 percent of cases have been against the inducement or receipt of discriminatory terms by buyers. The main effort of the authorities has been against cash payments and gifts from suppliers to retailers.

¹⁷ *Circulaire relative aux relations commerciales entre entreprises*, Ch. Scrivener, Le Secrétaire d'Etat auprès du Ministre délégué à l'Economie et aux Finances, Paris, 10 January 1979 (English translation by OECD).

¹⁸ See *Annual Reports on Competition Policy in OECD Member Countries*, OECD, Paris.

Enforcement has concentrated upon administrative proceedings with a strong emphasis on securing voluntary compliance. Few cases have been taken to court by the authorities and to date (September 1980) no judgments have been issued in any of these cases. Few court cases have been initiated by private parties. This relative absence of court actions appears to reflect partly a reluctance by both government and private parties to initiate cases involving price discrimination because of doubts over the ability of the court to interpret and apply the law successfully in such a complex area of commercial relations. It also indicates the willingness of offending parties to accede to the wishes of the competition authorities due to the criminal status of contraventions of the French competition law and the heavy fines which such contraventions attract.

The impact of the price discrimination law upon prices, discounts and competition depends largely upon the degree of compliance achieved. Officials of the Directorate-General for Competition and Consumer Affairs have indicated that considerable success has been achieved in eliminating some of the worst examples of off-invoice cash payments and rebates. However, in limiting discounts to large retailers to levels justified by savings in supply costs, progress has been acknowledged to have been limited. As to the effect on prices, while some tendency for discounts to large retailers to diminish has been noted, any general effect of the legislation in increasing the average net prices of suppliers could not be identified because of the effects on prices of the relaxation of price controls which coincided with the more active enforcement of the price discrimination measures.

A survey by the British Food and Drink Industries Council reported that there had been only limited compliance by manufacturers with the terms of the antidiscrimination law. The majority of respondents believed that the measures were only enforced by the authorities against the worst examples of discriminatory malpractices and that the law was being given a more flexible interpretation by officials than that indicated by the

Circulaire Scrivener. However, the existence of the Loi Royer was regarded as important by smaller retailers in providing them with a bargaining counter against their suppliers.¹⁹

With the recent shift in France government policy toward the revitalization of market forces with increased emphasis being placed on competition policy, it is difficult to forecast the future development of price discrimination control. In view of the rigidity of the French price discrimination law (particularly as interpreted by the Circulaire Scrivener) and its close association with the previous system of price controls, it might be expected that the current climate of economic policy would have encouraged a more relaxed interpretation and enforcement. However, officials of the Directorate-General for Competition and Consumer Affairs have expressed the view that, with greater freedom of businessmen to negotiate prices, there is a greater need for a legislative framework governing conduct in the market of which the price discrimination law forms an integral part.

The application of restrictive practices legislation to the problem of price discrimination: the case-by-case approach of Ireland

In the smaller countries of Western Europe the extent of import competition and the priority attached to the exploitation of scale economies, means that discretionary, case-by-case approaches to competition policy have been adopted in preference to general prohibitions of monopolies, restrictive practices or mergers. Thus, the competition legislation of Belgium, Denmark, Finland, Ireland, Netherlands and Sweden involve few outright prohibitions of particular practices, but confer on their competition authorities fairly wide powers to investigate and take remedial action in individual cases of anticompetitive behavior or monopolistic market structures.

¹⁹ Food and Drink Industries Council, *Results of the FDIC Survey on Legislation to Control Discounts and Related Practices*, January 1979.

Irish competition law is embodied chiefly in the 1972 Restrictive Trade Practices Act which consolidated and amended the acts of 1953 and 1959.²⁰ The Restrictive Practices Commission may inquire into the supply and distribution of a particular category of goods and, where certain business practices are found to be contrary to the public interest, is empowered to recommend remedial action. The Minister for Industry, Commerce and Energy may then introduce a legislative order to enforce the Commission's recommendation by prohibiting restrictive or unfair practices or taking action "to ensure equitable treatment of all persons." The Examiner of Restrictive Practices initiates inquiries and is responsible for implementing the Commission's recommendations.

The 1972 Act makes no explicit reference to price discrimination although among the "unfair practices" listed in the Third Schedule to which the authorities "shall have regard in the exercise of their functions" is: "Without just cause . . . to give preference in regard to the supply of goods or the provision of services." Yet despite the vagueness of this reference to discriminatory practices and the fact that price discrimination was not an important issue in either of the first two inquiries of the Commission (Radio Sets and Accessories, 1955 and Building Materials, 1955), identical recommendations against price discrimination were included in these reports and similar recommendations featured in subsequent reports:

A supplier shall not, as respects goods (of like grade, quality or quantity) to which this order applies, differentiate by means of any rebate, refund, discount, credit or any other similar concession or by the provision of any service, facility, or other consideration of value between one purchaser for resale and another purchaser for resale (being purchasers of the same class).²¹

²⁰ The 1978 Mergers, Take-overs and Monopolies (Control) Act extended competition law to cover monopolies and mergers.

²¹ See article 15 of the *Restrictive Trade Practices (Building Materials) Order, 1955* and *Restrictive Trade Practices (Radio Sets and Accessories) Order, 1955*. Similar articles were included in the orders

There are similarities of wording between the price discrimination article and section 2(a) of the Robinson-Patman Act, and in some respects the coverage of the Irish measures is wider than that of Robinson-Patman: the Irish orders do not require that the price discrimination should injure competition and there is no provision for "cost-justification" or "meeting competition" defenses. This absence of any reference to competition in the Irish orders may be indicative of the greater weight which the Irish competition authorities attach to considerations of fairness and equality of treatment than to the maintenance of active competition. However, the Irish price discrimination orders only apply to discrimination between supplies of "like grade, quality or *quantity*." This means that the Irish orders are subject to the same weakness as the original section 2 of the Clayton Act—that the prohibition does not apply to the most common form of price discrimination: that between large and small buyers. Furthermore, the Irish orders are concerned only with price discrimination between purchasers of the "same class."

In grocery products not only has price discrimination been the central issue in the Commission's inquiries, but the attempts to enforce controls over price discrimination have involved the competition authorities in unprecedented controversy. Rising concentration in the grocery trade during the late 1960's and growing dissatisfaction expressed by small retailers and wholesalers over their terms of purchase led the Commission to institute an inquiry into the supply of grocery goods in 1971. In the Commission's report of 1972, price discrimination was the central issue, with concern being directed primarily toward the issue of fairness rather than toward the effects of price discrimination upon competition.²² The Commission identified the relationship of discounts to costs savings as the appropriate criterion for fair-

relating to Motor Cars (1956), Carpets (1960), Hand Knitting Yarns (1962), Jewellery Watches and Clocks (1968), and Electrical Appliances and Equipment (1971).

²² Fair Trade Commission, *Report of the Enquiry into Grocery Goods*, Dublin, 1972.

ness: " . . . unfairness is where there are differences in discounts which are totally unrelated to objective considerations such as savings in costs and which reflect merely the strong bargaining positions of certain customers."²³

The main provisions of the Groceries Order of 1973 are set out in appendix 2. The major features of these provisions are:

Every supplier is required to prepare a statement of his terms of supply which should include an indication of the nature and extent of any *supplementary terms* (those negotiated with individual customers). The statement of terms must then be made available to the Examiner of Restrictive Practices and to any wholesaler or retailer who demands it.

Discounts may be related either to the distribution *functions* of resellers or the *quantity* or *value* of the goods.

Quality discounts should "take reasonable account of the costs of . . . deliveries."

Discounts related to aggregate purchases over a period of time should take "reasonable account . . . of the number of places to which the supplier is required to deliver the goods and the frequency of any such deliveries."

Terms and conditions "shall be reasonable" and shall not "unfairly or unjustly" cause established distributors to be forced out of business or prevent new distributors from setting up business.

Supplementary terms individually negotiated between suppliers and distributors shall not be substantially bigger than standard discounts and shall be "determined by reference to standard criteria."

A retailer or wholesaler shall not induce a supplier to sell to him on terms which contravene the Order.

Payment of advertising allowances by suppliers to retailers and wholesalers is prohibited.

The Order is a curiously unwieldy amalgamation of requirements and prohibitions concerning terms of sale in the grocery trade. While some of the provisions set out fairly detailed

²³ *Ibid.*, para. 121.

requirements for the structuring of discount scales (*e.g.*, by defining the criteria to which discounts and rebates should be related), other provisions are remarkably vague (*e.g.*, that “terms and conditions . . . shall be reasonable,” that “rates of discount . . . take reasonable account of . . . costs of . . . deliveries”). The reason for this rather complex set of provisions appears to be the desire of the Commission to provide practical and detailed guidance to the trade, while at the same time avoiding the rigidities of pricing practices which resulted from the enforcement of the Robinson-Patman Act.

In practice the Order seems to have been almost entirely ineffective. While some major suppliers of food products attempted to revise their terms of sale to comply with the Order, such revisions had the effect of offending either wholesalers or multiple supermarket operators which resulted in one or the other group taking boycott action.²⁴ Following complaints from the Examiner that the imprecise wording of the Order was resulting in conflicting interpretations and that the presence of powerful wholesalers and retailers was impeding enforcement, a special review of the operation of the Order was instituted.

Despite the difficulties experienced in enforcing the Order and the arguments of manufacturers that the regulation of suppliers' terms restricted competition and was unfair to suppliers when the cause of discrimination was the exercise of buying power, the Commission recommended only minor amendments to article 3. These recommendations were directed toward greater flexibility in the terms of supply which were allowable thus:

discounts could be related not just to the functions of the distributor and the amount of goods purchased but also to “any other objective

²⁴ The introduction of new terms by W & C MacDonnell was followed by certain wholesalers boycotting margarine suppliers. The revision of discount scales for tea by J. Lyons & Co. and cheese by Golden Vale Food Products in June 1974 resulted in similar boycotts by supermarket groups. See Restrictive Practices Commission, *Report of Special Review of the Operation of the Restrictive Practices (Groceries) Order, 1973*, Dublin, 1975, pp. 51-52.

criteria which are designed to promote efficiency in supply or distribution and which are necessary in the legitimate interests of the suppliers' business."

discounts should take "reasonable account of economies of supply and distribution" and not as previously of the *costs of delivery*.

the requirement that *overriding discounts* be related to the number and frequency of deliveries was dropped.

These recommendations were given effect in the Restrictive Practices (Groceries) (Amendment) Order, 1978.

The effect of the amendments was greatly to relax the prohibitions against discriminatory discount terms, but at the same time the amendments did nothing to clarify the limits of the law. Indeed, the greater flexibility which was introduced, particularly that of allowing discounts to be justified by "any other objective criteria . . ." increased the vagueness of the Order. Little progress has been made in implementing the Order. While the Examiner has pursued discussions with suppliers and distributors over the adjustments in trading terms required by the Order, boycotts have continued. In certain discriminatory practices other than in prices and discounts, enforcement of the Order has been more effective. Thus, restrictions on the length of credit which would be offered to distributors and the prohibition of advertising allowances appear to have been effectively implemented—probably reflecting their lack of ambiguity and greater ease of identifying contraventions.

The Irish experience clearly demonstrates the difficulties of introducing controls over price discrimination, which try to combine the prevention of unfairness with the provision of a wide margin of flexibility for suppliers and purchasers. Providing flexibility inevitably leads to uncertainty and conflicting interpretations which greatly increase the difficulties of insuring voluntary compliance. But probably the most significant factor in the Irish experience has been the failure of the competition authorities to pursue a vigorous implementation of the Order bringing, where necessary, court actions against contraventions of the

Order. This unwillingness to invoke the law would seem to reflect the belief that as complex an issue as price discrimination and as vague a piece of legislation as the Groceries Order would involve the courts in enormous problems of interpretation and would possibly result in unsatisfactory decisions from the point of view of the competition authorities.

The treatment of price discrimination as an abuse of market power: the case of Germany

The price discrimination law of Germany is the most limited of any of the four countries surveyed in this article. Despite this, the issues of buying power and discriminatory conditions of sale have been the subjects of much debate in Germany. The limited scope of the price discrimination law reflects, almost paradoxically, the strength of the German government's commitment to an active competition policy—the principal objection of the German government to a more general prohibition of price discrimination is that it may encourage price inflexibility and weaken the competitive market mechanism.

The basic antitrust law of Germany is contained in the 1973 Act against Restraints of Competition (ARC). Section 26(2) of the ARC specifically prohibits discriminatory terms of supply under certain conditions:

Market dominating enterprises . . . shall not unfairly hinder, directly or indirectly, another enterprise in business activities which are usually open to similar enterprises nor, in the absence of facts justifying such differentiation, treat such an enterprise directly or indirectly in a manner different from the treatment accorded to similar enterprises. Sentence 1 shall also apply to enterprises and associations of enterprises, insofar as suppliers or purchasers of a certain type of goods or commercial services depend on them to such an extent that sufficient and reasonable possibilities of dealing with other enterprises do not exist.

This section represents only a modest extension of the powers of the Cartel Office to prohibit price discrimination from the

general powers conferred on the Cartel Office to prohibit the abuses of power by market dominating enterprises (section 22 of the ARC).²⁵ The key element in section 26(2), which widens the scope of the price discrimination law beyond that implied by section 22, is the sentence which extends the prohibition of discrimination and hindrance to *relationships of dependence* between suppliers and purchasers. What is clear, however, is that section 26(2) is not and was never intended to be a general prohibition of discriminatory practices. An underlying theme of German competition policy has been a concentration upon the sources of market power rather than controlling the manifestations of market power. Thus, in relation to price discrimination, the competition authorities have been principally interested in the buying power which is the most common source of discriminatory prices and discounts.²⁶

The scope of section 26(2) in relation to price discrimination is far from clear, however. In the first place, the relationships of

²⁵ Section 22 states that an enterprise is market dominating if it has no competitor or is not exposed to any substantial competition or has in relation to its competitors a paramount market position, defined by financial strength, access to markets, links with other enterprises or barriers to the entry of other enterprises. Market domination is presumed to exist where for a certain category of goods: an enterprise has a market share of one third, three or less enterprises have a combined market share of one half, five or less enterprises have a combined market share of two thirds.

²⁶ In addition to the ARC which contains the principal statement of Germany's competition law, the Act Against Unfair Competition (*Gesetz gegen unlauteren Wettbewerb*) which deals primarily with consumer protection, has also been used to prevent certain forms of discrimination arising from the exercise of buying power. In a case involving a supermarket's demand for a cash payment from a supplier in return for stocking a particular coffee product, the supreme court ruled that such "entrance fees" are illegal under section 1 of the Act (*WuW/E BGH 1466*. Decision of 17 December 1976). In another case the Court of Appeals of Hamm found the demands of a retailer for advertising allowances from a supplier to be illegal (*WuW/E OLG 1975*. Jubiläumszeitung).

dependence outlined in the second sentence of the section is not precisely defined, and it is not clear how far this sentence extends the prohibition of discrimination beyond market dominating enterprises. Second, "the facts justifying" differentiation is left quite vague. Third, it is not clear how far section 26(2) together with section 22 is capable of controlling discriminatory terms arising from the abuse of buying power by large purchasers.

It was the clarification of these issues, and the third in particular, which was the concern of the Monopolies Commission in its 1977 report on *Abuses of demand power and possibilities for controlling it within the framework of the Law against Restraints on Competition*.²⁷ With regard to the provisions against the abuse of monopoly power in section 22, the Commission found that the control of "abuse by market dominating enterprises when applied to buyers does not present any difficulties that are fundamentally different from those which occur when it is applied to sellers." However, to increase the effectiveness of section 22 against buying power the Commission recommended that individuals should be able to apply to the Cartel Office for the initiation of proceedings, that injured parties should be able to claim damages, and that the Cartel Office should be empowered to carry out investigations into markets where competition is restricted due to the conduct of buyers.

The circumstances necessary to establish the dependence of one enterprise upon another have not been clarified either by the Cartel Office or the courts. The Monopolies Commission in its report believed that a supplier's dependence upon a buyer (or group of buyers) could "be traced back to inadequate or unreasonable possibilities of using other buyers." This might exist "in respect of suppliers to important purchasing associations . . . or . . . the suppliers of components to motor vehicles manufac-

²⁷ Monopolies Commission, *Abuses of demand power and possibilities of controlling it within the framework of the Law against Restraints on Competition*, 29 November 1977 ("Summary of Results" translated by OECD).

turers." Most of the cases of discrimination or hindrance involving relationships of dependence have been concerned with the refusal to supply a branded product to a dependent retailer.²⁸

The only successful actions by the Cartel Office against price discrimination under section 26(2) have involved market dominating suppliers. In the X-ray contrast media case, the supplier of contrast media was found to have violated section 26(2) by charging wholesale prices to distributors and retail prices to retail pharmacies.²⁹ In 1975 the Cartel Office proceeded against a mail order house for demanding additional discounts of 3 to 5 percent from its suppliers, but the case was dropped because price discrimination could not be proved, primarily because of the refusal by most suppliers to accede to the demand.³⁰ In 1978 the Cartel Office began investigating the alleged abusive buying practices of furniture buying associations against furniture manufacturers, but no court action has so far resulted.³¹

The principal means by which discriminatory price concessions to large retailers have been combated in Germany has been through the establishment of competition rules by individual industries which must be registered and approved by the Cartel Office. These competition rules are directed toward the furtherance of effective and active competition and may be enforced by the Cartel Office. The competition rules established by the Association of Branded Goods Manufacturers in May

²⁸ The principal case is that of *Rossinger Skis*, where the refusal by the German distributor of the skis to supply a retailer was found by the Federal Supreme Court to be discrimination against a dependent purchaser (see *Annual Reports on Competition Policy in OECD Countries*, OECD, Paris, 1976 no.2, pp. 24-25).

²⁹ See *Annual Reports on Competition Policy in OECD Countries*, *op. cit.*, 1976 no.2, pp. 31-32.

³⁰ *Ibid.*, 1978 no.2, p. 36.

³¹ *Ibid.*, 1978 no.2, p. 35.

1976, and subsequently by 26 other associations, ban specific discriminatory practices, including the granting of free gifts or special allowances by suppliers.³²

The main area of debate in Germany over policy toward price discrimination has concerned the adequacy of the existing law for controlling discriminatory practices, particularly those which result from the abuse of buying power by large purchasers. Despite proposals from the General Association of German Retail Trade for a general ban on price discrimination, the competition authorities have consistently opposed any prohibition on price discrimination which is not founded upon the abuse of market power. The Monopolies Commission has been the most forthright in its belief in the adequacy of the existing law and its opposition to any more general measures against buying power or discriminatory practices. In its report the Commission noted:

There was no intention in the ARC to enact a general prohibition of discrimination, aimed at eliminating disadvantages suffered by the competitors of the major buyers in the retail sales market, because they obtain less favourable prices, discounts and terms in their purchasing. Such a prohibition produces negative economic effect because encouragement to purchase goods as economically as possible is excluded and the trend towards price competition as a result of investment competition is neutralised. A general prohibition of discrimination considered in isolation from differences of costs would immediately recreate hidden discrimination in the economic sense because it would compulsorily impose the same prices despite different supply costs. A prohibition which permitted an exception owing to the difference in costs would lead to prices being pegged to costs. Such a prohibition would be irreconcilable with dynamic price competition.³³

The Cartel Office has supported the view of the Monopolies Commission on the undesirability of any general prohibition of price competition because of the threat of such control to competition and to the flexibility of market prices, although it has

³² *Ibid.*, 1977 no.2, pp. 34-35 and 1979 no.2, p. 41.

³³ German Monopolies Commission *op. cit.*, "Summary of the Results" para. 18.

been less satisfied with the adequacy of the existing law in dealing with the problems arising from buying power. In relation to discrimination arising from buying power the federal government has declared that "Competition is not an institution guaranteeing survival or even adequate earnings." However, the Cartel Office would take action where discriminatory concessions to large buyers "have a detrimental effect on market structure . . . e.g. . . . increasing concentration on the buyers' or the sellers' side . . . [or where the] choice of consumers is restricted."³⁴ The initiative for extension of the scope of section 26(2) over discriminatory practices and the abuse of buying power has come principally from the Federal Economics Ministry. In the Fourth Act Amending the ARC, first proposed in 1977 and enacted in 1980, section 26(2) was amended in two respects. To extend and clarify the law with respect to the abuse of buying power, it was made illegal for a market dominating enterprise or an enterprise with dependent suppliers to require another enterprise to grant unjustified preferential terms. The amendment also specified the conditions for the dependence of a supplier on a buyer: dependence is to be assumed where the buyer "regularly obtains special benefits not granted to similar purchasers."³⁵

³⁴ *Annual Reports on Competition Policies in OECD Countries*, op. cit., 1979 no.2, pp. 45-46.

³⁵ The precise amendments were as follows:

- (a) The following sentence 3 shall be added to subsection (2): "For the prohibition procedure pursuant to Section 37a (2) a supplier of a certain type of goods or commercial services shall be presumed to depend on a purchaser within the meaning of sentence 2, if, in addition to the price reductions or other considerations customary in the trade, that purchaser regularly obtains special benefits not granted to similar purchasers."
- (b) The following subsection (3) shall be added: "(3) Market dominating enterprises and associations of enterprises within the meaning of Subsection (2) Sentence 1 shall not use their market position to cause other enterprises in business activities to accord them preferential terms in the absence of facts justifying such terms. Sentence 1 shall also apply to enterprises and associations of enterprises within the meaning of subsection (2) sentence 2, in relation to the enterprises depending on them."

Assessment of the impact of the legislation

In the four countries surveyed, as in the United States, measures toward price discrimination have been among the most controversial and problematic areas of competition policy. There is little evidence that the ability of the four countries to learn from the U.S. experience with its price discrimination law has facilitated their introduction of price discrimination measures. In Australia and Ireland in particular, the prohibitions on price discrimination have aroused tremendous controversy with strong opposition from large retailers and some manufacturers.

The foremost criticism of price discrimination measures is that they are inherently anticompetitive. By permitting only those price differentials that are cost justified, discrimination law eliminates competition in discounts (often the principal form of price competition in concentrated industries) hence assisting oligopolistic price coordination. Similarly, new entry is discouraged by preventing price cutting in particular markets. Thus more uniform prices also tend to be higher prices. At a more general level it is alleged that any control over prices must inevitably strike at the heart of the competitive market mechanism. Thus, while price discrimination law may be needed to prevent unfair competition and arrest the tendency toward monopoly in the distributive sector, the cost may be less vigorous price competition among suppliers. The anticompetitive effects of price discrimination law have received particular attention in the United States.³⁶

The differences in the scope of the price discrimination measures among the four countries largely reflect differences in

³⁶ For an analysis of the tendency for price discrimination law to discourage price competition see Corwin Edwards, *The Price Discrimination Law*, Brookings Institution, Washington, D.C., 1959; U.S. Department of Justice, *op. cit.*, 1977 pp. 40-41. The arguments concerning the anticompetitive effects of the Robinson-Patman Act are summarized in Frederick Rowe, "Political Objectives and Economic Effects of the Robinson-Patman Act: A Conspicuous U.S. Antitrust Policy Failure," *Zeitschrift f#252;r die gesamte Staatswissenschaft* (forthcoming).

the priorities accorded to these conflicting goals of the fairness of competition and the effectiveness of competition. In West Germany, the emphasis on competition and the free play of market forces has resulted in a price discrimination law that represents only a modest extension of the general provisions against monopolistic abuse. The Australian price discrimination law places a strong emphasis on price competition by proscribing only discriminatory terms which substantially reduce competition in the market. The widespread concern in Australia over the potentially uncompetitive effects of the price discrimination section has resulted in the Trade Practices Commission adopting an extremely cautious and gradualist approach to its enforcement. In Ireland and France, on the other hand, the illegality of price discrimination is independent of any injury to competition. The generality and rigor of the French antidiscrimination legislation reflects the low priority assigned to price competition and market forces during the early 1970's.

In the four countries surveyed, as in the United States, arguments that price discrimination law is restrictive of price competition are based on the a priori analysis of oligopoly pricing behavior rather than on any empirical studies. Nowhere has any thorough econometric investigation of the effects of price discrimination legislation on the level of prices been undertaken,³⁷ and the only reasonably extensive survey of the impact of price discrimination legislation appears to be the above-mentioned AIDA study in Australia.³⁸ Since the study is based on opinion

³⁷ The U.S. Department of Justice report summarizes the evidence which has been reported as to the effects of Robinson-Patman on competitive behavior (*op. cit.*, pp. 239-243). The principal study is that of Professor Brooks (published in Hearings before the Special Subcommittee on Small Business and the Robinson-Patman Act, 91st Congress, 2d Session, Vol. 2 (1970) at 278). Brooks' findings and conclusions were criticized both by Wolfe ("Reform or Repeal of the Robinson-Patman Act—Another View," 21 *Antitrust Bulletin* 237 (1976)) and by economists at the Antitrust Division of the Department of Justice (see U.S. Department of Justice, *op. cit.*, pp. 239-240).

³⁸ N. R. Norman, *Trade Practices Regulation on Analysis*, *op. cit.*

rather than measurement, its results showing an inflationary impact of the legislation must be treated cautiously, although similar conclusions have been reached by the Swanson Committee and other independent observers.³⁹ All that can be concluded is that, while the view that price discrimination laws are likely to restrict price competition is eminently plausible and commands the support of the overwhelming majority of informed opinion, in the absence of any valid empirical evidence the verdict must remain open.

The existence of any effects of price discrimination measures on competition presupposes that the measures are complied with. While it is not possible to observe the degree of compliance in each country, it is clear that the enforcement of price discrimination legislation involves substantial difficulties. Since discriminatory terms of supply will normally arise from bilateral negotiation between individual suppliers and purchasers and, since the scope for discrimination extends to credit terms, merchandising and advertising allowances, price discrimination is a particularly difficult phenomenon to observe. Moreover, it is clear that in France, Ireland and Germany there is little enthusiasm among the authorities responsible for enforcing them, for the antidiscrimination measures.

Even where a reasonable level of compliance is achieved, the possibility remains that businessmen will have circumvented the legislation by introducing discriminatory terms of supply which do not contravene the provisions of the price discrimination law. It has been noted in the United States that one effect of the Robinson-Patman Act has been to encourage a proliferation of retailers' private brands and minor differentiation in the packaging and physical attributes of products supplied to large re-

³⁹ See: Trade Practices Review Committee, *Report to the Minister for Business and Consumer Affairs*, Canberra, 1976, p. 45; also, Food and Drink Industries Council, *Results of the FDIC Survey*, "Australia," pp. 6-8.

tailers.⁴⁰ The adjustment of supply conditions and arrangements to circumvent the price discrimination law has also been reported in Australia and France.⁴¹

Probably the most important single factor which has inhibited the active enforcement of the price discrimination legislation has been uncertainty over the precise limits of the law. Such uncertainty discourages active enforcement by the competition authorities and impedes compliance by business. The introduction of the Australian Trade Practices Act was followed by considerable confusion among businessmen as to the amendments in trading terms required by the price discrimination section. In Ireland conflicting interpretations of the antidiscrimination provisions of the Groceries Orders have been a significant factor in the disputes between multiple retailers, wholesalers and food processors. In Germany there appears to have been a lack of consensus of opinion among the Monopolies Commission, Cartel Office and Economics Ministry as to the precise limits of the existing law and the need for amendment.

The problem of uncertainty appears to be greatest in those countries which have attempted in the drafting of their price discrimination legislation to avoid the rigidities of pricing that may result from too precise a relationship of price differentials to cost differentials. The most notable example in this respect is that of the Irish Groceries Order. Furthermore, the amendments made in 1978 to the Order, which were aimed at allowing greater flexibility to suppliers in their pricing policies, served only to increase uncertainty and confusion over the distinction between prohibited and permitted price discrimination. In France, on the other hand, the relative simplicity of the legislation—a blanket prohibition of price differentials not justified by cost dif-

⁴⁰ See U.S. Department of Justice, *Report on the Robinson-Patman Act*, *op. cit.*, pp. 75-78.

⁴¹ See: Food and Drink Industries Council, *Results of FDIC Survey*, *op. cit.*, "Australia," p. 6, "France," p. 5.

ferences—has meant that the uncertainty and disagreements evident in other countries has been largely absent. Even in France, however, one difficulty experienced by all the other countries remains: how are supply costs to individual customers to be measured? Although France's *Circulaire Scrivener* goes further than any other country in providing detailed guidance as to the cost factors which are relevant as a justification for differentials in discounts and prices, ultimately the allocation of the costs of manufacture, marketing and distribution to individual customers must be an arbitrary exercise.

In view of the uncertainties concerning the meaning and scope of the price discrimination laws, it might be expected that the courts would play an important role in the interpretation of the statutes and in deterring infringement of them, as has occurred in the United States. Yet in none of the four countries have the competition authorities shown any eagerness to prosecute illegal price discrimination in the courts. In Ireland and Australia in particular, it would seem that the complexity of the legal and economic issues involved in cases of price discrimination and the difficulties of presenting and assessing evidence in such cases has discouraged the authorities from taking cases to court. In Ireland this reluctance may have been reinforced by the fear of a possible adverse judgment.

In these circumstances the role of private court actions (allowed in all four of the countries except Germany) is clearly enhanced. It would appear, however, that the same uncertainties that have deterred the competition authorities from making use of the legal system have also discouraged private parties. Moreover, in none of the countries is there the incentive to antitrust litigation similar to those provided under the "triple damages" provisions of U.S. antitrust law.

As a result, therefore, enforcement strategy in all four of the countries surveyed has been based upon the encouragement of voluntary compliance. Yet in the absence of court cases, not only is there a lack of an effective deterrent to the infringement of

price discrimination legislation, but the absence of court rulings on the precise meaning and limits of the law means that it is not clear how business should adjust their terms of supply and purchasing conduct in order to comply.

In France the combination of government guidance through circulars to industry and administrative action in apparent contraventions of the law appears to have been moderately effective in securing some measure of compliance. In Ireland, on the other hand, the greater confusion over the meaning of the price discrimination measures applying to the grocery trade, together with the unwillingness of business to comply, has resulted in the measures being almost entirely ineffective. In Australia the effectiveness of the authorities' cautious approach to enforcement is difficult to assess. While the controversy which followed the introduction of the price discrimination law has largely abated, this may reflect the Trade Practices Commission's narrow interpretation and limited enforcement of the measure rather than the willingness of businessmen to comply. In Germany the limitation of illegal price discrimination to uncompetitive price differentials imposed or induced by enterprises which are either market dominating or have dependent suppliers or purchasers has meant that the problems of the other countries in encouraging compliance with generally applicable price discrimination measures, have been largely absent.

Conclusions

Although the price discrimination laws of the four countries surveyed show considerable variation, as do their antitrust laws as a whole, the common problems experienced by the countries and the close parallels with those of the United States enable some general conclusions concerning the legal control of price discrimination to be drawn.

It should first be noted that measures against price discrimination differ from most other areas of antitrust policy. In all four

countries the primary intent of the measures was the protection of small business from unfair competition rather than the stimulation of competition. In all the countries, as in North America, measures to control price discrimination followed the contraction of the small retail sector in the face of expanding multiple retailers.

In all countries the possible anticompetitive and price increasing effects of prohibiting price discrimination have been of concern. Even where the prohibition of price discrimination is dependent upon evidence of a substantial reduction in competition (as in Australia), it seems likely that such measures will reduce the vigor of price competition. In all countries the price discrimination measures have given rise to problems of enforcement. These are the result of the difficulty of detecting price discrimination and a lack of energetic enforcement by the competition authorities. Low levels of compliance and enforcement are encouraged by uncertainty over the limits of the price discrimination laws. Price discrimination is a difficult concept to define. The greater the effort that is made to avoid the anticompetitive effects of price discrimination control by limiting prohibition to "uncompetitive" or "unreasonable" price discrimination, the greater is the difficulty of unambiguously distinguishing between legal and illegal price discrimination.

It is clear, therefore, that the control of price discrimination is far from being a costless activity. In addition to the enforcement costs of the competition authorities and the courts, there are the costs arising from reduced flexibility and competitiveness of prices and the costs incurred by firms seeking to circumvent the legislation. These findings are relevant to the debate over the future of the Robinson-Patman Act. The occurrence of many of the same problems, which have beset the Robinson-Patman Act, in countries which have taken quite different approaches to the control of price discrimination, suggests that these difficulties are inherent in any attempt to control price discrimination. The relevant questions in relation to the Robinson-Patman Act are therefore not "How should the Act be amended in order to

eliminate the problems which have arisen from it?" but "Are there particular features of the Act which have especially undesirable effects?" and "Is the Act achieving the optimal balance between the fairness of price competition and the vigor of price competition?"

In view of the various problems associated with price discrimination law, the question arises as to whether statutory controls over price discrimination are the appropriate policy response to the root problem. The principal source of price discrimination appears to be the buying power of large purchasers rather than the monopolistic behavior of suppliers. While in all four countries the price discrimination laws extend to the inducement of discrimination by buyers, such provisions are among the least satisfactory aspects of the various laws. Not only is the inducement of price discrimination difficult to identify but it is often impossible to distinguish between hard bargaining and the abuse of buying power. It may further be argued that to concentrate upon price discrimination is to divert attention from the source of the problem to its manifestation. To this end it may be argued that the approach of the German authorities who have sought not to regulate price discrimination, but to acquire powers to deal effectively with the sources of such discrimination, whether it be the power of sellers or of purchasers, is not only the most direct approach to the problem, but may ultimately prove to be the most successful.

APPENDIX 1

The Australian Price Discrimination Law— Section 49 of the Trade Practices Act, 1974 (as amended)

49. (1) A corporation shall not, in trade or commerce, discriminate between purchasers of goods of like grade and quality in relation to—

- (a) the prices charged for the goods;
- (b) any discounts, allowances, rebates or credits given or allowed in relation to the supply of the goods;
- (c) the provision of services *or facilities* in respect of the goods; or
- (d) the making of payments for services *or facilities* provided in respect of the goods,

if the discrimination is of such magnitude or is of such a recurring or systematic character that it has or is likely to have the effect of substantially lessening competition in a market for goods, being a market in which the corporation supplies, or those persons supply, goods.

(2) Sub-section (1) does not apply in relation to a discrimination if—

- (a) the discrimination makes only reasonable allowance for differences in the cost or likely cost of manufacture, distribution, sale or delivery resulting from the differing places to which, methods by which or quantities in which the goods are supplied to the purchasers; or
- (b) the discrimination is constituted by the doing of an act in good faith to meet a price or benefit offered by a competitor of the supplier.

(3) In any proceeding for a contravention of sub-section (1), the onus of establishing that that sub-section does not apply in relation to a discrimination by reason of sub-section (2) is on the party asserting that sub-section (1) does not so apply.

(4) A person shall not, in trade or commerce—

- (a) knowingly induce or attempt to induce a corporation to discriminate in a manner prohibited by sub-section (1); or
- (b) enter into any transaction that to his knowledge would result in his receiving the benefit of a discrimination that is prohibited by that sub-section.

630 : *The antitrust bulletin*

(5) In any proceeding against a person for a contravention of sub-section (4), it is a defence if that person establishes that he reasonably believed that, by reason of sub-section (2), the discrimination concerned was not prohibited by sub-section (1).

APPENDIX 2

Extracts from the Irish Restrictive Practices (Groceries) Order, 1973

- 3 (1) (a) A supplier shall prepare and maintain a statement . . . containing the terms and conditions upon . . . which he sells grocery goods . . . and shall effect a sale . . . subject to those terms and conditions.
- (b) . . . a statement . . . in relation to supplementary terms [should contain] a general indication of the nature and extent of those terms.
- (2) The terms and conditions aforesaid may make provision for discounts of different amounts . . . related to the different functions . . . performed by purchasers or the quantity of value of the goods.
- (3) . . . discounts related to the quantity or value the goods—
- (a) shall, in the case of discounts related to the quantity or value of single deliveries, . . . take reasonable account of the costs of such deliveries . . . ,
- (b) shall, in the case of discounts related to the quantity or value of . . . purchases . . . over a period of time, . . . take reasonable account . . . also of the number . . . of places to which the supplier . . . deliver(s) the goods and the frequency . . . of deliveries. . . .
- (4) The terms and conditions . . . shall be reasonable, having regard to all the circumstances, and shall not be such as unfairly or unjustly—
- (a) to cause . . . the cessation of the business of a wholesaler or retailer,
- (b) to prevent a person from commencing business as a wholesaler or retailer, or
- (c) to discriminate against any wholesalers or retailers.
- (5) (a) . . . 'supplementary terms' means any terms or conditions . . . providing for a rebate or discount in relation to . . .
- (i) . . . purchases . . . in excess of specified quantities over a period of time or
- (ii) promotion of sales . . . by means of special arrangements for a limited period by the wholesaler or retailer.

- (b) Where the terms and conditions . . . include supplementary terms—
 - (i) any discounts, rebates or allowances for which such terms make provision shall not be substantially bigger than those [provided under standard terms],
 - (ii) supplementary terms shall be determined by reference to objective criteria. . . .
- 4 (1) A supplier shall furnish to the Examiner a copy of the statement [of terms and conditions]. . . .
- (2) A supplier shall furnish to the Examiner a copy of any amendment of the statement. . . .
- (3) A supplier shall, if requested . . . by a wholesaler or retailer, furnish . . . a copy of the statement. . . .
- 5 If the examiner is satisfied that the operation by a supplier of the terms and conditions contained in the statement . . . constitutes unfair discrimination in favour of or against any wholesaler or retailer . . . the supplier shall . . . make such amendments of the terms and conditions . . . as may be specified by the Examiner . . . to eliminate the unfair discrimination.
- 7 (1) A person who is a wholesaler or retailer shall not, whether by the use of threats or inducements or otherwise, induce a supplier to sell grocery goods to him on . . . terms and conditions other than those contained . . . in the statement prepared by the supplier pursuant to Article 3 of this Order. . . .
- 9 A supplier shall not make any payment or allowance to a . . . wholesaler or retailer . . . in consideration of the carrying out by that person of advertising of the goods. . . .

COMMUNICATIONS

ON THE THEORY OF DIVERSIFICATION: A COMMENT

R. M. GRANT*

In basing a theory of diversification on a non-optimising managerial model of the firm C. J. Sutton (1973) encounters two problems common to many attempts to apply the newer models of the firm to business behaviour and industrial organisation:

1. Testable predictions over a wide range of business behaviour are not readily derived from these models. The comparative static properties of the models are clearly defined only for the output decision of the firm, the response of other aspects of business behaviour, in particular the investment decision to changes in exogenous variables is unclear.
2. Where definite predictions are derived from the newer models they are often consistent with the predictions of the profit maximising model. Since the former involve working with more variables and constraints, the principle of Occam's razor suggests a preference for the latter.

This comment makes the following points:

1. The investment behaviour of the firm cannot easily be predicted from the objective function of the firm postulated by Sutton and his theory of diversification is the result of questionable ad hoc behavioural assumptions (Section I).
2. Sutton's theory is consistent with the behaviour of the profit maximising firm. The profit maximising approach is to be preferred as simpler and less restrictive, and, since it can more easily take account of the influence of uncertainty, a potentially more predictively accurate theory (Section II). Section III examines Sutton's arguments for preferring the 'behavioural' approach.

The objective function of the firm in Sutton's model is taken from Williamson's 'staff model' (Williamson, 1964) where managerial utility is a function of the level of staff expenditure (S) and the size of the discretionary investment budget (ID) which is the residue of after tax profits (π) in excess of the minimum level of profit consistent with the existing management maintaining control of the firm (π_0).

$$U = U(S, ID) \quad (1)$$

$$\text{where } ID = R - C - S - \pi_0 \quad (2)$$

$$\text{and } R = R(X, S) \quad (3)$$

R — total revenue

C — total cost

X — output

* I am grateful to G. K. Shaw and M. Jones-Lee for comments. Errors are my own.

Assuming non-maximisation of utility, diversification, according to Sutton's analysis, will take place for two reasons:

1. If profits fall below π_0 the firm will seek more profitable investment opportunities in new industries—'cost push' diversification. Low profitability is a characteristic of industries with declining output.
2. The use of discretionary investment funds depends upon the preferences of managers. Production staff are assumed to support the directing of new investment towards the expansion of existing activities while marketing staff prefer entry into new industries. 'Market pull' diversification depends upon the strength of the marketing department within the firm.

Thus diversification (D) depends on the rate of growth of the firm's present markets (X') and the firm's marketing expenditure as a proportion of net output (M).

$$D = D(X', M) \quad (4)$$

Ignoring for the moment Sutton's modifications to the Williamson model and considering only the basic managerial model, we can derive no simple theory of the determinants of diversification. Diversification involves 'the spreading of its operations by a business over dissimilar economic activities' (Amey, 1964, p. 252) which may be measured most easily by the increase in the number of industries in which a firm operates during a particular time period. Since there is a minimum efficient size to most investment projects, diversification will depend upon the amount of net investment by the firm and on its ranking of diversifying and non-diversifying projects. Maximisation of utility over time by the Williamson firm where

$$U = \sum_t U_t(S_t, ID_t)(1+r)^{-t} \quad (5)$$

will not involve radically different investment behaviour from that of the profit maximising firm, since the objective of the utility maximiser is to increase the size of its future investment budget and provide funds to additional staff expenditure. The differences in investment behaviour are due to the positive utility derived from staff expenditure by the Williamson firm. The Williamson firm will continue investment to the point where for the marginal project j

$$\sum_t U_{jt}(S_{jt}, ID_{jt})(1+r)^{-t} = 0. \quad (6)$$

Where no borrowing constraint operates we may expect the utility maximiser to invest more than the profit maximiser for the same reasons that the utility maximiser produces at a higher level of output: staff expenditure by the utility maximiser produces at a higher level of output: staff expenditure by the utility maximiser is continued beyond the profit maximising level, and staff expenditure increases revenue. The ranking of investment projects by their discounted utility flows will differ from their ranking by net present value due to (i) differences in the marginal revenue returns from staff expenditure on investments in different industries, (ii) differences in the rate of discount employed by the utility maximiser and the profit maximiser, and (iii) variation in the marginal rate of substitution of S and ID over time

The problems of predicting the investment behaviour of the managerial investment preferences. The resulting theory of diversification is based entirely on these preferences and on the existence of a profit constraint and, the general utility function including both discretionary investment and staff expenditure becomes redundant. It is these assumptions of preferences between investment in existing and new activities which are the most questionable parts of the analysis. It seems equally likely that in oligopolistic industries the primary goal of marketing staff will be the maintenance and expansion of the firm's share of existing markets. In the case of production staff, long run objectives may best be served by supporting diversification into industries with a similar technological base.

The complexity of the Sutton model and the restrictiveness of its assumptions would be justified if the resulting hypothesis of the determinants of diversification was at variance with the predictions of simpler models of the firm and if the hypothesis was supported by empirical evidence. Neither is true. The 'coarse test' of the model is inconclusive, possibly due to the discrepancy between the theoretical concept of diversification (the extension of the product range of the firm) and the empirical measure (the growth in the ratio of non-primary to primary output). Also the relationship between growth of output, marketing expenditure and diversification is not inconsistent with profit maximising behaviour. We proceed by developing the profit maximising approach.

II

Under uncertainty, investment by the neo-classical firm is directed towards profit maximisation and risk minimisation. For the corporate firm operating in the interests of its owners these two objectives are combined in the single objective of maximisation of the market value of the firm's equity at every point of time. By developing a theory of the optimal investment behaviour of the firm to achieve this objective, we can predict the determinants of diversification and compare them to Sutton's hypothesis.

Assuming perfectly competitive securities market with no transaction costs where there exists a consensus as to the subjective probability distribution of returns to securities, Lintner (Lintner, 1965) shows how mean-variance portfolio theory may be used to determine the equilibrium prices of securities. The valuation of the equity of firm i at the beginning of period o (V_{i0}) is a function of $\bar{H}_{i0}$, the expected total return to investors during the period, and K_{i0} , the risk of the equity's return which cannot be eliminated by the holding of diversified portfolios, this is the 'systematic risk' of the securities. Thus V_{i0} is the present value of the certainty equivalent of H_{i0}

$$V_{i0} = (\bar{H}_{i0} - \gamma K_{i0})(1 + r^*)^{-1} \quad (7)$$

where r^* is the riskless rate of interest and γ is the market price of risk. H_{i0} is made up of D_{i0} , the expected dividend during period o , and $\bar{V}_{i1}$, the expected value of the equity at the beginning of the next period.

$$H_{i0} = D_{i0} + \bar{V}_{i1} \quad (8)$$

K_{i0} is the covariance between $(H_{i0} - V_{i0})$, the net return on company i 's equity, and the net return on the equities of all quoted companies. The random walk hypothesis of share price movement suggests that the current price of a security adjusts to its expected price, thus

$$V_{i1} = V_{i0} \quad (9)$$

Substituting (8) and (9) into (7) and extending over n periods we have

$$V_{i0} = \sum_{t=0}^n (D_{it} - \gamma K_{it})(1+r^*)^{-t} + V_{i0}(1+r)^{-n} \quad (10)$$

the latter term tending towards zero as n becomes large.

D_{it} is the firm's net cash flow in period t multiplied by the retention ratio a_t . Viewing the firm as a collection of independent investment projects the j th project yielding an expected net cash flow in period t of

$$\bar{z}_{ijt}(\bar{D}_{it} = 0, \Sigma_j \bar{z}_{ijt})$$

with a systematic risk of k_{ijt} , then substituting into (10):

$$V_{i0} = \Sigma_t \Sigma_j a_{it}(\bar{z}_{ijt} - \gamma k_{ijt})(1+r^*)^{-t} \quad (11)$$

Maximisation of V_{i0} means that investment projects are ranked by the firm by the present value of the certainty equivalent of the net¹ cash flow and, in the absence of any external borrowing constraint, investment is continued to the point where for the marginal project the present value of the certainty equivalent of the net cash flow is equated to zero

$$\Sigma_t (\bar{z}_{imt} - \gamma k_{imt}) = 0. \quad (12)$$

The amount of diversification by the firm depends on the expected net returns from diversifying investment projects and the systematic risk of the return² compared to that for investment projects within the firm's existing activities. To formulate a testable hypothesis of the determinants of diversification the determinants of our expectational variables $\bar{z}_{ijt}$ and k_{ijt} must be postulated.

k_{ijt} we can expect to be determined primarily by the covariance of the past returns from similar investments in the same industry with returns from all equities. $\bar{z}_{ijt}$ is a function of many variables. Assuming constant long run average costs (as indicated by most empirical studies), expected returns are determined by expected demand conditions. The major determinant of the expected rate of growth of market demand is the past growth rate of demand. The relationship between past rate of growth of output and investment demand (and therefore between past rate of growth and expected rate of return) is strongly supported by empirical evidence (Eisner and Nadiri, 1968). Expectation of the demand conditions facing the individual firm are

¹ Net of factor payments (other than capital depreciation) and interest costs.

² Textbook treatments of diversification emphasise the risk reducing role of diversification; however it is only reduction in that part of the variance of the firm's earnings that is correlated with general economic fluctuations which increases the market valuation of the firm.

also determined by expectations of the price-output behaviour of competitors. Generally the higher the level of concentration in an industry, the more sensitive are established firms to attempts by one firm to expand its market share, and the lower will be the expected profitability of investment.

For diversifying projects, a major determinant of the return on investment is barriers to entry. High barriers to entry are associated with above average profit rates, so that the profitability of entry depends upon the specific competitive advantages of the diversifying firm which enable it to overcome entry barriers. Since the most important barriers to entry are the product differentiation advantages of established firms, successful entry depends on the marketing and innovating skills of the firm which will be a function of the firm's expenditure on marketing and research and development. Thus:

$$D_i = D(X_i, R_i, M_i, C_i, K_i) \quad (13)$$

$$\frac{\partial D}{\partial X} < 0; \quad \frac{\partial D}{\partial R}, \frac{\partial D}{\partial M}, \frac{\partial D}{\partial K}, \frac{\partial D}{\partial C} > 0$$

where R_i is the firm's R & D expenditure as a proportion of net output, C_i is the concentration ratio in the firm's existing markets and K_i is the systematic risk of the firm's net cash flow.

Sutton's hypothesis that diversification is determined by the rate of growth of output of the firm's present markets and the firm's marketing expenditure is therefore compatible with profit maximising behaviour. The difference in the two approaches is in the additional variables postulated by the profit maximising hypothesis: in the managerial model the effect of seller concentration and R & D expenditure is uncertain, and the managerial model does not consider risk while maximisation of shareholder welfare implies that the greater is the systematic risk of the firm's earnings, the greater is the incentive to diversify.

Empirical testing of the two hypotheses is possible using Census of Production data on diversification in manufacturing industry between 1958 and 1963. Table 16 of part 132 of the Report on the Census of Production for 1963 classifies firms into 51 industry groups by their primary output and shows their operations in other industry groups. D_i measures the growth in the average number of other industry groups in which each firm in industry i operates establishments in between 1958 and 1963. D_i is not an entirely satisfactory measure of diversification: the census industry definitions do not correspond to the economist's concept of an industry, the measures are distorted by non-disclosures of information, the five year period is too short, and the measure of diversification fails to distinguish between pure diversification and vertical integration.

Linear regressions of on the 41 industry groups for which information is available yield the following results (t values in brackets):

$$(1) D_i = 0.150 + 0.000565 X_i' - 0.719 M_i \quad R^2 = 0.254$$

$$(1.31) \quad (2.64)$$

$$(2) D_i = 0.096 + 0.000174 X'_i - 0.249 M_i + 0.937 R_i + 0.00393 C_i \quad R^2 = 0.643$$

(0.40) (4.80) (1.32) (1.79)

X_i is the rate of growth of the output of principal products of industry i 1954-63

M_i is marketing expenditure of firms classified to industry i as a proportion of net output in 1963

R_i is research and development expenditure in 1955 by firms classified to industry i as a proportion of net output (from Dept. of Scientific and Industrial Research estimates)

and C_i is CR3 of industry i in 1958 (estimates from M. Sawyer, 'Concentration in British Manufacturing Industry', Oxford Economic Papers, Nov. 1971).

The evidence fails to provide strong support to either hypothesis. Nevertheless the profit maximising hypothesis performs less badly than the behavioural alternative (where the signs of both variables are opposite to those predicted). Inclusion of R and C increases the correlation coefficient and makes the F ratio for the regression significant at the 0.01 level, but fails to resolve the positive sign of the X' coefficient and the negative sign of the M coefficient. One explanation is the exclusion of the systematic risk factor which is not easily estimable. High cyclical variability of profit is a result of high cyclical variability of demand and capital intensive production. Both characteristics are associated with intermediate goods industries and it is in these industries that marketing expenditure is low (lowest marketing is in the iron and steel industry and in the insulated wire and cable industry, the highest is in the soap, oils and fats industry and in pharmaceutical preparations). Thus the negative relationship between marketing expenditure and diversification may reflect a positive relationship between primary industry risk and diversification and a negative correlation between risk and marketing expenditure. The positive influence of primary industry growth rate on diversification suggests imperfection in the capital market. Our model assumes a perfectly elastic supply of investment funds to the firm at the riskless rate of interest. The introduction of imperfections in the form of a borrowing constraint or the cost of external finance exceeding that of internal finance would cause the level of total investment expenditure by the firm to be related to its current profits, which will be positively correlated with rate of output growth. Thus it is possible that the growth rate of primary industry output has a dual effect on diversification which is obscured by the linear regression: while the relative return on diversifying investment is inversely related to primary industry growth, the level of total investment is positively related to output growth.

III

Sutton's preference for the behavioural over the profit maximising approach is due to his belief in the explanatory and predictive superiority of the former.

By concentrating on the decision process, behavioural theory may provide a better ex post explanation of diversification capable of explaining 'deviations from representative behaviour' and analysing the timing of adjustments. The ability of the behavioural theory to explain both the normal and the deviant behaviour of the firm is a result of the theory's vagueness and ambiguity. Thus R & D expenditure may or may not stimulate diversification depending on the nature of the R & D projects, the nature of the production process, the values of other variables and the time period considered. As is often the case in economic theorising, the cost of realism is operationalism. The complex interaction of different variables in the Sutton theory means that the precise functional form of the relationship cannot be specified and the parameters cannot be estimated.

Nor is the behavioural theory free from Sutton's criticism that the profit maximising approach is dependent upon the expectations of management rather than on current values of observable variables. Cost push diversification is instigated by profits falling below π_0 , which is not directly observable but is determined by managerial expectations of the take-over behaviour of other firms.

The choice between alternative hypotheses in the analysis of some economic phenomenon depends upon the purpose of our study. If our purpose is to predict the extent of future diversification by industrial groups of firms or to analyse the impact of diversification on market competition rather than to explain past diversification decisions by individual firms, then the profit maximising approach is preferable to the behavioural theory.

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REFERENCES

- AMEY, L. R. (1964). Diversified Manufacturing Business. *Journal of the Royal Statistical Society*, series A, vol. 127.
- EISNER, R. & NADIRI (1968). Investment Behaviour and Neoclassical Theory. *Review of Economics and Statistics*, vol. L.
- LINTNER, J. (1965). The Valuation of Risk Assets. *Review of Economics and Statistics*, vol. XLVII.
- SUTTON, C. J. (1973). Management Behaviour and a Theory of Diversification. *Scottish Journal of Political Economy*, vol. XX, No. 1.
- WILLIAMSON, O. E. (1964). *The Economics of Discretionary Behaviour: Managerial Objectives in a Theory of Firm*. Prentice Hall.

THE DETERMINANTS OF THE INTER-INDUSTRY PATTERN OF DIVERSIFICATION BY U.K. MANUFACTURING ENTERPRISES*

Summary

Evidence of the diversity of output of larger U.K. manufacturing enterprises¹ in 1958, 1963 and 1968 is provided in the Reports on the Census of Production. The Censuses show that between 1958 and 1968 diversification was a significant and general trend in manufacturing industries and an important element in the growth of firms during the period. Moreover diversification seems to be part of a longer term trend in U.K. industry and part of the typical development pattern of the large firm. A theory of the firm's diversification decision is proposed and from this theory predictions are made of the structural features both of a firm's primary industry and of outside industries which are likely to encourage diversification from the one industry to the other. The power of the model in explaining the pattern of diversification between SIC manufacturing orders in the period 1963-68 is weak, due in part to the wide variety of factors influencing diversification and to the aggregated form of the data. Nevertheless, the results show the importance of research and development effort in encouraging diversification and the stimulus to diversification given by profitability and risk in firms' primary industries and high rates of output growth in outside industries. While the findings offer no clear conclusions regarding the impact of diversification upon economic performance, the results are consistent with the propositions that (i) diversification encourages technical progress in industry and (ii) diversification increases the efficiency with which resources are allocated between industries.

The diversification trend in U.K. manufacturing industry

Diversification is an increase in the diversity of a firm's output (a decrease in diversity being 'specialization').² The diversity of a firm's output may be measured by the number of separate industries in which a firm produces, by the ratio of a firm's 'non-primary output' (output of products classified to industries other than its main industry) to the firm's total output,³ or by some composite measure.⁴

* This article was prepared while I was employed at the University of St Andrews; it should not be regarded as reflecting the views of the Monopolies and Mergers Commission.

¹ A 'larger enterprise' as defined by the Census is one or more companies under common control and employing 100 or more persons.

² Some writers (e.g. Amey 1964, Berry 1972, Goreki 1975) define diversification statically, the 'degree of diversification' of a firm being the diversity of its output. The dynamic definition used here corresponds more closely to normal business usage of the term.

³ 'Employment' could be substituted for 'output' to give an alternative measure.

⁴ Berry (1972) proposes an index of diversification similar to the Herfindahl Index of Concentration. The appropriate measure of diversification depends upon the purpose of the study: for examining the diversification decision entry into additional industries is the crucial issue, for analysing resource allocation changes in the proportions of firms' outputs in different industries is the better measure.

Census of Production data allow measures of average diversification to be calculated for groups of larger enterprises classified by 51 industry groups for the period 1958 to 1963 and 17 SIC manufacturing orders for the period 1963 to 1968. Because of the change in the basis of classification, measures of diversification cannot be accurately calculated for the ten-year period as a whole.

Diversification was a significant and general trend among manufacturing enterprises during the period. Between 1958 and 1963 the proportion of enterprises operating in more than one of the 51 industry groups increased from 14.8% to 22.7% and the ratio of 'non-primary' to total net output for all enterprises increased from 14.6% to 19.2%, the ratio increasing in all but 6 of the 51 industry groups. Between 1963 and 1968 the proportion of enterprises operating in more than one of the 17 SIC manufacturing orders increased marginally from 18.0% to 18.9%, but the ratio of non-primary to total net output rose from 14.1% to 16.9%. While this increase in the proportion of diversified output took place in 15 of the 17 SIC manufacturing orders, it was enterprises employing more than 1,000 persons which were entirely responsible for the diversifying growth.

Nor was diversification an unimportant source of growth for firms over the period. Between 1958 and 1963 when the average net output of firms employing over 100 persons increased from £0.761m to £1.240m 70.4% of this growth was within firms' primary industries and 25.6% in outside industries. From 1963 to 1968 average net output increased to £1.929m; of the increase 25.9% was in SIC orders other than firms' main order.

Although pre-1958 Censuses give no information on diversification, evidence from company histories and mergers suggest that the trend towards diversification is a long-term one, continuing from the beginning of the twentieth century, if not before then. Studies of the growth of large firms in the British and American economies by Channon (1973) and Chandler (1962) respectively, suggest that diversification is part of the typical pattern of development of the modern firm from single product manufacture vertically and horizontally into technically related products, followed by broader spectrum diversifying growth.

The expansion of firms between industries essentially involves a replacement of the allocative role of factor markets by managerial allocation of productive factors. Diversification is thus an integral part of the process by which market organization of production has been gradually replaced by the corporate organization of production, a process which has been one of the characteristic features of the development of 'managerial capitalism'. To explain the diversification trend we must examine the relative roles of the firm and the market in organizing production, explain the limits of the organizational function of the firm and suggest why these limits may recede over time.

Coase (1937) viewed the organization of production within the firm as an alternative to organization by the market, the former being distinguished by the existence of the entrepreneurial direction of factors of production as opposed to their movement and co-operation through price incentives to individual input owners. Planned production within the firm will replace market organization whenever the costs of managerial production are less than the costs of market organization. Marginal managerial costs tend to rise (due to control loss or rising supply prices of inputs), the firm will therefore 'expand until the costs of organizing an extra transaction within the firm become equal to the costs of

carrying out the same transaction on the open market or the cost of organizing in another firm' (Coase 1937, p. 295).

Thus multi-product will tend to replace single product firms whenever production in multi-product firms with input allocation between divisions by managerial direction can be carried out at less cost than production in single product firms with allocation of inputs between products by factor markets. Over the post-war period the costs of production by multi-product compared to production by single product firms will have been reduced by:

- (i) the increasing emphasis on the financial, marketing, product development and distribution activities of the firm relative to physical production — since these 'head office' functions tend not to be highly specialized to individual products and, because they have fairly large minimum efficient sizes, there tends to be economies from multi-product operation;
- (ii) the developments in management technology in the form of information handling systems and new forms of corporate organization, such as the multi-division structure, have tended to reduce the costs and increase the efficiency of the multi-product firm relative to the single product firm.

The analysis of Alchian and Demsetz (1972) suggests that diversification is a natural direction of growth for established firms even without the changing relative costs of organization required under the Coase theory. Alchian and Demsetz attribute the existence of the firm to the need for a monitoring of input productivity to ensure efficient production. The information collected by the firm on the performance of inputs in different combinations provides the established firm with an important advantage over the new firm in the exploitation of a new investment opportunity. The new firm must hire inputs individually in markets where information on input qualities is a scarce and costly resource, and, even then, information relating to individual inputs may give little indication of the performance of combinations of inputs. Thus, in an economy where new demands and new technology emerge, we can expect these opportunities for new investment to be exploited primarily by the diversification by established firms rather than by the creation of totally new enterprises.

A theory of the firm's diversification decision

While the theories of the organization of production can explain the tendency for firms to diversify over the long term in response to long-term factors such as the accumulation of non-marketable information by established firms and the fundamental changes taking place in the economy, in the shorter period the growth patterns of individual firms will be the result of conscious managerial decision-making in response to the economic conditions facing the firm.

To formulate some simple hypotheses to explain the diversification by firms from one industry to another, a number of simplifying assumptions are made:

- (i) Since the concern of this paper is with the inter-industry patterns of diversification by groups of firms, diversification is explained in terms of the structural characteristics of industries ignoring the individual characteristics of firms which may influence the decision to diversify.
- (ii) The diversification that we shall be concerned with explaining is the entry of established firms into new industries. The problem is that new entry

can take place either by internal or external growth and the determinants of each will differ: the former depending upon comparative rates of return on new capital, the latter depending upon the acquiring company's valuation of the victim's assets relative to the stock market's valuation. The assumption here is that both forms of diversification are influenced by the same factors. Firms will be indifferent between internal and external diversification either in perfect capital and securities of markets or if the stock market correctly anticipates take-overs. Even in the absence of these conditions diversification by either internal or external growth will be influenced by the same industrial factors, the choice of method depending upon the nature of barriers to entry into the industry and the nature of the diversifying firm's productive resources. Merger and internal expansion may, indeed, be complements rather than substitutes — a typical pattern of diversification is acquisition proceeded by internal investment by the parent company.¹

- (iii) It is assumed that firms operate in their shareholders' interests, maximizing shareholders' wealth by maximizing the market value of the firm's equity. This objective is adopted for its plausibility and convenience. Diversification has often been regarded as directed towards increasing profits and reducing risk, maximizing share prices allows both these considerations to be combined into a single objective.²

Given these assumptions, we may investigate the diversification decision of the firm in terms of the attractiveness of in the firm's existing activities relative to investment in a new industry.

The capital asset pricing model predicts that in perfectly competitive securities markets with no transactions costs, utility maximization by risk-averse investors results in equilibrium security prices being determined such that:

$$V_x = \frac{\bar{Z}_x - \beta_{Z,M} (\bar{M} - rV_M)}{r} \quad (1)$$

- where V_x is the market value of firm x 's equity at the beginning of the period;
 V_M is the market value of all quoted securities at the beginning of the period;
 $\bar{Z}_x$ is the expected value of Z_x , the uncertain return on V_x during the period;
 $\bar{M}$ is the expected value of M , the uncertain return on V_M during the period;
 r is the riskless rate of interest;

¹ The industrial pattern of diversification is similar to the industrial pattern of conglomerate merger. For the period 1958–68 the coefficient of rank correlation between the average number of conglomerate acquisitions by each enterprise in every SIC order and the average measure of diversification for each SIC order (measured the increase in the average number of orders in which each enterprise was represented) was 0.730.

² In fact, the assumption of motivation may not be a vital consideration in deducing the determinants of diversification. Hypotheses of the determinants of diversification on the basis of different objectives have been proposed by Penrose (1959) (long run maximization of profit and growth), Sutton (1973) (managerial welfare satisfying), and Kelly (1974) (profit maximizing). Since diversification requires investment funds and since managerial security is ultimately dependent upon some minimal level of profitability the different objectives imply broadly similar determinants of diversification. See also Grant (1974).

β_{ZxM} is the systematic risk of the return Z_x which is

$$\frac{\text{Cov}(Z_x, M)}{\text{Var}(M)}$$

Z_x is made up of dividend payments, W_x , and the change in the market value of the equity over the period, V_x . Stevens (1974, pp. 322-23) shows that if the riskless rate of interest and the market's trade-off between risk and return are known with certainty in every future time period, then V_x is also known with certainty and equation (1) can be extended to the multiperiod case where

$$V_{x0} = \sum_{t=0}^n \frac{W_{xt} - \beta_{Wxt, M} (\bar{M}_t - r_t V_{Mt})}{(1 + r_t)^t} \quad (2)$$

Assuming dividends are equal to net profits, then for the firm with activities in several industries:

$$W_{xt} = \sum_{i=1}^m H_{xit} \quad (3)$$

where H_{xit} is the earnings to shareholders from firm x 's investment in industry i during time t . Substitution (3) into (2):

$$V_{x0} = \sum_{t=0}^n \sum_{i=1}^m \frac{\bar{H}_{xit} - \beta_{Hxit, M} (\bar{M}_t - r_t V_{Mt})}{(1 + r_t)^t} \quad (4)$$

where $\beta_{Hxit, M}$ is the systematic risk of the return H_{xit} .

Thus the contribution of an investment to the value of the firm is equal to the certainty equivalent of its net return discounted at the riskless rate of interest.¹ For the firm operating in primary industry i contemplating diversification into industry j , the decision whether or not to enter will depend on the contribution to the value of the firm from diversification:

$$\sum_{t=0}^n \frac{\bar{H}_{xjt} - \beta_{Hxjt, M} (\bar{M}_t - r_t V_{Mt})}{(1 + r_t)^t}$$

compared to that of an equal investment in the firm's existing industry:

$$\sum_{t=0}^n \frac{\bar{H}_{xit} - \beta_{Hxit, M} (\bar{M}_t - r_t V_{Mt})}{(1 + r_t)^t}$$

The next task is to postulate the determinants of diversification in terms of observable variables so as to present testable hypotheses.

The determinants of diversification

The attractiveness of diversification compared to investment with a firm's existing activities depends upon the comparative returns of each investment and the comparative risks. On the basis of the above analysis and on previous hypotheses of the determinants of diversification, the following factors may be identified as influencing D_{ij} , the diversification by firms operating in primary industry i into industry j .

¹ This analysis of the risk reducing role of diversification differs from that of other writers. Smith and Schreiner (1969) view the firm as wishing to minimize the total variance of its return. The conclusion derived above however is that, since portfolio diversification by investors can eliminate unsystematic risk, firms will seek only to minimize the variance of their return which is correlated with general market fluctuations.

1. The rate of growth of output in industry i (X_i) and in industry j (X_j). Firms will wish to diversify from industries offering a low return on new investment to industries offering a high return. A major determinant of the expected long run rate of return on investment in an industry will be the rate of growth of demand for the products of the industry. If expected future growth rates are based on current rates of growth of output, we should expect D_{ij} to be positively related to X_j and negatively related to X_i .
2. The marketing effort (M_i) and research and development effort (R_i) of firms classified to industry i . Marketing and R & D inputs may have several influences in increasing the expected profitability of diversification: the indivisibility of marketing and R & D inputs will tend to offer economies from multi-product operation, managerial expertise in marketing and product development will help the diversifying firms in overcoming entry barriers to other industries based upon differentiation, while R & D will tend to give rise to unpredicted innovations which cannot be applied in the firm's existing markets and can only be effectively exploited through diversifying into a new industry. On behavioural grounds Penrose (1959) and Sutton (1973) have stressed the role of marketing and technical personnel in stimulating search activity for new investment opportunities.
3. The similarity in research and marketing efforts between the industries i and j (R'_{ij} , M'_{ij}). If the R & D and marketing involvement of the firm provide an incentive for diversification through economies in these activities and through the ability to successfully overcome barriers to entry, we should expect that diversification from industries characterized by high marketing and R & D expenditures would be directed towards entry into industries with similar characteristics. Similarly, firms diversifying from industries with limited experience in innovation and marketing will tend to prefer entry into industries with similar low intensities of research and marketing, shunning industries characterized by aggressive promotional and technological competition, should therefore be positively related to M'_{ij} and R'_{ij} .
4. The systematic risk in the firm's primary industry and outside industry (β_i , β_j). The effect of a firm's investment upon the value of its equity depends not only upon the expected return of the investment but also upon its systematic risk. Other things equal, diversification would be from low to high risk industries. The assumption made here is that the systematic risk of the returns on investment in industry i by a firm is equal to the systematic risk of the return on the shares of companies within industry i . The systematic risk is an ex ante concept based on the probability distribution of expected returns, the estimates of systematic risk for individual industries are based on ex post returns on industry share indices.
5. The profits of firms classified to industry i . Because of the costs of using the capital market, the constraints on borrowing and the large investment necessary for diversification, the ability to diversify is likely to be dependent upon the firm's generation of internal investment funds. Two factors will be important in determining the profits of a firm: firm size (S_i) and the rate of profit in the firm's primary industry (P_i).

To summarize our predictions:

$$D_{ij} = f(\bar{X}_i, \bar{X}_j, \bar{M}_i, \bar{R}_i, \bar{M}'_{ij}, \bar{R}'_{ij}, \bar{B}_i, \bar{B}_j, \bar{S}_i, \bar{P}_i)$$

where the signs show the ceteris paribus impact on diversification of an increase in the value of each of the independent variables.

Empirical testing

The above hypotheses of the determinants of diversification were tested using measures of D_{ij} derived from Census data on diversification between the 17 manufacturing orders of the SIC. Two measures of the diversification between industries i and j may be calculated:

- D_{ij}^1 the increase in the proportion of the enterprises classified to industry i which also operate in industry j ;
- D_{ij}^2 the increase in the proportion of the net output of enterprises classified to industry i which is of the products of industry j .

For the purpose of examining firm's diversifying decisions D_{ij}^1 is the appropriate measure since it measures the entry of firms of industry i into industry j .

The major deficiencies of the data were:

1. The shortness of the five-year time period.
2. The broadness of the SIC orders. The diversity between firms and their outputs within orders may be so great as to render average measures of diversification and other industry variables meaningless. While a finer industrial classification would certainly have been desirable, broad grouping should not completely obscure the systematic factors which determine diversification. An empirical study by Gort, Arora and McGuckin (1973) shows that using U.S. two digit industries (comparable in breadth to SIC orders) average diversification is a meaningful concept and valid conclusions on company decisions to diversify may be drawn.
3. The measure of diversification includes vertical integration which is considered a special type of diversification and is likely to be influenced by factors additional to those influencing diversification between technically unrelated industries.
4. For 36 observations D_{ij}^1 cannot be calculated owing to undisclosed figures. The bias imparted by the omitted observations was particularly evident in Order IV (Coal and Petroleum Products) where the only calculable observations were zero. As a result Order IV was omitted.

Multiple linear regressions of the 192 observations for which data was available gave the results summarized in Table 1. Details of the measurement of the different variables are in the appendix. Equation 1 includes all the postulated independent variables, equation 2 excludes the marketing variables, equation 3 omits the other variables whose regression coefficients were not significantly different from zero.

TABLE I
RESULTS OF REGRESSION ANALYSIS

	Regression 1 — all variables	Regression 2 — marketing variables excluded	Regression 3 (<i>t</i> values in brackets) — insignificant variables excluded
X_i	0.3257 (1.5437)	0.2635 (1.2923)	
X_j	0.3558 (1.1610)	0.3543 (1.6880)	0.4629 (2.5352)
R_i	23.379 (1.7867)	13.998 (1.3726)	16.616 (3.0451)
M_i	-7.627 (-1.1737)		
R_{ij}	10.292 (2.4096)	10.111 (2.4293)	9.488 (2.3060)
M_{ij}	-1.263 (0.3782)		
β_i	5.3630 (1.8983)	5.9294 (2.1366)	2.5671 (2.5478)
β_j	4.1251 (1.1600)	4.0975 (1.1543)	
S_i	-0.00540 (-0.3954)	0.00304 (0.2636)	
F_i	0.0225 (1.9020)	0.0234 (2.0031)	0.0116 (1.8831)
Coefficient of multiple correlation	0.4319	0.4241	0.4063
<i>F</i> value	3.9201	4.7437	6.9597

The poor explanatory power of the equations indicated by the low coefficients of multiple correlation is to be expected given the highly aggregated form of the data and the exclusion of the many variables likely to influence diversification. The excluded variables fall into two groups: the structural and managerial characteristics of individual firms, and industry variables which have a lesser, though possibly far from insignificant, impact on the attractiveness of diversification by firms. Examples from this latter group include concentration in primary and receiving industries which will affect the competitive reactions of other firms, and the extent of unexploited economies of scale in firm's primary industries. Nevertheless the results do provide some illumination of the industry characteristics affecting diversification:

1. Diversification was directed towards high growth industries (the coefficient of X_j is positive and significant), though low growth in the firm's primary industries provided no observable incentive to diversification. High systematic risk in firms' primary industries, on the other hand, did stimulate

diversification even though high risk in receiving industries provided no obvious deterrent to diversifying firms.

2. R & D strongly influenced diversification, R & D effort in firms' primary industries stimulated diversification (R_i positive and significant) and diversification was encouraged by a similarity in the degree of technological progressiveness between industries (R'_{ij} positive and significant). The marketing function, conversely provides no corresponding synergistic impetus towards diversification (M_i and M'_{ij} were insignificant), although it is possible that marketing may act as a stimulus to narrow spectrum diversification within firms' primary orders.
3. The positive influence of profitability suggests that the availability of internal finance does constrain diversification. However, this conclusion would imply that firm size should also have a positive influence (S_i was clearly insignificant). A possible explanation for the absence of the influence of firm size is the time period chosen: a similar analysis for the period 1953-63 shows diversification to be strongly related to firm size.

Diversification and economic performance

(i) competition

The major concern of economists over diversification has been directed at the possible anti-competitive effects of diversification by large companies. The above analysis provides no evidence relating to the competitive effects of diversification. It is worth noting, however, that the scarcity of direct evidence of diversification reducing competition suggests that this concern is over exaggerated. Indeed in the U.K. where oligopolistic collusion is the result chiefly of the adherence by firms to traditional pricing and marketing practices, diversifying entry by outside firms, whether by new entry or acquisition, is likely to sharpen competition.

(ii) technical progress

The major result of the empirical analysis is confirmation of the relationship reported by Amey (1964), Hassid (1975), and Goreki (1975) diversification is closely related to R & D effort. The encouragement to diversification given by high levels of R & D expenditure and the tendency for firms operating in industries with high R & D expenditure to diversify towards industries with a similar R & D effort suggests that diversification offers opportunities for the exploitation of scale economies in R & D and/or that diversification takes place to exploit innovations applicable outside firms' existing industries. In both cases diversification will encourage innovation and its diffusion.

(iii) efficiency of resource allocation between industries

As has been discussed above, corporate diversification involves a replacing of factor markets by management in the role of allocating resources between industries. The efficiency of management in this task in relation to the efficiency of the market, is the most important consideration for economic performance.

Efficient resource allocation would involve firms switching resources from low growth to high growth and high risk to low risk industries. Table 1 shows that while diversifying entry is attracted by high growth in the outside industry, it is also positively (though insignificantly) related to high growth in the firms' primary industry. A better measure of the diversification between pairs of industries for evaluating the efficiency of resource allocation is the D_{ij}^2 measure (the increase in the proportion of the output of firms in industry i which is of products falling into industry j). Efficient allocation would be indicated by D_{ij}^2 being positively related to the difference in the rate of growth of output in the firm's primary industry and the non-primary industry ($X_j - X_i$) and negatively related to the difference in the systematic risk of the two industries ($B_j - B_i$). Least squares regression gives the results:

$$D_{ij}^2 = 20.226 + \underset{(1.296)}{0.118} (X_j - X_i) - \underset{(-0.819)}{10.522} (B_j - B_i)$$

$$R = 0.0956$$

Although the signs of the coefficients support the hypothesis that diversification directs resources into industries of higher growth and lower risk, the coefficients are insignificant.

This lack of a conclusive result could reflect the limited opportunities for diversification available to firms and low growth industries due to their inability to generate sufficient internal finance. But the positive relationship between diversification and primary industry growth rate and profitability (see Table 1), does not mean that diversification involves resource misallocation. Where retained profits are the major source of company finance and retained profits are a less costly source of finance than external funds, then the inefficient allocation of investment funds is inevitable. The wider the range of investment opportunities open to expanding firms, then the greater is the efficiency of their investment of retained earnings likely to be.

A further consideration is that the allocation of inputs by managements within the multi-product firm may allow a greater inter-industry mobility of resources than the redeployment of inputs between single product firms through the market. Institutional restraints and government policies to limit unemployment have limited labour mobility in the U.K. The ability of the diversified firm to reallocate labour between the production of different products without incurring unemployment and avoiding the loss of pension rights and the other aspects of seniority may be important benefits to efficient resource allocation.

REFERENCES

- ALCHIAN, A. A. and H. DEMSETZ, 'Production, Information Costs, and Economic Organisation', *American Economic Review*, December 1972.
- AMEY, L. R., 'Diversified Manufacturing Business', *Journal of the Royal Statistical Society, Series A*, Vol. 127, 1964.
- BERRY, C. H., 'Corporate Growth and Diversification', *Journal of Law & Economics*, Vol. xiv, 1971.
- Board of Trade *Report on the Census of Production 1963*, H.M.S.O., London, 1969.
- CHANDLER, A. D., *Strategy & Structure*, M.I.T. Press, Cambridge, Massachusetts, 1962.
- CHANNON, D. F., *The Strategy & Structure of British Enterprise*, Macmillan, London, 1973.
- COASE, R., 'The Nature of the Firm', *Economica*, November 1937.
- Department of Trade and Industry *Report on the Census of Production 1968*, H.M.S.O., London, 1974.
- GOREKI, P. K., 'An Interindustry Analysis of Diversification in the U.K. Manufacturing Sector', *Journal of Industrial Economics*, Vol. xxiv, No. 2, December 1975.
- GORT, M., S. ARORA, and R. MCGUCKIN, 'Firm data and industry aggregated in the analysis and diversification and integration', *Annals of Economic & Social Measurement*, Vol. 1, No. 1, January 1972.
- GRANT, R. M., 'On the Theory of Diversification: a Comment', *Scottish Journal of Political Economy*, Vol. xxi, No. 1, February 1974.
- HASSID, J., 'Recent Evidence on Conglomerate Diversification in U.K. Manufacturing Industry', *Manchester School*, December 1975.
- KELLY, M., 'The Determinants of Diversification — A Simple Profit Maximising Model', Centre for Industrial Economic and Business Research, University of Warwick, Discussion Paper No. 49.
- LINTNER, J., 'Security Prices, Risk and the Maximal Gains from Diversification', *Journal of Finance*, xx, No. 4, December 1965.
- NARVER, J. C., *Conglomerate Merger and Market Competition*, University of California Press, Los Angeles, 1969.
- PENROSE, E. T., *The Theory of the Growth of the Firm*, Blackwell, Oxford, 1959.
- SMITH and SCHREINER, 'A Portfolio Analysis of Conglomerate Diversification', *Journal of Finance*, xxiii, No. 2, June 1969.
- STEVENS, G. V. G., 'On the impact of uncertainty on the value and investment of the neoclassical firm', *American Economic Review*, June 1974.
- SUTTON, C. J., 'Management Behaviour and a Theory of Diversification', *Scottish Journal of Political Economy*, Vol. xx, No. 1, February 1973.

APPENDIX

DESCRIPTION OF VARIABLES IN REGRESSION ANALYSIS

- D_{ij}^1 — the increase between 1963 and 1968 in the percentage of firms classified to SIC order i with operations in order j (from Department of Trade and Industry 'Report on the Census of Production 1968', Part 158, Table 47).
- X_i — the percentage growth in net output of the principal products of SIC order i between 1958 and 1968.
- R_i — R & D expenditure as a percentage of net output by firms in order i (from Dept. of Scientific & Industrial Research 'Estimates of Resources devoted to Scientific & Engineering Research & Development in British Manufacturing Industry', 1958).

- M_i — expenditure on advertising and market research in 1963 as a percentage of net output by firms in order i (from Census of Production 1963, Part 156, Table 4).
- R_{ij} — the degree of similarity of R & D expenditure in orders i and j . R_{ij} is the product of the differences between the average R & D expenditure for all orders ($\bar{R}$) and the expenditures for order i and order j , i.e. $R_{ij} = (R_i - \bar{R})(R_j - \bar{R})$.
- M'_{ij} — the degree of similarity of marketing expenditure in orders i and j . Calculated as R'_{ij} , i.e. $M'_{ij} = (M_i - \bar{M})(M_j - \bar{M})$.
- B_i — the systematic risk of the return on equities of firms in industry i , which is the systematic risk to the firm of the returns in this industry. B_i was calculated as the regression coefficient of the weighted average rate of return on the equity of firms classified to SIC order i on the rate of return of the market index. The FT Actuaries industry indices were used as measures of industry rates of equity returns and in the case of Timber, Clothing and Footwear, and Leather, special indices were calculated. The FT all-share index was used as the market index. Quarterly data for 1962-67 were used.
- S_i — average net output in 1963 of each enterprise in order i .
- P_i — 'profit' as a percentage of output in order i in 1963, where 'profit' = net output — wages and salaries — payments for certain services (from Census of Production 1968, Part 156, Table 5).

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The relationship between risk and rate of return on capital in UK industry

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I. INTRODUCTION

The determinants of differences in profit rates between industries has been a field of considerable research effort by industrial economists. Studies have been concerned with relating profit (as a percentage of sales or capital) to structural variables thought to confer market power—seller concentration and barriers to entry.¹ One reason for the inconclusive results of these studies, particularly in the UK, may be the implicit assumption that the competitive rate of profit is constant between industries. In reality the competitive rate of profit will vary according to the degree of risk in the industry. Moreover, in the absence of any general theory of price formation under oligopoly, there are stronger theoretical reasons for expecting rate of profit to be related to risk rather than to seller concentration. A further reason for studying the relationship between risk and the competitive rate of profit is to assist agencies of competition and regulation in establishing 'fair rates of return' for individual companies. In the UK, government agencies have tended to identify 'fair rates of return' with the average for industry as a whole with no quantitative account being taken of risk. This paper examines firstly the appropriate measure of risk which determines the competitive rate of return on capital: the approach taken is to identify a firm's competitive rate of return on capital with its cost of capital, the relevant risk is therefore the risk on all the firm's securities; this is measured by the risk of the return on the firm's equities adjusted to take account of the risk arising from financial leverage. Secondly, the extent to which differences in the rate of return on capital for 83 UK firms in 12 broadly competitive industries can be attributed to differences in levels of risk: the data show a strong positive relationship between risk and return on capital at both firm and industry level.

The principal novelty of the paper is the use of measures of risk derived from securities markets to explain differences in the rates of return on capital earned by manufacturing companies. Although the relationship between risk and return on securities has been subjected to extensive empirical testing, relatively few studies have related differences in

¹UK studies include Cowling and Waterson (1976), Hart and Morgan (1977), Holtermann (1973) and Khajizadeh-Shirazi (1974).

firms' rate of return on capital to risk, and these have used measures of risk based on the dispersion of rates of return on capital.²

II. COST OF CAPITAL AS A MEASURE OF THE COMPETITIVE RATE OF RETURN ON CAPITAL

Under perfect competition the long-run equilibrium rate of return on capital for a firm is its cost of capital. A wealth maximizing firm invests to the point where, at the margin, its rate of return on capital is equal to its cost of capital. Where there is free entry and exit from markets, capital movements between industries will eliminate quasi-rents on capital such that the average rate of return for each firm and for each industry is equated to the cost of capital for that firm and for that industry.

In the absence of uncertainty (and assuming a perfect capital market) the cost of capital to every firm is the riskless rate of interest. The competitive rate of return is therefore, also equal to the riskless rate of interest. Under uncertainty the cost of capital to firms and the competitive rate of return on capital will vary between firms according to the degree of risk faced by each firm as assessed by the suppliers of finance.

III. THE COST OF CAPITAL UNDER CONDITIONS OF RISK

For a firm operating in the interests of its owners and seeking to maximize the market value of its securities the cost of capital (ρ) is the expected rate of return on the firm's securities. For the wholly equity financed firm (i)

$$\rho_i = E(R_i) \quad (1)$$

where $E(R_i)$ is the expected value of the rate of return on firm i 's equity. The capital asset pricing model predicts that in perfectly competitive capital markets with no transactions costs, where investors' utility depends upon the mean and standard deviation of the anticipated returns on their asset portfolios, security prices are determined such that the expected rate of return on security i , $E(R_i)$, is a linear function of the systematic risk of the return, β_i ³

$$E(R_i) = R_f + \beta_i[E(R_m) - R_f] \quad (2)$$

²Stigler (1963) and Fisher and Hall (1969) examined risk as a determinant of inter-industry differences in rate of return on capital. Their measures of risk were based on variance of returns over time, skewness of the distribution of returns and inter-company variability of returns. Such approaches involve the arbitrary definition of a utility function for the firm. The advantage of identifying risk with the risk borne by the holders of the firm's securities is that it is consistent with the classical assumption of the firm seeking to operate in the interests of its owners and it enables risk to be identified and measured as a price determined in the securities markets.

³For an exposition of the capital asset pricing model see Fama and Miller (1972) chapter 7.

where R_f is the riskless rate of interest, $E(R_m)$ is the expected rate of return on the market index, and β_i is the least squares regression coefficient of R_i on R_m :

$$\frac{\text{cov}(R_i, R_m)}{\sigma^2(R_m)}$$

which is that part of the variance of R_i which cannot be eliminated by portfolio diversification by investors.

For the wholly equity financed firm, β is the appropriate measure of risk in determining both the return on a company's equity and the company's competitive rate of return (π^*)

$$\pi_i^* = \rho_i = E(R_i) = R_f + \beta_i[E(R_m) - R_f] \quad (3)$$

In the case of firms financed by both debt and equity, the cost of capital is the weighted average of the expected rates of return on the firm's securities

$$\rho_i = \alpha_i E(R_i) + (1 - \alpha_i) E(D_i) \quad (4)$$

where α_i is the ratio of the market value of equity to the market value of all the firm's securities and $E(D_i)$ is the expected rate of return on the firm's fixed interest securities.

Assuming that firms are able to offer sufficient security for their fixed interest borrowing that they are able to borrow at the riskless rate of interest (i.e. all risks are borne by equity holders then $E(D_i) = R_f$. Substituting for $E(R_i)$ from Equation 2

$$\pi_i^* = \rho_i = R_f + \alpha_i \beta_i [E(R_m) - R_f] \quad (5)$$

or alternatively

$$\pi_i^* - R_f = \rho_i - R_f = \alpha_i \beta_i [E(R_m) - R_f] \quad (6)$$

Thus for the firm financed by equity and debt, cost of capital and return on capital in excess of risk free rate of interest is directly proportional to $\alpha_i \beta_i$ —the systematic risk of the firm's equity adjusted for leverage.

The reason why $\alpha_i \beta_i$ is the appropriate measure of risk for determining the competitive rate of return of firm i , is that β_i , the risk of firm i 's equity return, reflects two sources of risk: the inherent risk arising from firm i 's operations and the financial risk which arises from leverage.⁴ Adjustment for leverage has the effect of eliminating the purely financial risk.

IV. ESTIMATING THE COMPETITIVE RATE OF RETURN

The variables in Equations 1 to 4 above represent investors' expectations and are not directly observable. However a good deal of empirical evidence shows that a useful estimate of the ex-ante β is provided by a least squares regression coefficient of ex-post

⁴This 'real' risk to the firm would be affected *inter alia* by the variability of the demand for the firm's product, the capital intensity of the firm's production process, uncertainty arising from competition in price and innovation.

values of R_i on ex-post values of R_m . R_i may be equated with the rate of interest on a short term default-free bond.⁵ For competitive industries, the competitive rate of return on capital (π^*) can be equated with the actual rate of return (π) earned over a period of several years. Thus Equation 6 may be estimated as a regression equation to examine the relationship between risk and return

$$(\pi_i - R_i) = a + b(\alpha_i \beta_i) \quad (7)$$

where the expected value of a is 0 and the expected value of b is $(E(R_m) - R_i)$. However two major complications affect the estimation of the relationship between risk and return on capital: the first is the unrealistic assumption that firms' fixed interest borrowing is at the riskless rate, and the second is the problem of taxation. As regards the return on company debt, $E(D_i)$ will invariably be in excess of the riskless rate of interest. Because of the different treatment of dividends and interest under the UK tax system it is necessary to distinguish between the two types of fixed interest borrowing by companies: the return on preference shares (like that on ordinary shares) is subject to corporation tax but under the tax-credit system income tax is not levied, while the interest on corporate debt escapes corporation tax but is subject to income tax.

Taking these complications into account the cost of capital Equation 4 becomes

$$\rho_i = \alpha_i E(R_i) + \theta_i E(R_i) + \left(\frac{1-T}{1-t} \right) (1 - \alpha_i - \theta_i) E(D_i) \quad (8)$$

where $E(R_i)$ is the expected return on firm i 's preference shares, θ is the market value of firm i 's preference shares as a proportion of the market value of all firm i 's securities, T is the rate of corporation tax and t is the standard rate of income tax.

Assuming that the bond market is efficient and the best estimate of next period prices bond are current bond prices, $E(P_i)$ and $E(D_i)$ can be identified with the current yields on these securities, P_i and D_i . Thus Equation 8 can be estimated as follows

$$\Pi_i = a + b(\alpha_i \beta_i) \quad (9)$$

where Π_i is the rate of a return on capital in excess of the riskless rate of interest and adjusted for the differences in firms' leverage and differences in the returns on fixed interest securities⁶ i.e.

$$\Pi_i = \pi_i - \alpha_i R_i - \theta P_i - \left(\frac{1-T}{1-t} \right) (1 - \alpha_i - \theta_i) D_i \quad (10)$$

⁵For a non-technical discussion of some of the empirical studies testing the capital asset pricing model see Modigliani and Pogue (1974).

⁶In fact, the quantitative significance of the adjustments made to the naive estimating Equation 7 for taxation and $E(D_i)$ being greater than R_i is small. The reasons are that the differences in return on loan capital between different medium-sized firms is not great and when account is taken of the tax advantages of debt finance, the cost of this source of capital is not much greater than the riskless rate of interest.

V. THE REGRESSIONS

From the Stock Exchange industrial classification of the securities (Stock Exchange, 1976) 12 industry groups were selected. They were selected for their broadly competitive structures: (a) supplying products with a weighted average concentration ratio for the five largest firms of less than 60%, (b) reasonable homogeneity in the group of products supplied and (c) relatively low entry barriers.⁷

From the 12 industry groups, firms with a net employed capital of less than £3 million were excluded since small companies were unlikely to have highly marketable shares which might upset the calculation of beta coefficients.⁸ In addition a few companies were excluded either because their market share made it likely that they might exercise market power (e.g. London Brick was excluded from the brick industry) or because the main activity of the firms was outside the product range of the industry (thus firms specializing in leather manufacture and shoe retailing were excluded from the footwear industry, and firms producing mainly specialist papers (e.g. Eucaiyptus Pulp Mills Ltd and Transparent Paper Ltd were excluded from the paper industry), 88 firms remained.

A least-squares regression of Equation 9 on the individual company data gave the following result

$$\Pi_i = -11.804 + 20.515 \alpha_i \beta_i$$

(2.855) (4.405)

where R^2 is 0.1857, the F value is 19.405 and the T values are shown in brackets.

The regression result shows risk to be a highly significant determinant of return on capital (significant at the 1% level). The low R^2 is to be expected in view of the large number of other factors influencing the profitability of individual companies (notably efficiency). The significant negative sign of the regression constant is contrary to the predicted value of zero. The major reason is probably that the measures of return on capital and cost of capital are not entirely consistent with regard to changes in the price level. Cost of capital was estimated on the basis of monetary returns unadjusted for inflation. Return on capital however was measured on an historic cost basis which excludes from profit the increase in the value of capital assets arising from inflation. Thus the return on capital was understated compared with cost of capital, but there is no reason to believe that this would significantly effect relative returns on capital between industries

⁷For three industries, the industries defined in the Stock Exchange's classification were narrowed in order to limit the range of products covered, thus: the Contracting industry was narrowed to Housebuilding, Paper and Packaging to Paper, and Meat Wholesaling was distinguished from the Food Processing industry.

⁸A major problem of calculating beta coefficients arises from the bias arising from the 'non-trading effect'. For thinly-traded shares, the prices published in the 'Official Daily List' may relate to transactions many days earlier. The result is to bias beta estimates downward for the shares of small companies or other companies with a relatively small market for their shares. The beta estimates used here make no allowance for the non-trading effect, hence the decision to exclude small companies from the sample. The problem of the non-trading effect in relation to UK share data is discussed by Franks *et al.* (1977).

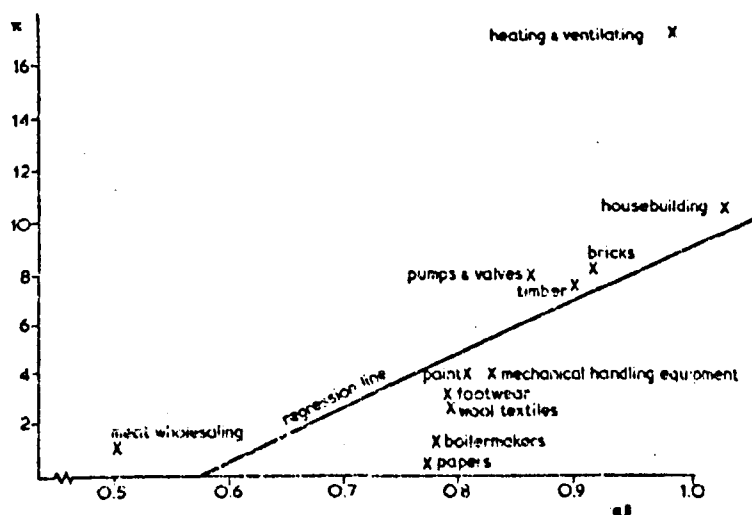


Fig. 1. Industry averages for adjusted excess rate of return on capital (R) and risk ($\alpha\beta$).

and between firms. In addition it is also likely that because of increases in company taxation, price control and economic recession, return on capital earned by UK industry as a whole during the early 1970s was below the competitive rate. Estimates by Flemming *et al.* (1976) show that between 1973 and 1975 real post-tax rate of return on capital fell below real cost of capital by a substantial margin.

Grouping the company data into 12 industry averages eliminates intra-industry variations in profitability and increases the R^2 between risk and rate of return to 0.7152. Regression results for the industry averages are not shown since no additional information is added to the individual company data and industry groupings give disproportionate weight to the industries with few firms. Fig. 1 shows the risk and rate of return for individual industries in relation to the regression line plotted for individual company data.

VI. CONCLUSIONS

The competitive rate of return on capital for a firm is equal to that firm's cost of capital. Cost of capital varies between firms according to risk of firm's securities as perceived by investors. Assuming that firms can borrow at the riskless rate and there is no taxation, cost of capital (and therefore, return on capital!) is a linear function of the systematic risk of the firm's equity weighted by the firm's equity to debt ratio. In the absence of these assumptions, return on capital must be adjusted to maintain the linear relation between risk and return on capital. For 12 competitively-structured UK industries risk was a highly significant and quantitatively important explanation of differences in rate of returns on capital for the period 1971-75. Risk was also significant in explaining the differences in return on capital earned by individual firms in these industries, although there the amount

of variation explained was much smaller. The results suggest that the weak explanatory power and inconsistent results of models which have been used to relate differences in profitability between UK industries to differences in market structure may be due, in part, to a failure to take account of risk differences between industries.

APPENDIX.

Industry and Company	Average rate of return on capital (π) (%)	Adjusted excess return on capital (π) (%)	Risk factor ($\alpha\beta$)
BRICKS			
G. H. Downing	14.3	4.0	0.810
Ibstock Johnson	23.5	13.1	1.131
Maidenhead Investments	9.8	- 1.1	0.650
Redland Ltd	26.2	15.8	1.078
Industry average	—	8.0	0.917
PAINT			
Blundell Permoglaze	15.1	4.7	0.594
Camrax Holdings	19.8	9.5	1.151
Dufay Bitumastic	11.6	1.3	0.507
International Paint	15.6	5.2	0.527
Leyland Paint	12.5	2.1	0.910
D. MacPherson	11.4	0.8	1.093
Manders Holdings	14.9	4.2	0.868
Industry average	—	4.0	0.808
TIMBER			
Aaronson Bros.	27.3	16.0	0.922
Bambergers	16.6	3.1	1.063
Brownlee	12.1	1.8	0.520
J. Carr (Doncaster)	15.7	5.4	0.967
Hollis and ESA	12.3	1.4	0.963
International Timber	13.0	2.5	0.781
J. Latham	13.1	2.8	0.748
Magnet and Southern	26.4	16.0	0.921
Wm. Mallinsons	16.0	5.5	1.051
May and Hassell	21.9	11.3	0.896
Montague Meyer	14.8	4.4	1.068
Parker Timber	21.9	11.6	0.934
Pheonix Timber	14.9	4.6	0.792
Sabah Timber	28.4	18.1	0.968
Industry average	—	7.5	0.900
HOUSEBUILDING			
Bett Bros.	29.9	19.6	0.744
Dryant Holdings	21.6	10.2	0.845
D. Charles	19.2	8.9	1.140

Industry and Company	Average rate of return on capital (π) (%)	Adjusted excess return on capital (π) (%)	Risk factor ($\alpha\beta$)
Fairview Estates	56.4	46.1	1.027
M. J. Gieson	14.0	3.7	1.033
Greaves Organization	21.9	11.6	1.293
Barratt Developments	19.6	8.9	1.151
Crouch Group	13.8	3.5	1.275
R. M. Douglas	19.0	8.7	0.882
Higgs and Hill	12.5	1.6	0.889
H. C. Jones	18.9	8.6	0.975
London and Northern	13.7	3.2	1.060
Y. S. Lovell	14.0	3.7	0.797
Orme Developments	30.7	20.2	1.213
Ward Holdings	13.6	3.3	0.986
G. Wimpey	17.1	6.8	1.180
Industry average	—	10.5	1.031
FOOTWEAR			
Chamberlain Phipps	13.6	3.2	0.586
Church and Co.	20.1	9.8	0.788
K. Shoes	16.9	6.4	0.821
Norvic Secs.	8.5	- 2.2	0.739
Stead and Simpson	11.7	1.4	0.947
Ward White	10.5	0.1	0.855
Industry average	—	3.1	0.789
BOILERMAKERS			
Babcock and Wilcox	11.4	1.0	0.874
Clarke Chapman	11.4	0.8	0.848
Green's Economiser	15.1	2.5	0.683
International Combustion	11.4	1.1	0.708
Industry average	—	1.4	0.778
MECHANICAL HANDLING			
Acrow	13.1	2.5	0.846
Bamfords	8.2	- 2.1	0.734
Blackwood Hodge	19.1	8.7	0.911
H. Brammer	28.4	18.1	0.676
J. H. Fenner	21.4	11.1	0.978
Herbert Morris	4.6	- 5.8	0.761
Stothert and Pitt	6.6	- 4.3	0.892
Industry average	—	4.0	0.828
PUMPS AND VALVES			
Amal. Power Engineering	12.3	1.7	0.969
British Steam Spec.	16.5	6.0	0.697
Hopkinsons Holdings	11.4	1.0	0.894
Martonair	29.4	19.1	0.876
Pegier Hattersley	20.2	9.8	1.036
Spirax Sarco	20.2	9.8	0.711
Industry average	—	7.9	0.864

Industry and Company	Average rate of return on capital (π) (%)	Adjusted excess return on capital (π) (%)	Risk factor ($\pi\beta$)
HEATING AND VENTILATING			
Haden Carrier	13.7	3.4	0.824
Hall Thermotank	13.8	3.3	0.896
M. K. Refrigeration	41.7 ^a	31.4 ^a	1.004
Myson Group	52.3 ^a	42.0 ^a	1.262
Wolseley Hughes	17.2	6.8	0.913
Industry average	—	17.4	0.980
PAPER			
Alliance Adler	12.2	1.9	0.829
Assoc. Paper Mills	8.4	— 2.3	0.527
Bemrose	14.7	3.4	0.964
Bunzl	17.4	7.1	0.875
Cutler Guardbridge	7.5	— 2.8	0.808
Dickinson Robinson Group	15.6	5.1	0.883
East Lancs. Paper	9.5	— 1.1	0.571
Inveresk	6.8	— 3.7	0.838
Reed and Smith	6.7	— 4.2	0.553
Industry average	—	0.4	0.771
WOOL TEXTILES			
Allied Textile	16.6	6.3	1.011
British Mohair	9.7	— 1.3	0.804
Bulmer and Lumb	7.8	— 2.5	0.812
Dawson Int.	12.8	0.9	0.565
J. Foster and Son	7.6	— 2.9	0.827
J. Haggas	26.1	15.8	0.844
Illingworth Morris	8.6	— 1.9	0.722
Parkland Textile	9.9	— 0.4	0.849
Sirdar	14.0	3.2	0.688
Industry average	—	2.8	0.791
MEAT WHOLESALING			
FMC ^b	12.9	1.4	0.503

^aYears 1973–75 only.

^bAll other firms in this industry were excluded on the basis of small size.

Calculation of the variables

Average rate of return on capital (π) was profits net of depreciation before interest and after tax as a proportion of average capital employed for the years 1971–75. (Source: Dept of Industry list of standardized company accounting information).

Systematic risk of ordinary shares (β) were calculated by Datastream International Ltd. The beta coefficients were calculated by simple linear regressions of the returns to each

security on the returns to a market index of 1000 ordinary shares. The returns were measured for 52 periods of 4 weeks (i.e. over 4 years) up to January 1976.

The ratio of equity to the value of all securities (α) was calculated at the market valuation of securities at January 1976.

Rate of return on capital in excess of the riskless rate, adjusted for taxation and fixed interest yields (Π) was calculated from π and R_f as indicated in Equation 10.

The riskless rate of interest (R_f) was identified with the rate of interest on 3 month Treasury Bills.

REFERENCES

- Cowling, K. and Waterson, M. (1976) Price cost margins and market structure, *Economica*, 43, 267-74.
- Fama, E. F. and Miller, M. H. (1972) *The theory of finance*, Holt, Rinehart and Winston, The Dryden Press, London.
- Fisher, I. N. and Hall, G. R. (1969) Risk and corporate rates of return, *Quarterly Journal of Economics*, 83, 79-92.
- Flemming, J. S., Price, L. D. D. and Byers, S. A. (1976) The cost of capital, finance and investment, *Bank of England Quarterly Bulletin*, 16, 193-204.
- Franks, J. R., Broyles, J. E. and Hecht, M. J. (1977) An industry study of the profitability of mergers in the UK *Journal of Finance*, 32, 1513-25.
- Hart, P. E. and Morgan, E. (1977) Market structure and economic performance in the United Kingdom, *Journal of Industrial Economics*, 25, 177-93.
- Holterman, S. E. (1973) Market structure and economic performance in UK manufacturing industry, *Journal of Industrial Economics*, 22, 119-39.
- Khalilzadeh-Shirazi, J. (1974) Market structure and price-cost margins in UK manufacturing industries, *Review of Economics and Statistics*, 56, 67-76.
- Modigliani, F. and Pogue, G. A. (1974) An introduction to risk and return. Concepts and evidence; *Financial Analysts Journal*, 30, 68-88 and 69-85.
- Stigler, G. J. (1963) *Capital and rates of return in manufacturing industries*, Princeton University Press, New Jersey.

THE MONOPOLIES COMMISSION AND THE RATE OF RETURN ON CAPITAL: A COMMENT

R.M. GRANT*

The recent article by O.A. Bello (1) criticises the use by the Monopolies Commission of the average rate of return on capital for industry as an indicator of the reasonable rate of profit for a monopoly supplier, and argues that the regulation of a firm's profitability with reference to such an average will result in a failure to maximise economic welfare. The purpose of this note is to point out that Bello's criticisms are founded on an erroneous view of the use made by the Monopolies Commission of rate of return comparisons and a misconception concerning the purpose of such comparisons. While Bello's chief result, that the regulation of a monopolist's rate of return on capital results in a welfare loss, is theoretically correct, the primary problem which the Monopolies Commission faces in using the accounting data for dominant firms is to infer the exploitation of monopoly power. To this end Bello's suggestion that a firm's cost of capital is the appropriate indicator of the "reasonable" rate of return on capital deserves careful consideration.

Bello's criticism of the Monopolies Commission's use of comparisons of rate of return on capital seems to stem from two fundamental misunderstandings:

1. that the average rate of return on capital earned by manufacturing industry is a guidepost used by the Commission for defining the reasonable rate of return for a monopoly supplier. The practice of using the average return for industry as a public interest guidepost was attributed to the Commission by Rowley (2), and Bello perpetuates this myth despite the cautions which have been expressed by the Commission concerning the interpretation of such comparisons¹. In the Breakfast Cereals Report (3), for example, the Commission noted:

"These average figures for manufacturing industry as a whole and for the food industry show that Kellogg's recent profits . . . are high compared to those of other companies, we regard the averages as no more than a yardstick for the purposes of making comparisons and not as providing any firm indication of the maximum level of profits which might be considered justifiable". (para 95)

The fact that averages for industry are not regarded by the Commission as defining a reasonable or desirable rate of return for a company is clear from a reading of the Commission's conclusions to its monopoly reports. In the reports

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on Cat and Dog Foods (4) and Electrostatic Reprographic Equipment (5), the return on capital earned by Pedigree Pet foods and by Rank Xerox were not criticised despite their being, respectively, about three times and about twice the average for manufacturing industry.

2. Bello assumes that, not only has the average rate of return been used to indicate the "reasonable" rate of return, but that the average rate of return has been used by the Commission to regulate the prices and profits of dominant firms. This view not only confuses the primarily investigatory role of the Monopolies Commission with the more regulatory function exercised by the Office of Fair Trading, but is misguided with regard to the kinds of recommendations made by the Commission in its reports into dominant firm monopolies. In general the Commission's preference has been for measures which stimulate competition (e.g. through the reduction of entry barriers) as opposed to the direct regulation of prices and profits. In the relatively small number of cases where the Commission has recommended a reduction in the prices and profits of a dominant firm, never has the Commission recommended that the prices and profits should be reduced to the point where the firm is earning a return on capital which is the average for industry as a whole². Thus a major conclusion of Bello's paper, that the use of the average return on capital to regulate the profits of monopoly firms will result in the regulated firm selecting input proportions that are not welfare maximising, is of limited interest.

The purpose of the Monopolies Commission's comparisons of a firm's return on capital with some average for industry has been to determine whether or not the firm has exploited its monopoly position to charge prices which are above the competitive level. To this end the Commission normally considers a variety of evidence. In addition to comparisons of return on capital, the Commission normally considers profits as a proportion of sales revenue, the firm's prices in relation to those of competitors, and changes in prices over time in relation to costs and general price indices.

The problem of inferring the existence of monopoly profit from a comparison between a dominant firm's return on capital with that of manufacturing industry as a whole is indeed immense. In an economy in long run equilibrium in the absence of uncertainty and efficiency differences between firms then differences in rate of return on capital (valued at opportunity cost) would indicate differences in market power. In practice, differences between a firm's return on capital and the industry average reflect a number of factors.

In particular Bello doubts whether any economic significance can be attributed to the Commission's comparisons of accounting rates of return since "book rates of return are poor measures of the true (DCF) rates of return" (1, p.237). True rates of return, suggests Bello (1, p.238), should be based upon the concept of opportunity cost. This is correct, but in its measurement of return on capital

the Commission has attempted to minimise the problems associated with accountancy rates of return. To avoid incomparabilities due to differing accounting conventions between firms the Commission obtains financial data on a standardised basis.³ To deal with the divergence between accounting measures of profits and asset values the Commission has for some years sought asset values on a replacement cost basis and in its recent reports profits have been measured on a current cost basis.

Two further problems are (a) the difference between anticipated and realised profits (or, as Bello puts it, "ex ante" and "ex post" rates of return) due to the influence of random factors and (b) the absence of long run equilibrium in the economy which may result in firms earning short term profits above or below their long run rates due to fluctuations in demand and other dynamic factors. By averaging rates of return over a five or six year period both of these problems are partially alleviated.

As regards risk, Bello states that "to argue that the dominant firm should earn an average rate of return implies that the firm is subject to average risk" (i.p.236). This is true, but in comparing a firm's return to the average for industry the Commission has attempted to take into account the riskiness of a firm's operations. In several enquiries the monopoly suppliers have claimed that their operations were subject to high levels of risk⁴. In its reports the Commission has recognised that high risk justifies an above average return on capital and the Commission has sought to evaluate the degree of risk by examining the extent of cyclical fluctuations in the demand for the firm's product, the capital intensity of production, competition and the vulnerability of the firm to technical change.

Probably the most important single hindrance to the use of profit data to indicate monopoly pricing is the variations in efficiency between firms. Some assessment of the efficiency of the monopoly supplier has been a feature of almost all dominant firm reports, but the Commission has not attempted in its reports to quantify the comparative efficiency of firms. An exception was the Cat and Dog Foods report (4) where the rate of return on capital earned by Pedigree Petfoods was adjusted to take account of a number of the company's efficient practices.

One of the positive results of Bello's analysis is that the "reasonable" or, more correctly, the competitive rate of return on capital for a firm should equal the cost of capital to that firm. Although Bello goes on to note that using cost of capital to determine the level at which a firm's return on capital is to be regulated will still result in a departure in the firm's choice of input proportions from the socially optimal ratio, this does not detract from the value of the cost of capital measure as an indicator of monopoly profit.

Assuming perfect capital markets and a perfectly elastic supply of capital to the firm, the rate of return on capital earned by a firm in competitive equilibrium would be equal to the firm's average cost of capital. As an indicator of the competitive rate of return for an individual firm, cost of capital also has the advantage of taking account of the riskiness of the firm's operations (as assessed by the suppliers of finance). The major difficulty of using cost of capital is, as recognised by Bello (1, p.239), the difficulty of estimating the cost of equity capital to the firm. The lack of consensus among finance specialists as to the appropriate method of estimating cost of capital would render controversial its use by a public regulatory body. Nevertheless, it is noteworthy that the Review Board for Government Contracts has changed from using average return on capital for industry to a cost of capital approach in determining the target rate of return for non-competitive government contracts. (9, pp13-23). It is not clear however, that the use of a cost of capital criterion would significantly alter the Commission's conclusions as to the reasonableness of the return on capital earned by monopoly suppliers. Estimates by Flemming et al. (8) show that, when averaged over several years, the deviation of the real post-tax return on capital for manufacturing industry from real cost of capital was small, although between 1972 and 1975 the effects of recession, price control wage inflation and taxation combined to push return on capital significantly below cost of capital.

CONCLUSIONS

1. Bello's criticism of the use by the Monopolies Commission of the average rate of return for industry as indicating the reasonable rate of return for a monopoly supplier is unjustified. The Commission's reports show an awareness of the problems of such comparisons and attempt to minimise such problems. Criteria other than return on capital are used to evaluate whether a firm is exploiting market power.
2. Bello's conclusion that the use of the average return on capital to regulate a monopolist's prices and profits is inefficient is of limited relevance to the Monopolies Commission since its recommendations indicate a preference for measures which will encourage competition rather than direct regulation of prices and profits. Where regulation has been recommended the average return on capital for industry has not been used as the regulatory norm.
3. Cost of capital has several advantages over the average return on capital as an indicator of a firm's competitive rate of return, but estimating cost of capital poses formidable difficulties.

NOTES

¹ Bello is also factually incorrect when he states that "These public interest guideposts are

of six varieties" (1, p.237). These six different indicators of the rate of return on capital in manufacturing industry were identified by Rowley (2) and related to the period prior to 1968 when the Commission was in the process of developing its own series of data on the profitability of manufacturing industry.

- ² Since 1960 in only five reports has the Monopolies Commission criticised the level of the prices and profits of the monopoly supplier as excessive. These were: Electrical Equipment for Land Vehicles (Lucas and Champion), Colour Film (Kodak), Household Detergents (Unilever and Proctor and Gamble), Chlordiazepoxide and Diazepam (Roche) and Contraceptive Sheaths (London Rubber Co.). In all of these cases the Commission recommended a reduction in price, but only in the Contraceptive Sheaths report was the cut in price related to a recommended rate of return on capital.
- ³ Capital employed is measured before deduction of bank loans and overdrafts, investment grants, provisions for tax on current year's profits, and dividends proposed and payable, but excludes goodwill and other intangibles (see, for example, 6, footnotes to p.48). Companies' depreciation figures are sometimes adjusted to bring them into line with the rates allowed by the Inland Revenue for tax purposes (7, p.107).
- ⁴ See the reports on Flat Glass, Man-made Fibres, Clutch Mechanisms, Cigarette Filter Rods, Primary Batteries and Contraceptive Sheaths. In the reports on Clutch Mechanisms, Cigarette Filter Rods and indirect Electrostatic Reprographic Equipment (Rank-Xerox) the Commission gave particular prominence to risk as justifying above average returns on capital.

REFERENCES

- (1) Olaseyi A. Bello, "The Firm, Investment, Rate of Return and the Monopolies Commission", *Journal of Business Finance and Accounting* Vol. 4, No.2, Summer 1977.
- (2) C.K. Rowley, "The Monopolies Commission and Rate of Return on Capital", *Economic Journal*, Vol. 79, No. 313, March 1969.
- (3) Monopolies Commission, "Report on the Supply of Breakfast Cereals", HMSO, 1975.
- (4) Monopolies and Mergers Commission, "Report on the Supply in the U.K. of Cat and Dog Foods", HMSO, 1977.
- (5) Monopolies and Mergers Commission, "Report on the Supply of Indirect Electrostatic Reprographic Equipment", HMSO, 1976.
- (6) Monopolies and Mergers Commission, "Report on the Supply of Building Bricks", HMSO, 1976.
- (7) Monopolies Commission, "Report on the Supply of Flat Glass", HMSO, 1968.
- (8) J.S. Flemming, I.D.D. Price and S.A. Byers "The Cost of Capital, Finance and Investment", *Bank of England Quarterly Bulletin*, Vol. 16 No.2, June 1976.
- (9) Review Board for Government Contracts, "Report on the Second General Review of the Profit Formula for Non-competitive Government Contracts", HMSO, 1977.

APPENDIX

SUPPLEMENTARY PAPERS ON STRUCTURAL ADJUSTMENT AND INDUSTRIAL INTERVENTION

6 The Impact of EEC Membership upon UK Industrial Performance

ROBERT GRANT

INTRODUCTION: EXPECTATIONS AT THE TIME OF ENTRY

During the years immediately prior to Britain's accession to the European Community, considerable attention was devoted to the likely effects of membership upon the British economy. Despite the controversy generated in the debate over membership, a substantial degree of consensus emerged as to the probable economic impact. It was clear, for example, that budgetary contributions and higher food prices would involve a substantial outflow on the balance of payments and would boost the rate of inflation during the transition period. The impact on the industrial sector was less clear-cut. It was generally considered that the effect of the elimination of tariffs between Britain and the EEC combined with a loss of Commonwealth, EFTA and Irish preferences would result initially in an adverse movement in the balance of trade in manufactures. The 1970 White Paper, *Britain and the European Communities, An Economic Assessment*, estimated an adverse movement in the non-food trade balance of between £125 million and £275 million. With higher import prices for food and the large net budget contributions, an adverse movement in the balance of payments of up to £1000 million was foreseen.

However, these impact effects of entry were generally regarded as being of less significance than the longer-term consequences for the rate of growth of the British economy. The nature and sources of the dynamic effects of entry were seldom made explicit. The most prevalent argument of the pro-marketeters was that Britain's incorporation

NOTE: This paper is the printer's proof copy, final
published version not yet available.

into the Community would cause her rate of economic growth to converge towards the higher rates experienced by the EEC(6).¹ The mechanism envisaged by the advocates of entry was that EEC membership would increase the potential for export sales, enabling the country to embark upon the desired strategy of 'export-led growth'. Not only did the EEC provide a large and affluent market on Britain's doorstep, whose growth of income per head exceeded that of Britain's traditional export markets, but Britain's prospects among her established customers were becoming increasingly gloomy due to erosion of Commonwealth preferences and the imposition of trade barriers by industrialising Third World countries.

A more detailed consideration of the dynamic effects of membership was provided in the 1970 White Paper. The potential for increased economic growth was seen as arising not only from the ability of British industry to expand exports of manufactured goods but also from (i) the stimulatory effects of increased competition; (ii) the increased investment which would arise from increased competition and export expansion; (iii) the exploitation of scale economies, in particular, the benefits to technologically-based industries from the ability of British companies to grow to the size required for adequate R & D.²

Belief in the beneficial character of the dynamic effects of EEC entry was far from unanimous. For example, Professor Kaldor, while endorsing the nature and the importance of the dynamic effects of entry, considered that the adverse static effects of entry in terms of an increasing trade deficit, a rise in domestic prices and costs, large net budget contributions, and loss of real income would be so severe as to result in dynamic effects of entry which would depress rather than stimulate economic growth (Kaldor, 1971).

Despite these differences of opinion as to the quantitative impact of the different effects, it is apparent that at the time of Britain's entry to the EEC there were some clearly formulated notions as to the nature of the impact of membership on British industry which were based upon the forecast of changes in UK trade and a diagnosis of the sources of Britain's low rate of economic growth. In this chapter I shall reexamine the arguments concerning the impact of the EEC upon British industry in the light of almost a decade of membership, drawing upon recent research into British trade performance and the deficiencies of growth and productivity in British industry. The main body of the chapter is in two sections: first, a summary of the principal changes in UK trade associated with Community membership; second, an

examination of the principal ways in which the EEC has influenced the growth of the UK industrial sector.

THE TRADE EFFECTS OF EEC MEMBERSHIP

The influence of EEC membership on British industry has occurred principally through the changes in UK overseas trade which have resulted from incorporation within the Community. Despite considerable research into this topic, definite conclusions about the impact of the EEC on UK trade cannot easily be drawn. All that can be observed are the changes in the volume and pattern of trade since entry. Not only are the separate 'trade-creating' and 'trade-diverting' effects predicted by the theory of custom unions empirically inseparable, but it is impossible to distinguish the effects of EEC membership from the effects of the oil price shocks, recession, North Sea oil, and the various other factors which have since 1973 so radically altered the international economic climate and the trading position of the UK.

The principal effects on UK trade have arisen from the changes in UK tariff rates consequent upon EEC entry. But even here it is difficult clearly to identify those changes which have directly resulted from Community membership. At the time of entry, Community membership promised a substantial fall in protection for British industry – not only were tariffs between the UK and EEC to be eliminated, but the Common External Tariff of the EEC was on average below the average UK tariff on manufactures. However, the historical fall in UK average tariffs since 1973 overstates the impact of the EEC since tariff rates were declining worldwide during the 1970s as a result of the multilateral tariff negotiations. Of the reduction in UK average tariff rates between 1959 and 1977 only between one quarter and one third were the result of EEC membership (Morgan, 1980). Since the late 1960s the average tariffs of the OECD countries on industrial products were reduced by 36 per cent in the Kennedy Round and by 34 per cent in the Tokyo Round, reducing rates of tariffs on most manufactures to very low levels (as shown in Table 6.1).

Thus UK entry into the EEC did not involve quite so drastic a change in Britain's commercial relations with the rest of the world as appeared in 1973. Certainly the notion of the EEC providing an 'expanded home market' for British manufacturers and a secure springboard for export sales to non-EEC markets fails to take account of the low tariff rates on manufactured goods throughout the indus-

TABLE 6.1 *Post-Tokyo Round average tariffs on all industrial products (excluding petroleum)*

	<i>per cent</i>
US	4.3
Japan	2.7
EEC	4.6
Austria	7.7
Finland	5.5
Norway	3.1
Sweden	4.0
Switzerland	2.2

SOURCE OECD

trialised world and of the non-tariff barriers and characteristic differences between national markets within the EEC.³

Despite these various factors which might be expected to limit and obscure the impact of the EEC on UK trade, the evidence on the changing pattern of UK trade after 1973 shows a remarkable shift in both imports and exports towards the EEC (9) (Table 6.2).

TABLE 6.2 *UK visible trade with the EEC as a proportion of total UK visible trade*

	<i>Exports to EEC as % of total UK exports</i>	<i>Imports from EEC as % total UK imports</i>
1970	29.7	28.4
1971	28.1	30.7
1972	30.2	33.8
1973	32.3	35.7
1974	33.8	35.3
1975	32.2	38.5
1976	35.5	38.4
1977	36.8	40.0
1978	38.1	43.3
1979	42.6	45.2
1980	43.1	42.7
1981 (Q4)–82 (Q1)	42.1	43.2

SOURCE The United Kingdom balance of payments, 1981, OECD internal paper (1982) based upon GATT data.

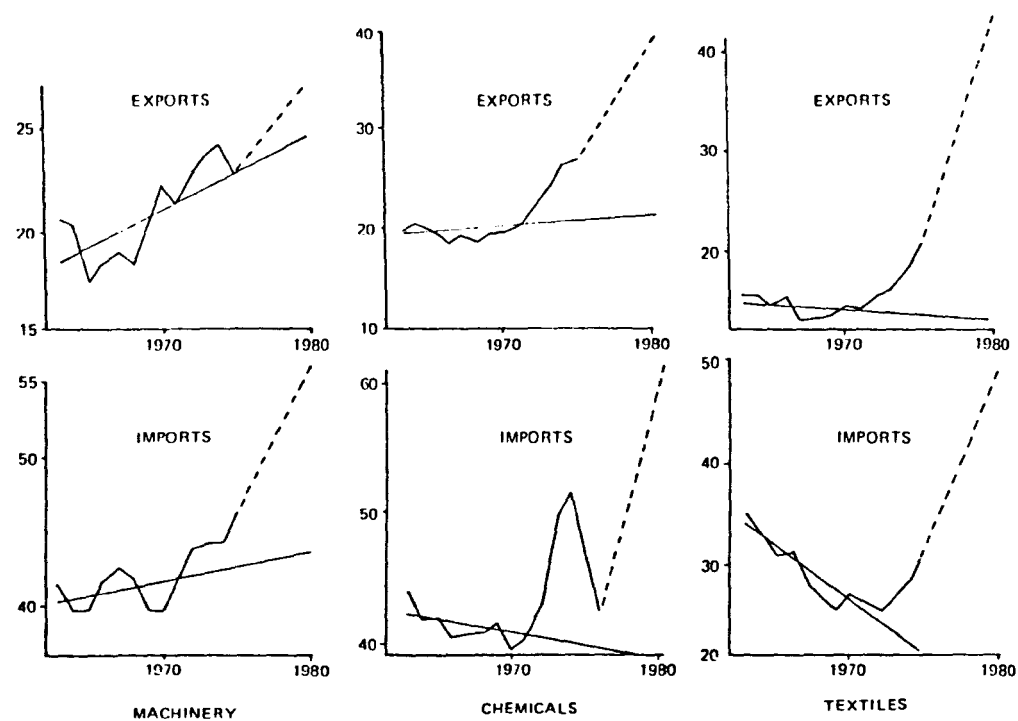
How far was this shift in British trade towards the countries of the EEC the result of Community membership? David Mayes has measured the EEC effect by comparing the actual EEC shares of UK trade in individual product groups with the shares which would have occurred if the trends of 1962–72 had continued. Figure 6.1 gives the results for just three product categories.

For almost all categories, the share of EEC (6) both in UK imports and the UK exports rose substantially above the extrapolated trends. Exceptions were imports and exports of raw materials which were not subject to any significant tariff changes and broadly followed the trend lines, exports of machinery and transport equipment whose increases were broadly in line with pre-1973 trends, and UK imports of transport equipment, the EEC share of which had fallen, largely due to UK imports of Japanese cars.

In addition to a diversion of trade towards the EEC, Community membership has resulted in a substantial growth in the volume of UK trade. Between 1972 and 1978 the ratio of total trade to GNP of the UK rose from 33.5 to 48.5 per cent, compared with a rise for the EEC (6) from 36.6 to 45.3 per cent.

The effect of these trade changes upon the total output of UK industry depends most directly upon whether EEC membership has increased exports by more than imports. Table 6.3 shows that EEC membership coincided with a substantial worsening of the balance of trade both with the EEC and the world as a whole. For manufactured goods there is a similar worsening of the trade balance with the EEC. A clearer perspective emerges from Table 6.4 which shows changes in the trade balance on manufacturers as a proportion of trade. The worsening of the UK trade balance with the EEC on manufactured goods is part of a general, though less severe, worsening of the overall UK trade balance on manufactured goods. An adverse impact of the EEC upon UK trade in manufactured goods is also indicated by Mayes's comparisons for individual commodity groups of actual trade with projections of pre-1973 trends: increases in the EEC shares of UK imports above trend levels substantially exceed the increase in EEC shares of UK exports above trend levels.

The main trade effects of Britain's accession to the European Community are, therefore, a substantial shift in the direction of trade towards the EEC, accompanied by a worsening of the balance of trade with the EEC particularly in manufactured goods. At the same time the picture is not wholly gloomy. The improvement in the overall trade deficit since 1977 has, of course, been largely due to North Sea oil, but



SOURCE reproduced from Mayes (1982), 'The Trade Effects of the EEC', discussion paper.

FIGURE 6.1 The percentages of UK trade in machinery, chemicals and textiles accounted for by the EEC (6), 1963-80.

TABLE 6.3 UK trade balances with the world and with the EEC (9) 1970-80

	All goods		Manufactured goods	
	World \$m	EEC ^a \$m	World \$m	EEC ^a \$m
1970	-2 416	-237	+5 348	+1 020
1971	-1 590	-747	+6 853	+735
1972	-2 715	-1 619	+6 211	+41
1973	-8 275	-2 986	+3 782	-707
1974	-15 413	-5 587	+4 200	-1 736
1975	-9 508	-5 800	+8 645	-1 293
1976	-9 918	-4 295	+7 944	-4 916
1977	-6 197	-4 345	+9 626	-1 542
1978	-6 942	-5 095	+7 541	-2 996
1979	-11 997	-6 440	+3 585	-6 175
1980	-3 521	-1 688	+8 933	-3 600
1981/82 ^b	-2 838	-5 988	+5 190	—

^a Measured as: EEC reported imports from UK minus UK reported imports from EEC. This is to correct for an overstatement of UK exports to the EEC arising from the British recording of exports on a consignment rather than a destination basis (see Morgan, 1981, pp. 63-4).

^b 1981 (Q4) to 1982 (Q1) on an annual basis.

SOURCE OECD Foreign Trade Statistics.

even in the case of manufactured goods, the erosion of the UK trade surplus with the world and the increasing deficit with the EEC since the mid-1970s are not as dramatic as might have been expected given the combination of sluggish productivity growth, high cost inflation and an appreciating exchange rate. Indeed, Table 6.5 shows some stabilisa-

TABLE 6.4 UK trade balance in manufactured goods as a percentage of total UK trade in manufactured goods

	World %	EEC only %
1970-2	+19.3	+6.3
1973-5	+9.6	+6.3
1976-8	+9.6	-8.1
1979-80	+4.2	-8.6
1981 (Q4)-82 (Q1)	+3.6	—

SOURCE OECD Foreign Trade Statistics.

TABLE 6.5 *The UK's share of the manufactured exports of the 12 major industrialised countries*

	<i>Per cent</i>
1955-8	19.0
1959-62	16.7
1962-5	14.7
1966-9	12.0
1970-3	10.1
1974-7	8.8
1978-80	9.2
1981(Q4)-82(Q1)	9.0

SOURCE Mayes (1982, 'The Trade Effects of the EEC', p. 38, updated.

tion in the UK's share of manufactured exports by the developed countries during the late 1970s. It remains clear, however, that manufacturing trade performance has deteriorated more rapidly with the EEC than with non-EEC countries. This may partly reflect the difficulties faced by British manufacturing industry in adjusting to the new environment of the EEC and also the continuing high value of sterling against the major continental currencies. Even when these factors are taken into account, however, there remains a question mark as to the long-term competitiveness of British manufacturers in the sophisticated, consumer-orientated markets of the EEC.

EEC MEMBERSHIP AND THE GROWTH OF THE UK INDUSTRIAL SECTOR

The 1970 White Paper contended that the dynamic effects of EEC membership on UK economic growth would be far more important than the impact effect on trade. Subsequent analyses have confirmed this view. For example, David Mayes's survey of the trade effects of the EEC concluded that 'even a trivial feedback effect on to the rate of economic growth of the participant countries will tend to dominate the welfare effects of changes in trade flows' (Mayes, 1982, p. 46).

In examining the effects of EEC membership upon the growth and growth potential of the UK industrial sector, I shall follow the conventional approach of dividing the sources of increasing real output per employee between increases in capital per employee and increases in

output per unit of input. This chapter focuses chiefly on the latter source of growth, and in particular on the impact on input productivity which has occurred through the effect of EEC membership on the extent and direction of the structural adjustment of British industry.

INVESTMENT

The relatively minor emphasis which is given to investment in this chapter reflects, first, evidence that lack of investment in fixed capital is not the dominant source of the low rate of economic growth in the UK and, second, the apparent absence of any strong effects of EEC membership upon the volume of UK investment. Since Solow's finding that only 12.5 per cent of the increase in US output per man-hour was attributable to increased capital (Solow, 1954), considerable interest has been shown in the contribution of investment to economic growth. Denison estimated that less than one-quarter of the growth of GDP per person employed in the UK between 1950 and 1962 was due to investment (Denison, 1968, p. 235), and more recently Caves found differences in the value of capital per worker between matched US and UK industries had an insignificant effect upon the differences in labour productivity between the two countries (Caves, 1980, p. 171). The contribution of investment in industrial fixed capital to growth is extremely difficult to distinguish since investment not only increases productive capacity but also acts as an avenue for the introduction of new technology and a means of achieving the adjustment of industry structure. It has been argued by Pavitt, however, that the shift of emphasis from process to product innovation means that the linkage between capital investment and technical progress is becoming weaker in the industrialised countries (Pavitt, 1979).

While trade expansion arising from economic integration may provide a stimulus to investment, the evidence is far from clear-cut and my concern here is solely with the impact of the EEC on flows of direct investment to and from the UK. Community membership has affected these, first, by removing most legal impediments to investment between member countries and, second, through the trade effects of EEC membership. The latter are complex. The elimination of trade barriers between Britain and the Community would have tended both to reduce two-way direct investment, to the extent that trade and direct investment are substitutes, and increase direct investment, to the extent that complementary relationships exist – particularly through the establishment of overseas marketing and distribution subsidiaries by manufacturing firms.

More important for the UK is likely to have been the effect of EEC membership on inward investment from non-EEC countries – particularly from the United States. The principal argument has been that the popularity of the UK as a destination for direct investment has been increased by the ability to use the UK as a base for European manufacturing and distribution operations.

Table 6.6 shows that while there was rapid growth in the flows of both inward and outward direct investment during the 1970s, the dominant directions were between the UK and North America. There was some growth in the share of EEC countries in inward direct investment to the UK, but the share of UK direct investment going to the EEC fell over the period. As regards flows of direct investment between the UK and the non-EEC countries, there was a fall in the UK's share of total direct investment into the OECD countries (from 7.4 per cent in 1968–73 to 6.1 per cent in 1974–8), but this fall would appear to be only a continuation of a longer-term trend. It is notable that the UK's share of US overseas direct investment in manufacturing has remained steady during the later 1970s (Table 6.7) as has the UK's share of the US overseas capital stock (Table 6.8).

In recent years there has been a shift in emphasis from a lack of investment in plant and equipment towards a lack of investment in

TABLE 6.6 *Direct investment into and out of the UK*

	1970–2 ^a	1973–5 ^a	1976–8 ^a	1979	1980
EEC (9)					
in the UK £m	48	95	251	270	157
% of total	12	13	22	15	6
by the UK £m	208	352	489	34	483
% of total	32	24	22	1	14
N. America					
in the UK £m	271	392	681	1 114	1 760
% of total	66	53	60	61	68
by the UK £m	167	448	761	1 801	1 896
% of total	26	31	34	64	54
Total					
in the UK £m	408	734	1 139	1 818	2 576
by the UK £m	653	1 456	2 257	2 788	3 491

^a Annual averages.

SOURCE The UK Balance of Payments, 1982.

TABLE 6.7 *The percentage of total overseas US manufacturing investment in the UK*

1976	1977	1978	1979	1980	1981 (est)
12.6	13.5	13.6	14.3	15.8	15.7

SOURCE *Financial Times*, 2 December 1981, p. 4.TABLE 6.8 *The percentage distribution of US overseas direct investment – based on end year stock values*

	1966	1970	1974	1979
Europe	31.6	33.5	40.6	42.3
UK	10.5	10.6	11.4	12.6

SOURCE *International Investment and Multinational Enterprise* (OECD, 1981).

human capital as an explanation of the low level and low rate of growth of output per employee in British industry. Comparisons of levels of education and training of the British and German labour forces show clearly the high proportion of the British labour force with no educational or technical qualifications as compared with the high proportion of the German labour force with intermediate qualifications (Prais, 1981). Membership of the EEC can influence the stock of human capital available to British industry through the removal of restrictions on mobility of workers within the EEC. It appears, however, that no significant labour migration has occurred between Britain and other member countries. Compared with other European countries the UK has very small proportion of its labour force working abroad. At the same time British industry has not benefited from any significant inflow of skilled labour from elsewhere – the principal flow of labour into the UK is from the Irish Republic and largely consists of unskilled labour.

Hence, the evidence both on direct investment flows and labour movements does not give any clear indication as to EEC membership having any impact upon the stock either of physical or human capital available to British industry.

CHANGES IN OUTPUT PER UNIT OF INPUT

Increases in output per unit of input in the industrial sector arise from two main sources: technical change and structural adjustment involving the reallocation of resources from low- to high-productivity employment.

I shall not attempt any examination of the impact of the EEC on the technical progressiveness of British industry. The determinants of technical change and the role of innovation in the growth process are too poorly understood and the ways in which EEC membership might affect technical change are too many to allow any simple hypotheses to be ventured or conclusions to be drawn. Nevertheless it is likely that EEC membership has had some important effects on technical change: increased competition is likely to accelerate the diffusion of innovations and may act both as an incentive and a constraint upon investment in innovation, economic integration may enable companies to exploit economies of scale and risk spreading in R & D and may facilitate transnational technical cooperation. In addition the activities of the Community in harmonising patent law, regulating licensing agreements and promoting research may encourage technical progress.

The remainder of the chapter is concerned with the influence of EEC membership upon the structural adjustment of British industry. It is being increasingly recognised that one of the major constraints upon the economic growth of the mature economies since 1973 has been inadequate adjustment of economic structures. Not only has there been an increased need for structural adjustment as a result of oil price rises, increased competition from low-cost manufacturing countries, and other shocks to the international economy, but the capacity for adjustment has been reduced by stagnation, inflexibility of relative prices and the unresponsiveness of economic units to price incentives (OECD, 1982). Although the problem is a general one for the older industrialised countries, there is evidence to suggest that the industrial structure of Britain is specially resistant to adjustment pressures (Jones, 1980, pp. 118–21).

In examining the effect of EEC membership upon structural change in British industry it is convenient to distinguish between interindustry and intraindustry adjustment.

Interindustry structural adjustment involves the movement of factors of production from products facing declining demand to products facing expanding demand. Intraindustry structural adjustment in-

volves changes in the size distribution of plants and firms as resources are reallocated towards the optimal sizes of plant and firm, and the reallocation of resources from inefficiently managed to efficiently managed firms. In view of the substantial growth of trade between Britain and the EEC since 1973, it is to be expected that Community membership will have exercised a powerful influence on both aspects of structural adjustment. The reduction in UK trade barriers resulting from EEC membership is conducive to the reallocation of resources between industries through specialisation on the basis of comparative advantage. The changing identity of Britain's closest trading partners is likely to influence the direction of such specialisation by altering the nature of Britain's comparative advantages. Increased specialisation also provides the potential for exploiting economies of scale within Britain's industrial specialisms. Such economies are likely to be of primary importance in industries where, due to very large minimum efficient plant size, or the very specialised nature of the market being served, or the heavy costs of research and development, the domestic market is too small to sustain commercially viable operation. Finally, the increased pressure of competition consequent upon EEC membership is likely to speed the reallocation of resources from inefficient to efficient firms within the same industry and to hasten the elimination of suboptimally-sized plants and firms.

Having outlined the ways in which EEC membership might be expected to have stimulated structural change in British industry, let us look at the evidence.

INTERINDUSTRY SPECIALISATION AND EEC MEMBERSHIP

The extent of interindustry adjustment The view that adjustment of the structure of output of British industry to the changes in the world economy during the 1970s has been particularly slow is clearly revealed in an analysis undertaken by the UN Economic Commission for Europe (Table 6.9).

The table shows that with regard to changes in value added across eighteen manufacturing sectors the UK ranked among the lowest of nine European countries during the 1970s, although the disparity was less marked than in the previous decade. In terms of employment, UK structural change remained comparatively very low during the 1970s—probably reflecting characteristics of the UK labour market.

If EEC membership had stimulated changes in the structure of UK output by inducing increased industrial specialisation, this would be

TABLE 6.9 *Interindustry structural adjustment and growth in the manufacturing sectors of nine European countries*

	Structural change in value added at constant prices		Structural change in employment		Annual % growth of real output	
	1958/60	1970	1958/60	1970	1958/60	1970
	to	to	to	to	to	to
	1968/70	1978	1968/70	1978	1968/70	1978
Belgium	10.7	10.2	6.5	7.8	6.5	3.4
Finland	10.4	8.7	7.9	6.3	6.9	3.1
France	9.4	13.2	7.9	6.8	6.3	4.4
Germany	10.2	7.7	7.8	5.8	6.3	2.0
Italy	9.4	6.6	6.7	5.3	8.3	2.9
Netherlands	13.6	7.9	7.8	7.4	6.8	2.9
Norway	9.3	9.0	7.8	7.6	5.3	1.5
Sweden	11.2	6.8	6.7	7.4	6.9	0.7
UK	7.7	7.3	5.5	3.5	3.3	0.7

NOTE The index of structural change (c) is measured

$$c = \sum_i (a_{i2} - a_{i1})$$

for all $a_{i2} \geq a_{i1}$ where a_{i1} is the share of branch i of output or employment in period 1 and a_{i2} the share in period 2.

SOURCE *Economic Survey of Europe in 1980* (New York: United Nations, 1981).

indicated by increased specialisation in Britain's trade. Government economists (Smith et al., 1982) have shown, however, that the standard deviation across MLH industries of the ratio between the trade balance and domestic sales was *less* in 1979 than in 1970 – indicating a *fall* in trade specialisation. At the same time, however, the standard deviations of both export/sales and import/sales ratios increased which was interpreted as evidence of increased intraindustry trade specialisation. This pattern of decreased interindustry specialisation and increased intraindustry specialisation was particularly evident in trade with the EEC.

The apparent failure of EEC membership to stimulate any substantial interindustry reallocation of resources during the 1970s is also indicated by the fact that, despite the rapid growth of UK trade with the EEC, the industrial composition of UK exports remained relatively stable. At the same time there was a substantial change in the composition of Britain's manufactured imports. The implication is that changes in the pattern of final demand in the UK were accommodated

largely by changes in the composition of imports rather than of domestic output.

TABLE 6.10 *Structural change in the industrial composition of the exports and imports of eight European countries 1970-8*

	Exports	Imports
Belgium	16.3	9.4
France	6.0	11.1
Germany	4.2	14.1
Italy	7.6	10.7
Netherlands	8.0	9.5
Sweden	3.6	5.4
Switzerland	8.8	10.1
UK	6.5	15.3

SOURCE *Economic Survey of Europe in 1980* (1981).

One explanation for the comparative lack of structural change of UK industry could be that the UK's manufacturing sector was already specialised in the growth industries of the 1970s. A correlation across eighteen manufacturing industries of relative specialisation for each industry in 1970 and each industry's rate of growth in Europe between 1970 and 1978 gave the following results:

France	- 0.3397
Germany	+ 0.1183
Sweden	+ 0.0795
UK	+ 0.0995

These figures show UK manufacturing industry to have been in a broadly neutral position with regard to industrial specialisms in 1970, but more favourably placed than France.

The direction of interindustry adjustment Since in advanced economies comparative advantages in manufacture are not primarily the result of exogenous factor endowments, but are created through investment in capital, innovation and human skills – the consequences of interindustry structural adjustment for economic growth depend chiefly upon the extent to which the direction of structural change is

towards industries with the highest growth potential. On the basis of the UN Commission for Europe's eighteen-sector breakdown of manufacturing industry, it is possible to calculate the extent to which the interindustry structural changes of 1970-8 were directed towards the faster growing industries. Regressing the change in relative specialisation in each of the eighteen industries (ΔS_{ij}) on the growth rate of each industry (G_i) gave the following results

	<i>Constant</i>	<i>Regression coefficient</i>
France	- 5.594 (- 0.8680)	+ 1.338 (2.303)
Germany	- 2.576 (- 1.371)	- 0.06045 (- 0.3568)
Sweden	- 0.4351 (- 1.021)	- 0.1630 (- 0.87118)
UK	+ 3.986 (1.301)	- 0.7593 (- 2.748)

(t-values in brackets)

The strongly negative relationship between the UK's changes in specialisation and growth in output reflect the fact that all the industries where the UK increased its share of European output were those with a stagnant or declining output. These included tobacco, clothing and footwear, rubber, printing, textiles and leather. This pattern of specialisation reflects a tendency for the UK to maintain its output of low-technology products whose output is increasingly shifting towards developing countries.

To what extent, if at all, can EEC membership be held responsible for the failure of British industry to adjust towards the growth industries of the 1970s? At the time of entry it was believed that the affluent, sophisticated consumers of the EEC would provide a stimulus for the development of technologically-based, high-value added industries in the UK. An alternative view, however, would be to argue that within the EEC the UK represents a low-wage economy with a high proportion of its labour force unskilled. To the extent that the EEC achieves significant protection against imports from the newly-industrialising countries through the Common External Tariff, the Multifibre Agreement and various voluntary export restraints, then the UK is encour-

aged to specialise in the production of low skill-intensity products.

An indication of the failure of EEC membership to stimulate the development of technologically-based, skill-intensive industries is provided by the analysis by Smith et al. (1982) of the determinants of the UK's trade specialisation. While similar studies for West Germany and Sweden have shown human capital variables to have a strong impact on trade performance of individual industries, for the UK human capital variables only had a positive impact on trade performance with less developed countries and had an insignificant impact on UK trade with the EEC. Also the R & D variable had no significant impact on UK trade performance.

The service sector and the EEC The discussion so far has been exclusively in terms of structural adjustment within the manufacturing sector. However, probably the most fundamental long-term trend in UK industrial structure is the decline in manufacturing relative to services. Between 1970 and 1980 the contribution of manufacturing to GDP fell from 33 per cent to 23 per cent, while the contribution of the service sector (excluding the ownership of dwellings and public administration and defence) rose from 45 to 50 per cent. While this phenomenon is common to the economic development of all mature industrial economies, the disparity between the relative growth rates of manufacturing and services has been particularly large in the UK, reflecting, in comparative international terms, the inefficiency of UK manufacturing and the efficiency of many parts of the service sector. Hence there is a broad consensus that the major areas of international comparative advantage of UK industry lie chiefly in services, for example, in financial services, computer services, consultancy services and, to a lesser extent, in shipping and retail distribution.

The reduction in trade barriers consequent upon accession to the EEC would be expected to accelerate the structural adjustment from manufacturing into services and would be accompanied by an increase in the trade deficit on manufactured goods and an increase in the trade surplus on services.

The problem for the UK, however, has been that EEC trade liberalisation has been asymmetric between manufacturing and services. The elimination of tariffs and the reduction in non-tariff restrictions on manufactured goods have not been accompanied by any widespread dismantling of the multifarious regulatory requirements and restrictive practices which have hampered international trade and competition in many service industries.⁴

TABLE 6.11 *Trade in services in total and with the EEC (9)*

<i>Credits</i>	1973	1974	1975	1976	1977	1978	1979	1980	1981
Total private sector and public corporation services (£ billion)	5.19	6.63	7.73	10.02	11.60	12.32	14.16	15.41	16.29
of which EEC (%)	26	26	25	24	24	23	24	24	23
transport and travel (£ billion)	3.26	4.19	4.65	6.05	6.99	7.11	8.35	8.98	9.13
of which EEC (%)	32	31	30	30	30	29	30	29	28
financial services (£ billion) ^a	0.60	0.79	1.03	1.30	1.39	1.54	1.60	1.60	1.95
of which EEC (%)	17	20	21	19	18	19	21	23	22
other services (£ billion)	1.33	1.65	2.05	2.67	3.22	3.67	4.21	4.83	5.21
of which EEC (%)	14	15	14	14	14	13	13	14	16
<i>Balance of Service Trade</i>									
Total private sector and public corporation services (£ billion)	1.20	1.60	2.09	3.11	3.68	4.41	4.48	4.98	4.75
of which EEC (%)	4	6	7	9	11	8	10	8	4

^aFigures for financial services are net of debits (which are negligible).

SOURCE The United Kingdom Balance of Payments, 1982.

Table 6.11 provides evidence of the limited effect of EEC membership on UK trade in services. Between 1973 and 1980 service receipts from the EEC have maintained a roughly constant proportion of the total from all countries and the expansion in the proportion of overseas earnings of the financial sector has been modest. The overall picture is that the EEC has remained a surprisingly small market for the UK service sector and has made a very minor contribution to the UK's surplus on service trade.

INTRAINDUSTRY STRUCTURAL CHANGE AND EEC MEMBERSHIP

Lack of research into the effects of EEC membership on the internal structure of UK industries makes it impossible to present any informed account of the impact on productivity of EEC-induced changes in the internal structures of industries. Suffice to say that even leaving aside the specific impact of EEC institutions upon individual industries (through, for example, anti-trust interventions, subsidy schemes, crisis cartels), the contribution of Community membership to the increased competitive pressure faced by most UK industries since 1973 is likely to have caused substantial reorganisation within industries, with important consequences for productivity.

An aspect of intraindustry structural change on which it is possible to offer more informed commentary concerns the impact of EEC membership on the exploitation of scale economies by British firms. Prior to entry, it will be recalled, considerable weight was given to the view that Community membership would enable UK firms and plants to lower costs and improve innovative performance by growing beyond the confines of the home market. How far has EEC membership enabled exploitation of scale economies?

Most recent research has failed to find support for this view that a limited home market had resulted in UK firms and plants being of suboptimal size. Caves's analysis of the sources of productivity differences between US and UK industries found that a variety of variables measuring the scale of firm and plant in UK industry had no significant influence on the productivity differential (Caves, 1980, p. 169). Research by Prais into plant sizes in the UK, Germany and US has shown the presumption that UK plants were of suboptimal size compared with countries serving larger markets is largely unfounded. Table 6.12 shows that across manufacturing industry, UK plant size (measured by employment) exceeded that of Germany and the US at the lower quartile and median levels.

TABLE 6.12 *Median plant sizes by numbers of employees in Britain, Germany and US, 1970-3*

	<i>All manufacturing</i>	<i>Light industries</i>	<i>Heavy industries</i>
Britain	440	240	820
Germany	410	140	1 080
US	380	210	810

SOURCE Prais (1981) *Productivity and Industrial Structure*, p. 27).

In those industries where British plant size is particularly small in relation to Germany and the US – in steel and motor vehicles, for instance – this may be a reflection not of suboptimal British plant size, but a smaller optimal UK plant size because of the strike-proneness of large British plants in these industries (Prais, 1981, pp. 261-3).

Even if plant sizes are below the minimum efficient level in some UK industries, the consequences for production cost and productivity of suboptimal scale of plant are small in relation to the differential in output per employee between Britain and more advanced industrial countries. Of the thirty-seven products examined by Pratten, for twenty-seven of them, production at a plant one-half of minimum efficient size involved an increase in unit cost of 15 per cent or less (Pratten, 1971). Prais estimated that in 1975 German manufacturing output per employee exceeded that of the UK by 30 per cent, while for the United States the differential was 200 per cent (Prais, 1981, pp. 259-61).

Evidence on comparative firm sizes, though fragmentary, rejects even more strongly the notion that one source of the UK's productivity disadvantage lies in small firm size in comparison with European competitors. Of the 500 largest companies by turnover in 1972, 182 were British (*Times 1000*, 1973). Moreover, the fall since 1973 in the number of British firms in the 500 largest European firms shows no 'catching-up' by large British firms which would be implied by suboptimal size *vis-à-vis* their Continental counterparts. Comparatively large British firm size is also indicated by comparisons of seller concentration ratios between EEC countries. A survey by the EEC Commission showed that for those industries where comparisons were possible, four-firm concentration ratios were generally higher in the UK than in Germany, France or Italy during the early 1970s (HMSO, 1978, pp. 63-4).

CONCLUSIONS

The chief problem in examining the impact of the EEC upon UK industrial performance has been that a decade of Community membership has coincided with a period of unprecedented change in economic conditions both nationally and worldwide. Hence there is an acute problem of identification which is compounded by the difficulty of specifying the commercial and economic relationships with other countries which would have existed had Britain remained outside the Community. This chapter has not attempted to grapple with these problems of identification on any rigorous basis, but has simply examined some of the major trends and changes which have occurred in the 1970s in the light of some simple hypotheses as to the effects which might have been expected from an *a priori* analysis.

The most obvious consequence of Community membership has been growth in the volume of UK trade and its redirection towards the EEC. The effect of these trade changes on total manufacturing output is not easy to assess. The worsening of the UK trade balance with the EEC in manufactured goods after 1973 must be viewed in the light of the long-term deteriorating trend in British trade performance, the continuing productivity gap between Britain and much of the EEC, and the adverse initial impact effects which were forecast prior to entry. Hence, although EEC membership has clearly failed to stimulate any revival in manufacturing trade performance, it is far from apparent that British industry would have been better placed to withstand the increased international competition of the 1970s by remaining outside the Community.

The expansion of trade between Britain and the EEC appears to have done little to encourage greater change in the structure of manufacturing output. Even more serious, the changes in specialisation have been towards increasing concentration on industries which, on a *long-run* basis, are declining. There is limited evidence that EEC membership may be reinforcing the tendency of British businessmen to concentrate upon the production of goods embodying low levels of skill and technology whose production is increasingly shifting towards the newly industrialising countries. Membership of the EEC also appears to have done little to stimulate the growth of those service industries in which Britain has a significant comparative advantage in relation to the other countries of the EEC.

It was not possible to assess the impact of the EEC upon the internal structure of individual industries or their input productivity. One fact

which does emerge, however, is that the scope for productivity improvement through exploiting economies of scale of plant and firm level appeared limited as a result of EEC accession.

The suggestion, therefore, is that while there have been no obviously disastrous consequences for the growth of British industry as a result of EEC accession, there is no evidence of any benefits being generated. This is not to say that Britain should not have joined the EEC in the first place, even less to imply that the prospects for industrial growth would be enhanced by leaving. The absence of significant benefits from Community membership is more likely to be a failure of the British government and British business to exploit the opportunities made available by membership, than an inevitable result of the institutions and policies of the Community. †

I am reluctant on the basis of the limited evidence of this chapter to offer prescriptions for economic and industrial policies. Some of the facts speak for themselves, however. The lack of structural adjustment and the failure of industry to establish a strong export base founded on technological know-how and labour skills suggests a failure to invest in plant, innovation and training. Government must create the conditions conducive to such investment. Most fundamental, however, British governments should seek to create greater stability in their policies so as to reduce the uncertainty which encourages a short-term, risk-averse attitude among businessmen and investors. Past ambivalence of political parties towards the Community, and opposition commitments to future withdrawal have been particularly detrimental to business efforts to exploit the economic advantages of membership. Governments have also done little to encourage the exploitation of comparative advantages by British industry, particularly where this has necessitated the government taking a leading role in the shaping of Community policies. In this context, the lack of strong pressure for the more substantial liberalisation of Community trade in services may be noted.

NOTES

1. As late as 1975 the CBI stated: 'the chief argument for membership of the EEC is the opportunity it offers of sharing in the Community's rate of economic growth which has long been substantially higher than that of Britain' (CBI, 1975, p. ii).
2. The economies of scale argument attracted widespread support during the early 1970s and led to exaggerated claims being made by some of the more

ardent pro-marketeers. Sir Frederick Catherwood, former director-general of NEDO, for example, envisaged that increased specialisation would mean that the output of certain products would be increased by up to five times with savings in average cost of between 10 and 50 per cent (Catherwood, 1973).

3. The lack of perception of the EEC as a single home market for European companies is apparent from the attitudes and organisation of a sample of German and British companies. See Arthur D. Little (1979).
4. In banking, for example, it was not until 1977 that the first Council directive on the coordination of banking laws and regulations was adopted. Even though most forms of overt discrimination in national banking regulation against banks from other EEC countries have been removed, it is apparent that the seemingly uniform regulatory practices frequently operate in favour of domestic banks (see Maycock, 1981).

REFERENCES

- Catherwood, Sir Frederick (1973) 'An Industrial Strategy', in Douglas Evans (ed.) *Britain in the EEC* (London: Gollancz).
- Caves, R. E. (1980) 'Productivity Differences Among Industries', in R. E. Caves and L. B. Krause (eds), *Britain's Economic Performance* (Washington DC: Brookings).
- CBI (1975) *British Industry and Europe. A Report by the CBI Europe Committee* (London: CBI), March.
- Denison, E. F. (1968) 'Economic Growth', in R. E. Caves and associates, *Britain's Economic Prospects* (London: Kuen & Unwin).
- Economic Commission For Europe (1981) *Economic Survey of Europe in 1980* (New York: United Nations).
- HMSO (1978) *A Review of Monopolies and Mergers Policy. A Consultative Document*, Cmnd 7198 (London: HMSO).
- HMSO (1970) *Britain and the European Communities. An Economic Assessment*, Cmnd 4289 (London: HMSO).
- Jones, D. T. (1980) 'British Industrial Regeneration: the European Dimension', in William Wallace (ed.), *Britain in Europe* (London: Heinemann).
- Kaldor, N. (1971) 'The Dynamic Effects of the Common Market', in D. Evans (ed.), *Destiny of Delusion?* (London: Gollancz).
- Little, Arthur D. (1979) *The EEC as an Expanded Home Market for the United Kingdom and the Federal Republic of Germany* (London: Anglo German Foundation).
- Maycock, J. (1981) 'Discrimination in Banking in the EEC,' *The Banker* (July) pp. 29-31.
- Mayes, D. G. (1982) 'The Trade Effects of the EEC', a discussion paper (University of Exeter).
- Morgan, A. D. (1980) 'The Balance of Payments and British Membership of the European Community', in Wallace (1980) *Britain in Europe*.
- OECD (1982) *Positive Adjustment Policies, Managing Structural Change. Summary and Conclusions* (Paris: OECD).

- Pavitt, K. (1979) 'Technical Innovation and Industrial Development', *Futures* (December).
- Prais, S. J. (1981) *Productivity and Industrial Structure. A Statistical Study of Manufacturing Industry in Britain, Germany and the United States* (Cambridge University Press).
- Pratten, C. F. (1971) *Economics of Scale in Manufacturing Industry*, University of Cambridge Dept. of Applied Economics Occasional Papers 28 (Cambridge University Press).
- Smith, S. R., G. M. White, N. C. Owen, M. R. Hill (1982) 'UK Trade in Manufacturing: the Pattern of Specialisation in the 1970s' (London: Departments of Trade and Industry).
- Solow, R. M. (1957) 'Technical Change and the Aggregate Production Function', *Review of Economics and Statistics*, 39 (August) pp. 312-20.
- Times (1973) *The Times 1000 1973-74* (London: Times Books).

A SURVEY OF STRUCTURAL POLICIES AND THEIR EVOLUTION IN THE BRD AND UK

A. Introduction

by R.M. Grant

4.1 Chapter 3 discussed some of the factors which account for the divergence in the development of structural policies between the UK and BRD. Among the more important were:

- the greater severity of economic problems in the UK, in particular balance of payments weakness and an insufficient rate of industrial expansion which has made it difficult to absorb the labour displaced by declining industries and increasing productivity, which has created a greater need for structural policies in the UK;
- the influence of a more market-orientated economic philosophy in the BRD as compared with the growing prominence of interventionist thinking in the UK;
- the different priorities accorded to the common policy objectives of employment, balance of trade and growth in the two countries;
- differences in political and administrative structure and constraints.

In this chapter it is shown how these factors have influenced the development and operation of structural policies in the BRD and UK by describing the main features of structural policies.

4.2 In common with elsewhere in the report, practical considerations necessitate concentration on particular areas of structural policy. As explained in paragraph 1.8, the main interest is in structural policies which aim at the achievement of macro-economic goals, and hence we exclude structural policies aimed primarily at influencing the allocation of resources to particular sectors such as housing policies, transport policies, health and social services. In both countries the most prominent field of structural policy since the mid-1960s has been selective industrial intervention, particularly financial assistance for individual firms and industries. It is this area of structural policy upon which attention is concentrated, an emphasis further justified by the fact that, in relation to regional development policies, agricultural policies and competition policies, selective industrial intervention is an area of structural policy which has, until recently, received scant attention from economists.

B. Structural policy in the BRD

4.3 *The principles of structural policy.* Before 1967 structural intervention by the BRD in industry was limited and consisted primarily of a collection of *ad hoc* measures designed to meet specific problems. In the immediate post-war period government intervention was necessitated by the problems of reconstruction followed by the need for regional assistance measures in the areas affected by partition. The problems of certain basic but unprofitable industries, notably coal mining and the railways influenced government provision of financial assistance, as did the need to develop certain technologically-based industries such as aircraft and atomic power. In general, however, structural interventions were restricted and structural policy was not viewed as a means for achieving such national economic objectives as growth and employment. The limited role of structural policies reflected an antipathy towards state intervention in the economy which is indicated by the avoidance of the term 'subsidy' in policy statements during this period.

4.4 The 1967 Stabilisation and Growth Law established the principles of state intervention for the achievement of macro-economic goals. The motivation for increased state intervention was the slow-down in the rate of growth of the German economy during the 1960s accompanied by stronger cyclical fluctuations and, in particular, the recession of 1967. As already pointed out, the Act set out the macro-economic objectives of policy as

- stability of the price level,
- a high level of employment,
- external balance, and
- a constant and acceptable rate of economic growth,

and established a policy framework in the form of Annual Economic Reports (*Jahreswirtschaftsberichte*). The Act in identifying the need for structural policies and the requirement that the Federal government should publish a separate Subsidies Report indicated the importance it attached to financial aids. The aims

of structural financial aids were classified by the Act as:

- i. *structural maintenance* — the safeguarding of jobs and wages, the stabilisation and increase of producers' income and maintenance of production;
- ii. *structural adjustment* — the improvement of adjustment flexibility, the acceleration of adjustment procedures, reduction of excess capacity and avoidance of too precipitate adjustment; and
- iii. *productivity* — increasing sectoral growth potential and stimulating innovation.

4.5 Between 1968 and 1970 the framework and principles of structural intervention were established in four policy statements: *Principles of Regional and Sectoral Structural Policies* (Bundestagsdrucksache 1968), the *Principles of Structural Policy for Small and Middle-Sized Companies* (Bundestagsdrucksache 1970) and two *Structure Reports* (Bundestagsdrucksache 1969 and 1970).

4.6 Structural policies were designed to fulfil two objectives. First, promotion of growth, in which case the emphasis should be on 'future orientated' industries, the appropriate types of aid being productivity aid and adjustment aid to accelerate structural adjustments. Second, social objectives requiring the avoidance of unemployment and social tension and upheaval directed attention towards contracting industries by using maintenance aid to control structural adaptation and adjustment aid to alleviate the effects of structural adaptation. The emphasis of the policy outlines was heavily on adjustment and to a lesser extent on productivity aid, the role of maintenance aid being viewed as very limited. Selective policy measures (Marktsteuerung) should not supercede or prevent the operation of market forces, but should aim only to facilitate, accelerate or retard them, as was clearly established in the *Principles of Sectoral Structural Policy*:

- 'Primarily it is the managers of industry who are responsible for the necessary structural adaptation in the context of the freely competitive economy;
- Special government aids and other interventions can only be used if the economic circumstances affecting individual sectors are undergoing excessively rapid and sharp changes, and if the process, left to itself, would result in undesirable economic and social consequences;
- Government aids must take the form of help for self-help, and can be granted only if they will durably strengthen the competitive ability of the enterprises;
- The aid must be of a temporary nature and digressive in character, and must not restrict the functional viability of free competition.' (OECD 1971, p.16)

4.7 Structural economic policies in the BRD have mainly involved the provision of financial incentives through grants, loans, interest remissions and tax concessions. These subsidies are provided primarily by the Federal government but also by the Länder and by local authorities. Administration of subsidies is undertaken by the following Federal ministries:

Federal Ministry for Economics (assistance to industry)
 Federal Ministry for Transport (assistance to shipping, the railways and airlines)
 Federal Ministry for Food, Agriculture and Forestry (agricultural support)
 Federal Ministry for Town, Planning and Housing (assistance for housing and social infrastructure)

4.8 An additional source of financial assistance has been the European Recovery Programme established initially with US funds to administer reconstruction under the Marshall Plan. The ERP Special Fund now finances a number of different programmes, primarily those involving regional development, but also for environmental protection, labour market incentives and selective industrial schemes. Although financial incentives are the main tools of structural policies and indeed the only ones strictly compatible with the concept of the market economy, other forms of intervention are used for the achievement of structural goals (e.g. the promotion of cartels, state guarantees for loans and the encouragement of industrial reorganisation).

4.9 Concentrating on government subsidies alone, the trend during the post-war period has been almost continuously upwards, reflecting a steady increase in government intervention in industry. For the period before 1966 estimates of financial assistance have been published by Zavlaris (1970). Although the coverage and classification of subsidies differs from that in the later Subsidy Reports, the figures reveal a remarkable growth in aid to industry and agriculture during the late 1950s and early 1960s (see Table 4.1). From 1966 official statistics of subsidies in the form of direct financial aid (grants and loans) and indirect financial aid (tax relief) are available in the bi-annual Subsidy Reports. The Reports cover the financial aids of the Federal Government and, since 1971, of the Länder and local authorities as well. The Reports exclude aid from the ERP and support for the railways and postal service. Included, however, are some financial aids to households in the form of housing subsidies and tax allowances. The subsidy payments are classified by:

- i. type of aid — maintenance, adjustment and productivity aid (see Table 4.2);

- ii. recipient sector — food agriculture and forestry, industry, transport and housing (see Table 4.3). Industrial aid is further broken down into particular programmes (see Table 4.4).
- 4.10 Table 4.2 shows an uninterrupted expansion of total subsidies between 1966 and 1978. The breakdown of total assistance between the various forms of aid — maintenance, adjustment and productivity — shows the importance of maintenance aid which accounted for about one half of direct subsidies and about 55 per cent of tax allowances up until 1974, after which the proportion of total aid devoted to maintenance fell. This predominance of maintenance support seems surprising in view of the statements of role and objectives of structural policy which have regarded the maintenance of particular industries as justifiable only in special circumstances. The breakdown of subsidies by sectors and programmes in Tables 4.3 and 4.4 sheds light upon the prominence of maintenance support: the major recipients of government aid have been agriculture, mining and industries located in less favoured regions. These subsidies have been devoted primarily to the maintenance of employment for social and strategic reasons.
- 4.11 As has been already noted, the main focus of our attention is on structural policy towards industry since industrial policy is the area of structural policy which is most closely related to the macro-economic goals of growth, employment and balance of payments. The breakdown of industrial support the Table 4.4 reveals the enormous growth in grants and loans to the mining and energy sectors between 1973 and 1975, the growth in assistance to aerospace and innovation and the regions and the recent growth in subsidies to manufacturing industry. Support for individual industries is discussed in some detail in the following sections.
- 4.12 *Regional structural policies.* Unlike the UK where regional problems have focused upon well-defined peripheral regions and declining industrial areas highly dependent upon coal mining and heavy industry, the regional problems of the BRD are more 'sub-regional', involving a number of different areas distributed across the whole country. During the 1950s the Federal Regional Promotion Programme (Regionales Förderungsprogramm) offered low interest loans to industry and local authorities in annually delineated 'emergency areas', while special assistance was provided to border areas under the Zonal Border Promotion Act of 1951. During the 1960s the emphasis of regional policy changed with the increasing problems which arose from the decline of the coal mining and iron and steel industries of the Ruhr, the criteria for regional assistance were changed and Federal policy placed more emphasis on infrastructure investment and less on assistance to industry.
- 4.13 The Programme for the Improvement of Regional Economic Structure (Gesetz über die Gemeinschaftsaufgabe Verbesserung der regionalen Wirtschaftsstruktur) of October 1969 established a comprehensive approach to regional planning involving joint action by the Federal Government and the Länder in the identification and the assistance of less-developed regions through the establishment of joint planning committees. Regional policies have been formulated within a series of programmes. The current programme is the sixth plan covering 1977-80 [see Casper (1978)]. The principal incentives offered to industry are:
- the investment allowance — a 7.5 per cent grant covering almost all investment projects in the assisted areas;
 - the investment grant — a discretionary investment grant of up to 25 per cent of project expenditure;
 - ERP 'soft loans' available to small and medium-sized firms for projects not eligible for investment allowances and grants; and
 - special depreciation allowances with an initial depreciation allowance of up to 50 per cent, these special allowances being available only in the Zonal Border Area.
- 4.14 In addition to financial support for private industry, regional policy measures include investment in infrastructure (notably roads and urban renewal), removal assistance for workers, retraining allowances and the freight transport subsidy for firms in the border area.
- 4.15 Of particular interest for the purpose of comparing UK and West German approaches to regional policy is the use of planning and quantitative criteria and measures in the regional policy of the BRD. Assisted areas are delineated periodically on the basis of a weighted combination of three indicators: shortage of employment opportunity, income per head and level of infrastructure. While legislation establishes the maximum rates of assistance, limitations and criteria for policy measures, implementation is undertaken under the annual framework plans (Rahmenplan) of each planning committee.
- 4.16 In addition to the basic framework of regional planning, special regional assistance is available under particular schemes, for example the particularly heavy support for West Berlin, the Tourist Promotion Areas and the 1975-77 employment creation scheme to counter the problems of redundancies at Volkswagen.
- 4.17 *Assistance to particular industries in the BRD.* Selective financial assistance has been offered to a relatively small number of extractive and manufacturing industries. The major recipients have been coal mining,

Table 4.1

GOVERNMENT ASSISTANCE TO INDUSTRY AND AGRICULTURE, 1951-65

											9 month year		DM millions				
			1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
I	Food, Agriculture	P T	274.7	440.6	416.8	552.7	676.3	1293.6	2011.2	2157.8	2360	2075	2870	3515	3830	3990	4610
											710	745	830	830	885	940	1240
											3070	2820	3700	4345	4715	4930	5850
II	Industrial Sector	P T	24	53	72	73	71	414	438	270	130	240	255	260	440	660	870
											2165	2530	3505	4030	5185	5530	5985
											2295	2770	3760	4290	5625	6170	6855
III	Transport*	P	28.7	41.6	43.9	45.3	79.9	95.8	134.3	157.3	200	220	400	405	445	475	490
											650	560	570	500	600	670	855
											850	780	970	905	1045	1145	1345
IV	Housing	P T	50	56	62	72	64	78	131	129	140	145	295	335	385	465	525
											985	1155	1275	1415	1525	1655	1770
											1125	1300	1570	1750	1910	2120	2295

Notes: P — payments (grants and loans)

T — tax allowances

* — railways, airports, Lufthansa, shipping

Source: Zavlaris (1970)

Table 4.2

TOTAL FINANCING AID, 1966-78

	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
Total Assistance (DM mn)	13,339	15,565	18,573	19,895	24,690	27,382	29,736	33,191	35,518	36,819	39,439	41,268	42,063
Total Grants & Loans (DM mn)	6,549	7,490	8,849	8,572	10,965	10,387	10,587	12,325	13,212	13,700	15,278	16,833	16,554
Total Tax Allowances (Dm mn)	6,790	8,072	9,274	11,323	13,725	16,995	19,149	20,866	22,306	23,119	24,161	24,385	25,509
Maintenance (% of total)		55.2	61.2	49.1	55.4	51.1	50.1	50.7	51.1	35.2	33.8	35.2	34.5
Adjustment (% of total)		42.0	35.9	44.9	38.1	41.9	42.1	41.3	42.2	54.3	57.4	55.1	56.1
Productivity (% of total)		2.8	2.9	6.0	6.5	7.0	7.8	8.0	6.7	10.5	8.8	9.7	9.4

Note: In addition to assistance to companies, these figures include assistance to households, mainly in the form of subsidies for housing and saving.

Source: *Subsidy Reports*

Table 4.3

SUBSIDIES BY SECTOR, 1966-78

			1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
I	Food, Agriculture and Forestry	P	2855	2678	2604	2158	2168	2687	2064	2850	3225	3218	3162	3136	3246
		T	873	881	1041	1186	1237	1483	1745	1917	1834	1995	1962	1998	2005
	Total		3828	3559	3645	3344	3405	4170	3809	4767	5059	5213	5124	5134	5251
II	Industrial Sector (Without Transport)	P	692	1107	1230	867	1077	1024	1149	1605	2054	1935	1796	2272	2588
		T	2608	3799	3826	4800	5449	6686	7670	7926	8513	7613	7975	7784	8044
	Total		3300	4906	5056	5667	6526	7710	8819	9531	10567	9548	9771	10056	10632
II	Transport (Without Rail)	P	111	103	158	261	275	302	458	568	601	672	871	912	1295
		T	484	491	680	807	833	846	847	967	1014	1061	1104	1146	1218
	Total		595	594	838	1068	1108	1148	1305	1535	1615	1733	1975	2058	2513

Notes: (1) Financial assistance by the EEC (mainly to agriculture) is excluded.

(2) Subsidy payments by the Federal government, Lander and local authorities are included. Since 1970 Federal tax allowances have amounted to a little under half of total allowances to the above sectors.

P = Direct payments (grants and loans)

T = Tax allowances

Source: *Seventh Subsidy Report*

Table 4.4

SUBSIDIES TO THE INDUSTRIAL SECTOR

		DM millions												
		1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
GRANTS AND LOANS														
-	Mining	278	786	960	493	379	280	458	913	1215	889	770	991	1323
-	Energy and raw materials	255	161	47	18	16	78	28	47	226	349	196	309	379
-	Aerospace and innovation	26	48	84	122	186	248	256	269	294	289	297	354	321
-	Special technological support	—	—	—	—	—	—	—	—	—	63	63	53	35
-	Regional structural measures	43	55	78	136	240	190	215	167	146	159	244	228	193
-	Other measures	90	57	61	98	256	228	192	209	173	186	226	337	337
TOTAL		692	1107	1230	867	1077	1024	1149	1605	2054	1935	1796	2272	2588
TAX ALLOWANCES														
-	Mining	235	219	349	350	361	363	346	172	355	292	287	277	287
-	— of which Federal	88	79	120	125	153	148	139	77	58	130	127	123	125
-	Regional structural measures	1135	2195	2305	3017	3470	4490	5343	5790	6255	5595	6183	5900	6175
-	— of which Federal	419	1323	1396	1624	1811	2306	2653	2916	3110	2795	3114	2990	3097
-	Banking	569	680	433	454	492	570	598	535	64	643	358	414	444
-	— of which Federal	156	183	107	115	196	231	244	210	260	294	154	156	171
-	General industry	669	705	739	979	1126	1263	1383	1429	1339	1083	1117	1193	1138
-	— of which Federal	264	246	261	286	465	524	577	561	536	410	416	447	498
TOTAL		2608	3799	3826	4800	5449	6686	7670	7926	8513	7613	7975	7784	8044
of which Federal		927	1831	1884	2150	2625	3209	3613	3746	4064	3629	3811	3716	3891

Source: *Seventh Subsidy Report*

mineral oil production, shipbuilding, nuclear energy, aerospace, computers and electronics. The objectives in supporting these industries have been to reduce dependence on overseas supplies of strategically important inputs (notably in the case of the energy industries), to prevent excessive increases in unemployment (in the case of coal mining and shipbuilding) and to encourage innovation through supporting R&D (aerospace, computers and electronics). Policies towards the shipbuilding (and shipping) industries and the computers industry are examined in the following two chapters, the main features of structural policies towards the other industries are described below.

4.18 The coal mining industry of the BRD is the sole German example of an industry in long-term decline which has received maintenance assistance from the Federal government on a large scale. Government intervention was prompted by the declining demand for coal which began with the world recession in 1958 and continued throughout the 1960s. The measures introduced were:

- an import tariff on coal (1959 Coal Customs Duty);
- a subsidy for the transportation of coal (1960);
- taxes on heating oil (1960); and
- restrictions on the use of heating oils including stock piling obligations and import duties.

In addition, measures were introduced to relieve the regional problems associated with the decline in the number of coal miners.

4.19 The Law on Adjustment and Restructuring of Coal Mining (1968) introduced a comprehensive framework of government intervention and state aid directed towards the structural reorganisation of the industry. A Federal Commissioner for Coal Mining was appointed with powers to allocate production between mines, guide investment and promote rationalisation and concentration. Under the influence of the Commissioner the greater part of the industry merged into three companies: Ruhrkohle AG, Eschweiler Bergwerksverein and Saarbergwerke AG (owned jointly by the Federal Government and Saarland). During the 1970s the principal direct financial support for coal mining has been in adjustment aid for investment, reorganisation and closures while the principal maintenance support has been in the form of taxes on competing sources of energy (notably the mineral oil tax and *Kohlepfennig* paid by electricity consumers) and voluntary and mandatory requirements for the electricity and steel industries to purchase domestic coal. The rapidly increasing price of crude oil since 1974 has reinforced the Government's efforts to maintain its coal industry. In recent years the coal industry has been hard hit, however, by the recession in the steel industry. Support for 1978 totalled about DM5,000 mn including the additional Federal and Länder support measures announced in April and May 1978 (German Tribune, 11 June 1978).

4.20 Government policy towards the coal industry is of considerable interest since not only does it contrast with the typical unwillingness of government to support declining industries, but the structural interventions by government are quite inconsistent with the principles of *Marktkonformes Mittel*. Industrial policy measures normally considered to be consistent with the competitive market mechanism are non-discriminatory financial incentives. However, in the coal industry not only has government been willing to intervene directly to force consuming industries to increase their use of domestic coal, but government has also severely restricted competition in the industry by reorganising it into fewer companies and imposing upon it a regulatory commission.

4.21 Federal support for the production of *civil aircraft* has many similarities to support for the computer industry. Both are examples of technologically based industries in which the high costs and uncertain returns from R&D make it unlikely that either industry could survive without at least some initial support from government. Both occupy a strategically important position, the computer industry because of the key role of electronic technology in the future development of the industrial sector, and aircraft industry because of its initial defence role. The enormous cost of civilian aircraft development, the need for international cooperation and the oligopolistic structure of the industry internationally has meant that the aircraft industry has been often regarded as one in which the principle of workable competition cannot be invoked and the industry has been subject to considerable government intervention. Government has encouraged mergers with the result that the industry is reorganised into two companies: VFW-Fokker and MBB. In common with the UK and France, the aircraft industry of the BRD has suffered from the inability to achieve sufficient sales of individual models to reap the benefits of scale economies. Also in common with the UK and France, government policies have been influenced by considerations of national prestige and over-optimistic projections of commercial success. Both the VFW 614 short haul aircraft and the Franco-German airbus have incurred substantial losses caused by high development costs and limited sales — the direct result of failure to break into the US market.

4.22 Considerations of economic and defensive strategy and self-sufficiency which have been identified as

important motives in the financial support of the coal, computer and aircraft industries, are the dominant influence on Federal assistance for the *oil industry*. The dependence of the economy on imported crude oil and the absence of any German-based multinationals in the international petroleum industry has meant that disruption of oil supplies has been regarded as a major threat to the security of the BRD. Government promotion of mergers in the coal industry was paralleled by a similar policy in the oil industry from 1968 onwards. In the interests of security, it was considered that at least one quarter of the nation's supply of crude oil should come from German firms (Kruster, 1974, p.77). DEMINEX, a joint venture involving 7 oil companies, was established with government encouragement and government backing of DM575 mn over six years. The company was expected to engage in exploration for new sources of petroleum and to form joint ventures with other oil companies and the governments of producer countries for the ownership and operation of oil and gas fields.

- 4.23 The activities of the Federal Government in encouraging increasing concentration in the oil industry have been the subject of considerable controversy. In 1974 the government-backed merger between VEBA, the state-owned energy conglomerate, and a smaller oil company, Gelsenberg AG, was turned down by the Cartel Office. The decision was overruled by the Economics Minister only to be upheld by the Monopolies Commission.
- 4.24 It would seem that the government's strategy for the internal growth of the domestic oil industry has been a failure with no major discoveries of crude oil and few joint ventures with other companies. In 1978 a takeover of VEBA's petroleum interests by BP was turned down by the Cartel Office.
- 4.25 *Structural policy and firm size.* An industrial policy based on the maintenance of the market system for the allocation of resources might be expected to adopt a neutral position towards enterprises of different sizes allowing the competitive mechanism to promote the emergence of optimally-sized firms. In practice a range of measures has been introduced to assist investment by small and medium-sized business (SMBs). The justification for such measures is, first, that some measure of public support is needed to offset the handicaps which face SMBs in capital markets, in sponsoring R&D and in complying with legislation and government regulations; second, SMBs provide important sources of output and employment growth and an entree for new managerial talent and innovative ideas to the industrial sector. A further factor influencing the Government's attitude towards SMBs is that in Germany SMBs account for a smaller share of industrial employment (12 per cent) and industrial production (10 per cent) than in any other OECD country. The support measures include:
- low interest loans for capital investment by SMBs by the Reconstruction Loan Corporation (at 6½ per cent rate of interest) together with special assistance for SMBs in textiles and clothing and leather and footwear (1974);
 - adjustment aid for SMBs from the ERP (1975);
 - tax concessions to SMBs to enable them to carry forward losses (1976);
 - a special programme for assisting the establishing of new firms (DM270 mn budgeted in 1977 with an additional DM600mn in 1978); and
 - assistance for SMBs introducing new innovations (funds increased from DM10 mn in 1976 to DM15 mn in 1980).
- 4.26 During the early 1970s total financial assistance to SMBs was as follows [O.E.C.D. (1978)]

	1971	1973	1974	1975
DM millions	342	429	458	490

As indicated above, since 1975 the number of programmes assisting SMBs and the amount of expenditure has increased considerably.

- 4.27 In spite of the assistance by government to SMBs and the general support which government has expressed for the principles of the competitive market economy, in some industrial sectors government policy has fostered the growth of large-sized firms. Apparently influenced by the ideas contained in Galbraith's *New Industrial State* (1968) and Servan-Schreiber's *Le Défi Américain*, the Federal Government recognised a need for large companies capable of competing in international markets and keeping abreast of technological change. Herr Schiller in particular emphasised that competition was not to be regarded as a policy goal, but as one of a range of policy instruments [see Schiller (1955)]. In a comment upon the Cartel Office Report for 1967 the Federal Government stated: 'The Common Market and the trend to world-wide economic integration have created new premises for competition. Larger markets demand in many ways larger and more efficient company units . . . The Federal Government is concerned to remove

obstacles which stand in the way of concentration of enterprises now blocked by cartel law, so that the development of firms of optimum size will not be hindered.' (*Stellungnahme der Bundesregierung zum Tätigkeitsbericht des Bundeskartellamtes für 1967*, pp.2-3, quoted in Kuster (1974). Concern over sub-optimal sizes of firms and plants may seem surprising in view of the large average size of large plants in the BRD (see paragraph 2.57 above) though, on average, industrial concentration is lower in the BRD than the UK (see paragraph 2.53). While the favourable attitude of the Federal Government towards increasing company sizes undoubtedly encouraged mergers between large manufacturing firms between the mid-1960s and early-1970s, with the exception of coal and oil industries (see above), the Federal Government does not appear to have taken a direct role in effecting industrial mergers.

4.28 *Structural policies towards the labour market.* Structural change in industry is dependent not only on the investment decisions of firms but also on the responses of workers to changing employment opportunities and incentives. The ability of an economy to take advantage of technological change and the changing structure of final demand partly depends upon the degree of occupational and geographical mobility of the labour force. In the BRD high labour mobility has been greatly facilitated by the presence of a large number of foreign workers. Until recently, the principal manpower problem has been the continuing demand of Germany's growing manufacturing industry for highly skilled personnel necessary for the maintenance of Germany's export strength based on high quality, technologically advanced manufactured products. To avoid serious manpower shortages in key skilled occupations, the Federal Government has placed considerable emphasis on vocational training and incentives to occupational and geographical mobility. Manpower and employment policy is carried out by the Federal Employment Bureau which implements the Vocational Training and Employment Promotion and the 1971 Act on Vocational Training. In 1975 there were 271,000 persons undergoing state-supported vocational training and retraining schemes and about another 200,000 who undertook other supported training (OECD, 1978, p.120). The types of training for which financial assistance is available are:

- *conversion* courses for workers faced with redundancy;
- *adaptation* courses for entrants to new jobs;
- *occupational advancement* courses for workers seeking to improve their skills and qualifications within a particular occupation;
- *refresher* courses for workers seeking to maintain their level of skill; and
- *Pre-training and preparatory* courses for young people between 16 and 18 before taking up employment.

Table 4.5 shows expenditure by the Federal Employment Bureau (note that this includes expenditure on unemployment benefits as well).

Table 4.5

EXPENDITURE BY THE FEDERAL EMPLOYMENT BUREAU

	DM million
Personnel training assistance	2,802
of which: initial training	277
further training	374
retraining training	159
subsistence allowances during training	1,991
Assistance to training institutions	64
Assisting entry into employment	186
Rehabilitation of handicapped persons	434
Short-time working allowances	2,207
Bad weather pay	396
Aid to productivity in building industry in winter	50
Other aid to building firms and workers	17
Employment creation measures	127
Unemployment benefits	7,766
Supplementary unemployment benefits	776
TOTAL PAYMENTS	15,743

Source: OECD, 1978, p.114

- 4.29 Until the mid-1970s government policies towards the labour market were concerned chiefly with encouraging skill acquisition and greater efficiency in the allocation of manpower resources. With the emergence of structural problems of industry and higher rates of unemployment after 1974 the Federal Government has become increasingly involved in the maintenance of employment on social grounds. In 1975 the first programme of wage subsidies was introduced for firms offering non-temporary employment to unemployed persons. The scheme operated for six months with an expenditure of DM600 million. Further programmes for increased support were introduced in 1976 and 1977. In May 1977 the budget for employment creation measures was increased from DM650 million to DM1150 million with particular emphasis on work creation for the long term unemployed and training courses for school leavers. Considerable use has been made too of short term working and various work-sharing arrangements.

C. Structural policy in the UK

- 4.30 *Structural intervention in theory and practice.* In contrast to the BRD, structural policies in the UK have not been formulated within such a coherent set of principles as those of the *social market economy*. As has been noted in Chapter 3, the much heavier emphasis on structural economic policies in the UK as compared with the BRD primarily reflects the view that UK's greater need for structural intervention follows from its less satisfactory economic performance. The increasing resort by UK governments to industrial intervention would seem to have been encouraged by the failure of more traditional tools of macro-economic policy to achieve the elusive goals of stability and growth. While UK structural policy has been moulded more by pragmatism and political opportunism than by philosophical considerations, it is possible to identify certain directions of economic thought which have been influential. The post-war German faith in the political virtues and economic efficiency of the competitive market system found little echo in the UK debate over economic policy, and even under Conservative governments it is difficult to identify the introduction of any significant constraints on government intervention in industry arising from a belief in the efficiency of the free market system. Even in competition policy where controls over cartels, monopolies and mergers in the UK have pre-dated those of the BRD, the UK approach has been marked by extreme pragmatism with a lack of whole-hearted commitment to the principle of competition. In fact, the most influential direction of economic thought on the UK policy formulation has been a belief in the efficacy of government sponsored economic planning as a means of stimulating increased investment and economic growth. This belief that economic planning could remedy the poor performance of the UK with regard to growth, inflation and international trade, was greatly strengthened by comparisons with policy and performance in some other European countries. The indicative planning practices of France, the active role of the state-owned conglomerates in Italian industry and the wage bargaining system of Sweden were all held up during the early 1960s as models for the UK to imitate.
- 4.31 Government attempts at a comprehensive structural policy within a medium-term planning framework have been associated with the role of the National Economic Development Council (NEDC). The establishment of NEDC in 1962 was stimulated by the success of French indicative planning and represented a remarkable conversion in the attitude of the Conservative party towards intervention in the economy. The NEDC provided a forum of representatives, from government, business and the unions, backed by a planning office (NEDO) and a number of Economic Development Committees for individual industries. The work of NEDC was embodied in five year plans which represented a consensus view of economic growth and development and a commitment by government to orientate its policy towards the achievement of the growth targets.
- 4.32 While the Conservative party's commitment to indicative planning during the 1960s was somewhat half-hearted, to the Labour government of 1964 national economic planning backed by extensive micro-economic intervention was the basis of its economic strategy. After 'the thirteen wasted years' of Conservative rule, the party's election manifesto promised 'a deliberate and massive effort to modernise the economy; to change its structure and to develop with all possible speed the advanced technology and the new science-based industries with which our future lies'. In addition to new ministerial powers and new agencies for government intervention in industry, the Labour government's policy was notable for its commitment to overall economic planning at the national level. Economic planning involved the creation of new planning institutions. The industry-based Economic Development Committees were supplemented by geographically defined Economic Planning Councils. The Department of Economic Affairs was established for the construction of national plans which were to be implemented through the machinery of NEDO, the EDCs and the Regional Economic Planning Councils. This bold attempt at indicative planning crumbled almost as soon as the *National Plan* of 1965 had been published. The introductions by government of deflationary measures in order to meet the balance of payments in 1966 made the growth targets of the Plan unattainable.
- 4.33 The failure of the National Plan and the subsequent demise of the Department of Economic Affairs resulted in the discrediting of 'national planning'. In particular it was noted that it was easy to establish performance targets for the economy, but impossible to ensure they would be fulfilled without sufficient tools of

of government policy to influence the economy at macro and micro level. While the failure of planning in the 1960s may have encouraged the Conservative party to move towards a more market-orientated economic philosophy, no such tendency can be observed in the Labour party's approach to economic policy. Although the 1974-79 Labour Government made no attempt to revive medium-term planning of the national planning, its belief that government leadership and extensive industrial intervention in industry were necessary to overcome the fundamental problems of the UK economy was the basis of the Industrial Strategy launched in 1975. Unlike the National Plan, the Industrial Strategy involved no national targets for growth and employment and little coordinated planning at a national level. The approach was to use the organisation of the NEDC to identify structural and performance problems in individual sectors of UK industry, and then to formulate government policies to remedy these defects. Statements of the content of the Industrial Strategy were deliberately vague. In *An Approach to Industrial Strategy* (HMSO, 1975) the Government emphasised the need for economic policies to take a longer term perspective aiming in particular to remove the obstacles to long term economic growth rather than to concentrate on short term policies directed at the immediate problems of unemployment, inflation and balance of payments deficit. The only formal planning which the Strategy envisaged was at company level through *Planning Agreements* between government and individual companies. This area of the Industrial Strategy was a conspicuous failure. In practice, the major thrust of the Industrial Strategy was to identify sectors of industry where economic growth and increasing productivity were supposedly hindered by inadequate investment and to introduce sectoral assistance schemes aimed at increasing and accelerating capital investment.

- 4.34 At an ideological level, therefore, the history of economic policy since 1964 has consisted to two periods, 1964-70 and 1974-79 when government was committed to extensive structural intervention in the economy, and two periods, 1970-74 and June 1979 onwards when government declared its support for market-orientated economic policies. Yet neither under Conservative nor Labour government have the actual structural policies which have been introduced corresponded to any marked degree to the philosophical inclinations or election statements of the parties. In the case of Labour governments one would have expected structural policies to have taken the form of comprehensive programmes aimed at long-term goals of output and productivity growth and greater equality in income distribution. While Labour governments have been associated with increased structural intervention, the policies have comprised a variety of different schemes administered by different departments and agencies with little overall planning and directed more towards short- than long-term goals. Under the 1970-74 Conservative government the gap between principle and actual policies was even more evident. Apart from the abolition of a few interventionist agencies, there is no evidence of a shift towards laissez-faire policies and it was this government which established the framework for selective industrial intervention that was to be subsequently expanded between 1974 and 1979.
- 4.35 The contrast between ideology and practice is one which characterises UK economic policy in general, but is particularly evident in the case of structural policy towards industry. Despite differences in the economic philosophy of the Labour and Conservative parties, intervention in the economy increased over the period 1964-1979 with only minor interruptions. Despite the emphasis of policy statements on the longer term problems of lack of investment and low growth industrial intervention has tended to be orientated more to short term employment maintenance than to long term growth. Again, despite the emphasis of the Labour party on coordination of economic policies with a framework of medium term planning, industrial interventions have been haphazard and *ad hoc*. This course of structural economic policies and the apparently limited influence of economic philosophy reflects the dominance of circumstances over ideas. The tendency for UK governments of quite different political complexions to adopt similar economic policies reflects not so much the pragmatism of policy makers as the severity of the short-term economic problems and political pressures that constrain the choice of policy instruments and goals. We proceed by identifying some of the trends in UK structural policy and examining some major areas of structural policy towards industry.
- 4.36 *Instruments of structural intervention and trends in structural policy.* In the UK as in the BRD structural economic policies have operated primarily through the provision of financial incentives to industry. Financial incentives have mainly been subsidies for capital investment: investment grants, tax allowances, low interest loans and interest relief grants. The forms of financial incentive and assistance offered by UK governments have been more varied than in the BRD. In particular, subsidies for the employment of labour have been important in the UK, notably the Regional Employment Premium and the Temporary Employment Subsidy. Also UK governments, particularly during the period 1974-79, have provided long-term finance to private industry in the form of equity capital.
- 4.37 Unlike the BRD Subsidy Reports, the UK Government does not provide a comprehensive account of financial assistance to the private sector. Financial assistance to industry which takes the form of government expenditure (i.e. grants, loans and equity purchases) is classified in the annual White Papers on Public Expenditure. Table 4.6 shows expenditure by central government on industry and employment between

1969/70 and 1977/78. The figures are misleading as an indication of subsidies to industry. First, the figures aggregate loans and grants, and, second, no account is taken of tax allowances. Calculation of the subsidy element in loans is difficult since it depends upon the rate of interest charged compared with that which would have been charged on an identical loan by a financial institution and also upon whether or not the loan is repaid (many of the loans made to unprofitable firms ultimately become grants). In recent years interest relief grants have become a particularly important method by which government provides selective assistance to industry. The Department of Industry has noted that this form of aid is advantageous from the Government's point of view since it involves less public expenditure than the provision of loans and the Department is relieved of the responsibility of evaluating the commercial viability of the project and administering the payment and repayment of the loan (see *House of Commons*, 1978, pp.15-17).

- 4.38 Structural policies have not relied exclusively on financial incentives to encourage industrial adjustment and growth, and numerous instruments of direct intervention into the industrial sector have been employed by British governments. Regional development policies have traditionally involved governments in a range of direct intervention, notably direct control of industrial location and the provision of social and industrial infrastructure. Since 1964 governments have become involved on a wider scale in direct intervention in industry to change industrial structure, to exploit new investment opportunities and to improve industrial performance. The work of the Industrial Reorganisation Corporation in effecting mergers in several manufacturing industries and the promotion of new enterprises by the Department of Industry and agencies such as the National Enterprise Board and Scottish and Welsh Development Agencies are notable in this respect. The more flexible approach to public ownership than that represented by traditional nationalisation has been a significant feature of the past two Labour administrations: 1964-70 and 1974-79. The use of part-public ownership to support financially particular companies and to encourage structural changes in industry was inaugurated by the Government's purchase of shares in the Fairfield shipbuilding company in 1964. By the beginning of 1979 the shareholdings of the National Enterprise Board covered a large number of companies in a wide range of industries.
- 4.39 As we have noted, Table 4.6 is rather misleading as a guide to trends in financial assistance to UK industry. The Table shows that total expenditure on industry and the labour market was, in real terms, much the same in 1969/70 as in 1978/79, a peak being reached in 1974/75. The figures are distorted by the replacement in 1970 of investment grants by investment allowances, investment allowances not being included in the Table. If payments of investment grants are excluded from the totals, then the Table shows that finance for industry and the labour market increased by 86 per cent in real terms over the period, with a remarkable increase of 171 per cent over the five year period 1969/70 to 1974/75. The decline in expenditure between 1974/75 and 1978/79 is interesting, but closer inspection reveals that this is due not to a contraction of government industrial policy but to a change in the system of financing export credits and the abandonment of the severe restraint on nationalised industry price increases.
- 4.40 Probably the principal change in industrial policy over the period has been the relative decline in the importance of regional assistance but it is not easily identified in Table 4.6 because the principal regional aid during the early 1970's 'higher investment grants in the development areas, is not included under 'regional support and regeneration'. The growing importance of selective assistance to particular firms and industries is clearly indicated in the Table. Other trends which are worthy of note are the fall in expenditure on aircraft development and production (notably the Concorde and RB211 projects); second, the increase in government expenditure on the labour market. Some of these policy programmes are now discussed in more detail.
- 4.41 *Regional policy.* In the UK, as in the BRD, regional policies have provided the foundation for the development of wider structural policies towards industry. A large part of the growth of industrial intervention in the UK during the 1970s has involved an extension of financial aids originally intended for regional development to companies and industries outside the development regions. The origins of UK regional policy lie in the inter-war years, the 1934 Special Areas Act representing the first measures aimed at encouraging industry to site in particularly depressed areas. During the post-war period the regional problem is reflected in above average rates of unemployment in the well-defined regions of Scotland, North West and North East England, Wales and Northern Ireland with particularly serious problems affecting certain conurbations within these regions — notably Clydeside, Tyneside, Merseyside, and Belfast. The principal form of aid has been inducements to invest in the development areas in the form of investment grants, initial allowances and accelerated depreciation provisions. Higher rates of investment incentives were made available for the specially depressed 'Special Development Areas' (established in 1967) and lower rates were introduced in 1970 for 'Intermediate Areas'. The most active phase of regional policy was the period 1966 to 1970. The 1966 Industrial Development Act introduced investment grants in Development Areas at the rate of 40 per cent of the cost of plant and machinery and 25 per cent of the cost of buildings. In 1967 the Regional Employment Premium introduced a cash subsidy of £1.50 per week for each full-time worker employed in

the Development Areas. In addition, industry was directed towards the Development Areas by means of the discriminatory issue of Industrial Development Certificates and by inducements in the form of advance factories and new towns.

- 4.42 After 1970 the emphasis of regional policy changed. Investment grants were replaced by investment allowances in 1970 (although regional development grants were reintroduced in 1972) and the Regional Employment Premium was withdrawn in 1973. The primary emphasis of regional policy after 1972 was towards a more selective approach. Under Section 7 of the 1972 Industry Act, the Department of Industry was empowered to offer selective industrial assistance to individual companies and projects which would have the effect of creating employment in the Development Areas. The shift from generally available regional incentives towards selective incentives produced a basic change in regional policy. Although selective assistance under Section 7 of the Industry Act is available only in the 'assisted areas', these areas include all of UK with the exception of the Midlands and the South East and the flexibility of the criteria. Moreover the growth in selective assistance to industries and firms outside the development regions has had the effect of further weakening the importance of regional incentives. This weaker emphasis on regional problems *per se* has partly reflected a change in the nature of industrial problems. During the 1970s unemployment has increasingly become a national problem and the growing severity of the problems of industrial decline, import competition and structural change have resulted in the emergence of localised economic problems outside the traditional development regions. Notable examples have been the rising unemployment in the West Midlands — traditionally a high income, high employment area — during the recession in the engineering industries in the mid-1970s and the growing problems of inner city areas. Its unemployment and industrial decline have become associated more with particular industries than with particular areas.
- 4.43 *Selective assistance to industries and companies.* While structural intervention by government in UK industry through the provision of financial assistance to selected industries and companies has become a dominant feature of UK industrial policy only since 1972, it is important to note that selective intervention by government in private industry is over forty years old. During the inter-war period in particular the pressures on government posed by balance of payments difficulties and unemployment with its attendant social problems placed pressures on government which were similar to those posed by the problems of the post-war recessions. Structural intervention by government was primarily at an informal level using government influence on firms and industry, the encouragement of cartels and the introduction of protective tariffs rather than financial subsidies. Government policy towards the cotton industry through the 1936 Cotton Spinning Act and 1959 Cotton Industry Act was the first example of the formal approach to structural policy (Miles, 1968).
- 4.44 Selective financial assistance to industry since 1966 has taken two main forms. First, assistance directed primarily towards the maintenance of employment in industry, and secondly, assistance aimed primarily at the promotion of growth through support for capital investment and research and development in newer and technologically-based industries. Both these objectives have been influenced by balance of payments considerations, and in almost all cases of support for declining industries and unprofitable firms, the industry or firm has been a significant exporter. Prior to 1972 selective assistance to industry was limited. The severe adjustment problems of particular industries — notably shipbuilding and cotton textiles — resulted in legislation making available financial assistance for these industries. In addition, government provided substantial assistance to the aircraft industry partly because of the need to maintain the capacity to build military aircraft and partly through a belief in the importance of R&D spin-off from aerospace. Assistance took the form of grants for research and development costs and the requirement that the nationalised airlines purchase domestically built planes. Legislation empowering Ministers to offer discretionary assistance to particular firms across industry as a whole was introduced by the 1964-70 Labour administration as part of its policy to stimulate innovation and the development of science-based industries. The 1965 Science and Technology Act and Development of Inventions Act increased government support for research and development, while the 1968 Industrial Expansion Act empowered the Minister concerned to give financial support in almost any form to projects designed to 'promote efficiency; to support technological advance; or to create, expand or sustain productive capacity' (HMSO 1968). The main beneficiaries of the Industrial Expansion Act were International Computers Ltd (see Chapter 5), the aluminium smelting industry which was established in the UK with generous subsidies under the Act and the aircraft industry.
- 4.45 The enormous growth in the amount of selective financial assistance to industry shown in Table 4.6 followed the passing of the Industry Act in 1972. The purposes of selective financial assistance have been described by the government as follows:
- to promote the development or modernisation of industry;
 - to promote the efficiency of an industry;

- to create, expand or sustain productive capacity in an industry, or in undertakings in an industry;
- to promote the reconstruction, reorganisation or conversions of an industry or of undertakings in an industry;
- to encourage the growth of, or the proper distribution of undertakings in an industry; and
- to encourage arrangements for ensuring that any contraction of an industry proceeds in an orderly way (Trade and Industry, 19 January 1979).

Selective assistance can be offered under Section 7 and 8 of the Act. Section 7 assistance is designed to provide and maintain employment in the assisted areas, Section 8 assistance is available for the support of projects anywhere in the country so long as it benefits the economy and serves the national interest. In the case of selective assistance to individual companies under both Sections 7 and 8 of the Act, it would appear that the maintenance of employment in relatively unprofitable companies has been a dominant criterion in the allocation of aid. Table 4.7 below shows the most important allocations of financial aid to individual companies, in the great majority of cases aid has been to companies in serious financial difficulties and has been in order to maintain employment.

- 4.46 In addition to selective assistance for individual companies and projects, a number of financial assistance schemes have been established under Section 8 of the Act to support investment in selected industries. These schemes have been closely linked to the Industrial Strategy of 1975-79, a principal feature of which was the establishment under the NEDC of sector working parties to identify areas where increased capital investment was necessary to relieve production bottlenecks and increase productivity. Table 4.8 shows the schemes introduced under the Act. They include a wide variety of industries, some such as the electronic and instrumentation schemes are in areas of high technology, most of the others are in more traditional areas where productivity and capacity growth has been hindered by inadequate investment. In all cases, however, the basic reasoning has been the belief that unsatisfactory growth performance of British industry has been due in part to a lack of capital investment and the presence of capacity bottlenecks in certain areas of industry which have inhibited attempts by government to attain non-inflationary growth.
- 4.47 *The sectoral distribution of financial support.* The use of selective financial assistance to maintain employment in declining industries and to rescue unprofitable manufacturing companies from bankruptcy raises the issue of whether government subsidies to British industry have the effect of inhibiting rather than promoting the structural adjustment of the economy. Some indication of whether industrial subsidies have had the effect of supporting low growth sectors of the economy is provided by the industrial distribution of financial assistance under the 1972 Industry Act in Table 4.9. Ranked by the amount of financial assistance per employee in each SIC order, no clear pattern emerges. Heaviest support would appear to be for basic manufacturing industries (notably coal and petroleum products, chemicals, metal manufacture) and ship-building. In general, support would appear to be concentrated on low rather than high growth sectors of industry. The average level of assistance per employee in the six slowest growing orders was £568, in the six fastest growing orders it was £220.
- 4.48 *Industrial restructuring and the promotion of new enterprises.* Financial incentives to industry are generally regarded as market-orientated policy measures where the adjustment of market prices and rates of return by means of subsidies influences decision making by firms. Such a view is largely correct in the case of non-discretionary assistance (e.g. Regional Development Grants) but in the case of selective assistance, the award of finance is a matter for discussion and bargaining between government and the company, such that government is able to use the offer of financial assistance to influence a company's decisions in a number of respects. For example, the aid given to Chrysler UK involved the company agreeing to maintaining its Scottish plant (Linwood), producing certain models in the UK and signing a 'planning agreement' with government which gave government the right of consultation over the company's planning. In a number of areas government has sought to intervene directly in industrial structure both to reorganise industries through the promotion of industrial mergers and to encourage the establishment of new business ventures. Such direct structural intervention has been associated with particular government agencies. For example, the National Research and Development Corporation has been responsible for promoting the exploitation of British inventions, the Industrial Reorganisation Corporation was closely associated with the encouragement of mergers, the National Enterprise Board has been responsible for encouraging the establishment of new enterprises aimed in particular at exploiting growth areas in industry. In all cases intervention has been accompanied by the provision of finance to the enterprises concerned, generally in the form of equity purchases.
- 4.49 The work of the Industrial Reorganisation Corporation during its existence from 1967 to 1971 is of particular interest on account of the large-scale structural reorganisations which it promoted in a number of manufacturing industries. The objective of the Corporation was to promote the industrial efficiency and international competitiveness of British industry in areas where market forces were not resulting in efficient performance, particularly where firm size was considered too small to maximise the benefits from scale

Table 4.6

GOVERNMENT ASSISTANCE TO UK INDUSTRY

	Year ending March					£mn at 1978 prices				
	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Regional support and regeneration										
— Regional development grants	—	—	—	19	223	358	428	452	385	430
— Provision of land and buildings	40	38	29	30	12	22	30	18	19	30
— Selective assistance to industry in assisted areas	—	—	—	1	50	58	74	35	34	92
— Other regional support	14	13	16	15	15	16	16	15	23	30
— Regional employment premium	359	333	302	253	227	277	303	269	3	—
— Residual expenditure under repealed sections of the Local Employment Act, 1972	70	87	73	106	56	—	-4	-15	-10	-8
— Scottish and Welsh Development Agencies	—	—	—	—	—	—	7	28	64	112
TOTAL	484	471	420	425	584	730	853	803	518	686
Industrial innovation										
— General industrial R & D	61	56	46	45	50	51	51	44	41	51
— Department of Energy non-nuclear R & D	—	—	—	—	2	3	9	13	18	24
— Aircraft & aeroengine general R & D programme	21	26	28	33	38	33	26	23	20	17
— Concorde — development	177	181	164	122	81	73	58	32	25	21
— production	17	21	39	64	71	60	52	28	24	19
— RB 211	88	36	179	121	43	88	-3	12	-6	29
— Other aircraft and aeroengine projects and assistance	33	104	66	6	31	29	93	—	5	45
— Space	31	21	21	19	24	30	34	40	35	33
— Nuclear	99	136	121	124	126	115	139	157	114	120
TOTAL	527	581	665	535	465	482	459	348	275	358
General support for industry										
— National Enterprise Board	—	—	—	—	—	—	12	158	368	70
— Selective assistance to individual industries, firms and undertakings	—	—	—	19	32	35	423	105	59	225
— Promotion of tourism	16	18	31	43	63	30	22	20	20	23
— Refinancing of home shipbuilding lending	—	—	—	108	207	174	152	88	-98	10
— Interest support costs of home shipbuilding lending	—	—	—	—	47	57	43	54	28	33
— Assistance to the shipbuilding industry	24	1	16	40	28	63	36	15	35	30
— Other support services	76	73	-59	-57	-31	-13	1	—	8	2
— Investment grants	1571	1428	1121	683	416	173	82	26	6	2
TOTAL	1687	1520	1109	835	762	520	771	466	427	396
Support for nationalised industries (other than transport industries)										
— Compensation for price restraint	—	146	107	128	748	1096	92	—	—	—
— Assistance to the coal industry	74	70	282	268	624	114	60	82	91	136
— Coal Industry Acts	—	—	—	—	—	60	40	—	—	—
— Pneumoconiosis scheme	2	2	2	45	9	14	17	78	24	21
— Other compensation	—	—	—	—	—	—	—	—	—	—
TOTAL	76	217	391	441	1381	1285	209	160	115	157
International trade										
— Export promotion and trade co-operation	22	22	19	17	18	18	18	17	17	19
— Refinancing of fixed rate export credits	—	—	—	759	813	796	751	616	-287	193
— Interest support costs	—	—	—	—	212	245	204	244	127	202
— Cost escalation guarantees	—	—	—	—	—	—	—	-1	1	1
— Regulation of domestic trade and industry & consumer protection	13	3	1	2	26	35	34	28	32	40
TOTAL	35	25	20	778	1069	1093	1007	905	-110	454
Functioning of the labour market										
— Employment services and employment rehabilitation	70	78	81	99	92	86	118	150	162	167
— Industrial training	79	109	91	128	116	138	232	280	311	374
— Redundancy & maternity fund payments	119	132	176	119	62	76	135	114	112	110
— Industrial relations & other labour market services	13	13	12	81	-2	10	25	154	291	324
TOTAL	282	330	359	428	269	310	510	697	876	974
Health and safety at work										
— Central & miscellaneous services	—	—	—	—	18	16	32	42	42	44
— Employment	74	73	71	70	85	56	43	53	54	54
— Other	147	89	68	67	58	76	74	71	90	110
Transactions in British Petroleum Company shares	—	—	65	65	—	318	—	—	-590	—
GRAND TOTAL	3312	3307	3168	3644	4692	4886	3958	3545	1698	3232

Table 4.7

MAJOR OFFERS OF SELECTIVE ASSISTANCE TO INDIVIDUAL COMPANIES UNDER SECTIONS 7 & 8 OF THE INDUSTRY ACT 1972

<i>Year</i>	<i>Company</i>	<i>Amount of offer</i>	<i>Section of the Act</i>
1972/3	Mersey Docks & Harbour	3.50	7
	Govan Shipbuilders Ltd	35.0	7
	Camell Laird	20.0	7
	Kearney, Trecker and Marwin	1.25	8
	Norton Villiers Triumph	4.8	8
1973/4	Harland and Wolff	— ^a	7
1974/5	Ferranti	6.0*	7
	Fodens	2.0*	7
	Kirkby Manufacturing & Engineering	3.9	7
	Scottish Daily News	1.2	7
	Austin & Pickersgill	9.0	7
	Sunderland Shipbuilders	25.0 ^b	7
	Alfred Herbert Ltd	3.0*	8
	British Leyland	50.0*	8
	Kearney, Trecker and Marwin Ltd	3.5	8
	Norton Villiers Triumph	8.0*	8
	Synova Motors Ltd (Meriden motorcycles)	4.95	8
1975/76	Ferranti Ltd	15.0	7
	Triang Pedigree Ltd	3.5	7
	Sunderland Shipbuilders Ltd	6.0	7
	Alfred Herbert Ltd	26.18	8
	British Leyland	265.0 ^c	—
	Cambridge Instrument Co Ltd	4.5	8
1976/7	Chrysler UK Ltd	162.5	8
	British Leyland	30.0	8
	Kearney, Trecker and Marwin Ltd	1.9	8
1977/8	Ford Motor Company	75.0	7
	British Leyland	150.0	8

Notes:

- * Loan guarantee only
 a Financed jointly by Department of Industry and Northern Ireland government
 b Including a payment of £16m to Court Line for its shipbuilding assets and a loan of £9m to Sunderland Shipbuilders.
 c This sum was for equity finance and was provided under the British Leyland Act 1975.

Source: *Industry Act 1972. Annual reports.*

Table 4.8

SECTORAL SCHEMES OF ASSISTANCE UNDER SECTION 8 OF THE INDUSTRY ACT 1972

<i>Scheme</i>	<i>Date of introduction</i>	<i>Closing date</i>	<i>Assistance offered to 31 March 1978 £m</i>
Wool textile			
— Stage 1	19/ 7/73	31/12/75	16.7
— Stage 2	29/11/76	31/12/77	1.2
Ferrous foundry	5/ 8/75	31/12/76	78.4
Machine tool	5/ 8/75	31/12/77	14.4
Clothing	15/10/75	31/12/77	5.7
Paper and board	15/ 6/76	30/ 6/78	11.5
Non-ferrous foundry	24/ 1/77	31/ 7/78	4.6
Electronic components	24/ 1/77	31/ 7/78	4.0
Instrumentation and automation	1/11/77	31/12/78	1.5
Drop Forging	8/11/77	31/12/78	nil
Printing machinery	13/ 8/76	31/12/77	3.5
Textile machinery	13/ 8/76	31/ 3/77	2.0
Poultrymeat processing	4/ 8/76	31/ 3/77	4.9
Redmeat slaughterhouse	9/11/76	30/11/78	3.3

Source: *Industry Act 1972. Annual reports.*

Table 4.9

FINANCIAL ASSISTANCE UNDER THE 1972 INDUSTRY ACT 1972/3-1977/8 BY SIC ORDER

SIC ORDERS	Regional development grants	Selective regional assistance (Section 7)	Selective* investment scheme grants	Sectoral* assistance schemes under Section 8	Total	Total financial assistance per employee £	Growth of production 1972/3 to 1977/8 %
II Mining and quarrying	80.0	1.4	—	—	82.2	236	59.4
III Food, drink & tobacco	132.9	9.6	1.1	8.2	151.8	208	10.0
IV Coal & petroleum products	75.5	0.2	—	—	75.7	1992	-6.3
V Chemicals	271.6	19.1	5.0	—	295.7	698	32.8
VI Metal manufacture	283.9	11.2	0.1	83.0	378.2	788	-18.5
VII Mechanical engineering	-80.4	32.1	1.3	19.9	133.7	142	-2.1
VIII Instrument engineering	10.1	2.6	—	1.5	14.2	92	23.3
IX Electrical engineering	51.3	32.9	0.4	4.0	88.6	114	23.2
X Shipbuilding & marine engineering	36.7	6.2	—	—	42.9	232	-10.3
XI Vehicles	41.1	16.3	2.3	—	59.7	78	-1.1
XII Metal goods nes	38.1	7.6	0.6	—	46.3	86	-3.0
XII Textiles	50.5	18.7	0.2	17.8	87.2	165	-7.4
XIV Leather, leather goods & fur	2.8	3.0	—	—	5.8	139	-8.6
XV Clothing & footwear	14.5	2.9	—	5.7	13.1	33	16.9
XVI Bricks, pottery, cement, glass	50.6	4.4	0.8	—	55.8	200	11.0
XVII Timber, furniture, etc	24.0	5.2	—	—	29.2	109	8.6
XVIII Paper printing & publishing	51.7	7.6	10.5	11.5	81.3	146	3.6
XIX Other manufacturing industries	34.5	13.8	1.3	—	49.6	146	22.4
XX Construction	105.6	1.9	—	—	107.5	83	-12.6
Other	17.3	6.9	—	—	24.2	—	—
TOTAL	1454.0	203.7	23.7	151.6	1833.0	194	6.0

*Offers of assistance

Source: *Industry Act 1972. Annual reports, Annual Abstract of Statistics*

economies, innovation and export marketing. In a number of industries IRC promoted mergers resulted in the amalgamation of all the domestically owned producers into a single company, notably in car assembly (BMC and Leyland Motors), heavy electrical goods (GEC, AEI and English Electric), and ball bearings (Hoffman, Ransome and Marles, and Pollard). Table 4.10 shows the distribution of IRC finance between different industries.

4.50 The National Enterprise Board established by the 1975 Industry Act has been less ambitious than the IRC in intervening to restructure private industry. It was designed to encourage investment into growing and profitable areas of UK industry. In addition to acting as a management and holding company for state shareholdings in companies such as British Leyland, Alfred Herbert, Brown Boveri Kent Ltd, Cambridge Instruments and other companies involved in government rescues and restructuring, the NEB has taken an active role in promoting new enterprises in areas of rapid technological change — notably micro-electronics (see paragraph 5). It might be argued that the existence of agencies such as the NEB and IRC to undertake selective financial assistance for individual companies is to be preferred to the direct provision of aid by government departments as semi-independent agencies are able to adopt a more commercial strategy and may be subjected to less political pressures.

4.51 *Structural policies towards the labour market.* Although this chapter has concentrated on structural policies towards industry, note must be taken of policies towards the labour market since these may be regarded as complementary and, to some extent, alternatives to industrial policy. The process of structural change in industry in recent years has been characterised by the relative immobility of labour with the result that increasing rates of structural unemployment coexist with large numbers of unfilled vacancies. The increasing expenditure by government on the labour market during the 1970s (see Table 4.7) reflects government's determination to encourage greater efficiency in the labour market both to stimulate economic growth and to avoid the social problems which accompany industrial change.

Table 4.10

INDUSTRIAL REORGANISATION CORPORATION FINANCE BY INDUSTRY, 1967-71

	£m
Automobiles	34.0
Computers	18.0
Aircraft	10.0
Instrument engineering	9.5
Ball bearings	9.4
Heavy engineering	7.0
Textiles	4.6
Paper	4.0
Shipbuilding	3.8
Machine tools	2.9
Nuclear energy	1.1
Mechanical engineering	0.7
TOTAL	105.9

4.52 The principal problem of the UK labour market has been seen to be an insufficient supply of trained manpower, particularly skilled manual workers. The first comprehensive attempt at encouraging an expansion in industrial training was the 1964 Industrial Training Act which established a system of grants to encourage training administered by Industrial Training Boards. The establishment of the Manpower Services Commission by the Employment and Training Act 1973 was aimed at a more integrated approach to labour market policies by bringing together employment information and exchange facilities and government training schemes under a single body. During the 1970s expenditure on industrial training and retraining has increased greatly, although this greater expenditure seems to have had little success in solving the problems of labour immobility and the shortage of certain categories of skilled labour. To a great extent, however, policies to encourage greater geographical and occupational mobility have been offset by other government policies. Incomes policies between 1972 and 1979 have had the effect of suppressing wage differentials and preventing the normal operation of the forces of supply and demand in the labour market, while the Employment Protection Act of 1975 has made it more difficult for firms facing declining demand to shed excess labour. Measures directed at the short term maintenance of employment have directly operated against policies which have sought to achieve a more efficient allocation of labour. Selective support of unproductive and unprofitable companies has been discussed above, in addition the temporary employment subsidy has directly encouraged the retention of labour in unproductive employment. The temporary employment subsidy may be regarded as a disguised subsidy to industry, the benefits of which have accrued to declining industries. Table 4.11 shows the distribution of the temporary employment subsidy by industry.

Table 4.11

PAYMENTS OF TEMPORARY EMPLOYMENT SUBSIDIES BY INDUSTRY,
18 AUGUST 1975 TO 31 MARCH 1977

	Workers covered \	% of industry labour force
Clothing & footwear	64,038	17
Textiles	52,864	11
Leather	3,473	8
Timber, furniture	7,164	3
Shipbuilding	4,064	2
Other manufacturing	74,055	1
Non-manufacturing industries	23,589	—
TOTAL	229,247	

Source: *Financial Times*, 30 January 1978, p.21

D. Conclusions

4.53 A detailed comparison of structural economic policies in the UK and BRD is complicated by the difficulties of obtaining comparable statistics on the amounts of financial aid and its distribution and the problems of distinguishing the practical operation of structural policies from official statement of policy aims and effects. Nevertheless, from the foregoing description of some of the principal features of structural policies in the two countries, some generalisations may be proposed.

- 4.54 The most obvious difference between the countries in the use of structural policy is the much heavier emphasis placed by UK governments on the instruments of structural intervention in attaining macro-economic goals. This is evident in the greater expenditure in the UK on industrial subsidies (see Tables 4.4 and 4.7). Comparisons of tax allowances involve numerous problems, but a simple comparison of direct aid to industry (grants and loans) shows that in 1977 and 1978 UK industrial aid (excluding support for nationalised industries) totalled £2,837 million (approx DM11 billion) while that for the BRD was DM4.9 billion. This difference almost entirely reflects the more widespread use of subsidies in the UK. Comparing individual programmes shows that in the BRD grants and loans for aerospace and innovation and mining and energy exceeded those in the UK, while expenditure on regional support was broadly similar (though with a greater emphasis on tax allowances in the BRD). But, while in the UK almost all manufacturing industries receive some degree of selective subsidisation, financial aid to German manufacturing industry is restricted to very few industries, notably shipbuilding.
- 4.55 The instruments of financial aid are broadly similar in the two countries — investment grants, grants towards R&D, tax allowances for investment expenditure, low interest loans, loan guarantees and interest relief grants. The main differences lie in their application. In general, subsidies have been used far more selectively in the UK than in the BRD. In the BRD industrial support other than regional policy has been in the form of sectoral schemes together with more general schemes for innovation and small and medium-sized businesses. The UK government, on the other hand, has acquired powers to offer financial support in virtually any form to almost any company, so long as the support is regarded as in the national interest.
- 4.56 Such highly selective and discretionary powers for offering financial aid confers upon government the ability to make highly specific structural interventions in industry. The offer of aid to individual companies has sometimes been conditional upon the detailed involvement of government in the companies' decisions. The wide powers of various government agencies to make loans and purchase equity has allowed these agencies, notably the IRC and the NEB to intervene directly in industry to effect structural change. The over-ruling of the market mechanism by direct structural intervention by government, extensions of public ownership and attempts at government to establish formal planning arrangements with individual companies would clearly be contrary to the prevailing economic philosophy in the BRD as well as to its *Principles of Structural Policy*.
- 4.57 Nevertheless, too great an emphasis on the formal aspects of structural policy may result in underestimating the powers of government to intervene in industry at the micro level. Even in Germany where a strong and stable consensus view has been taken of the limits of government intervention in the economy, it would seem that, in the search for solutions to economic problems, policy principles do not impose binding constraints. Both in the UK and the BRD an important area of industrial policy is at the informal level through persuasion and pressure on private sector organisations and companies. Galbraith has noted that, in the modern industrial state, government and industry are forced into close cooperation through mutual dependence. The increasing complexity of society results in expanding contacts between government and the private sector for the purpose of economic, social and environmental policies. Within such a framework, informal persuasion may be considered to be a more efficient and effective means of structural intervention than legislative controls and financial incentives through taxes and subsidies. Prior to 1945 it was in West Germany rather than the UK where cooperation between business and government was a primary feature of economic policy and economic development. It is possible that the more selective interventionist approach of the British government to structural policy may reflect not only the commitment of the Federal government to the principles of the market economy but also the greater ability of the Federal government to command the voluntary adherence of German industry to national economic policies without the need for formal powers of intervention. This thesis is supported by the comparative success of the West German Government in its voluntary wage and price policies through the programme of Concerted Action, as compared with British governments' reliance on statutory powers over wages and prices. The ability of the Federal government to intervene informally in industry in the BRD is further assisted by the influential position of the banks in German industry and the close links between government and the banking sector.
- 4.58 In both countries governments have stressed the need for structural intervention to be directed towards the promotion of industrial growth and technological advance. In both countries, however, financial aids have been used primarily for the maintenance of the output and employment in relatively unprofitable industries rather than towards the encouragement of growth industry. Yet comparing the two countries, it is quite clear that the maintenance of declining industries and unprofitable firms has been accorded a far greater priority in the UK than in the BRD. Maintenance aid in the BRD has been allocated mainly to mining the energy industries and transportation; with the exception of shipbuilding little aid has been given to declining manufacturing industries and virtually none to particular enterprises in financial difficulties. The contrast between the policies of the two governments towards their domestic motor car industries

is particularly revealing. In both countries the car industry experienced a severe recession in 1974/75 with the major manufacturer facing financial difficulties. The response of the UK government was to acquire the equity of British Leyland and to offer it heavy financial support in order to maintain output and employment. In the BRD, the Federal government was faced with similar social problems and political pressures arising from the financial difficulties of Volkswagen. Its response, however, was not to interfere in the plant closures and redundancies by the company, but to offer financial incentives to the expansion of industry and employment in the areas affected by Volkswagen's contraction.

- 4.59 It has been argued by Peters (1971) that the 'sectoral economic policy in the Federal Republic of Germany has greatly undermined general economic policy'. The purpose of structural policy has been to lend assistance to the ailing rather than the growing branches of industry, reflecting according to Kuster (1974, pp.84-86), the political pressures exerted by the owners, managers and workers in declining industries on government. Yet, despite the growth in Federal government assistance to declining industries since 1975, in comparison with the UK, structural policy would appear to provide only limited interference with the process of structural adjustment through the market mechanism. Heavy subsidisation has been restricted to industries considered to be strategically vital (e.g. energy), where external benefits are considered important (e.g. transport), or which are technologically based, such as computers and aerospace. While maintenance and adjustment aid must inevitably retard the transfer of resources from declining to expanding sectors of the economy, these rigidities in the market mechanism may partly be overcome by encouraging mobility in the labour market. It is notable that during the period 1974-75 while government vocational training and retraining schemes covered about 114,000 persons in the UK, in the BRD the figure was 893,000 persons (OECD, 1978, pp.119-120). In the case of geographical mobility in the UK in 1974/75 and 1975/76 31,263 workers were assisted in employment transfer schemes, compared with 697,253 under similar schemes in the BRD (OECD, 1978, pp.126-127).

REFERENCES

- Bundestagsdrucksache V/2469 (1968), *Grundsätze der Regionalen und Sektoralen Strukturpolitik* (Principles of Regional and Sectoral Policy). January.
- Bundestagsdrucksache VI/1666 (1969), *Grundsätze einer Strukturpolitik für kleine und mittlere Unternehmen* (Principle of Structural Policy for Small and Middle-sized Companies).
- Casper, U. (1978), *Background Notes to Regional Incentives in the FDR*. International Institute of Management.
- Galbraith, J.K. (1968), *The New Industrial State*.
- House of Commons, 60011, 281 (i) and (ii) (1978), Report from the Expenditure Committee. Regional and Selective Assistance to Industry.
- HMSO (1975), *An Approach to Industrial Strategy*, Cmnd 6315.
- HMSO (1968), *Industrial Expansion*, Cmnd 3509.
- Kuster, G.H. (1974), *Germany* in R. Vernon (ed) *Big Business and the State Changing Relations in Western Europe*, Macmillan.
- Miles, C. (1968), *Lancashire Textiles: a Case Study of Industrial Change*, Cambridge University Press.
- OECD (1971), *The Industrial Policies of 14 Member Countries*, Paris.
- OECD (1978), *Selected Industrial Policy Instruments. Objectives and Scope*, Paris.
- Peters, H.R. (1971), *Strukturanpassungsgesetz gegen wuchernden Branchenprotektionismus*, *Wirtschaftsdienst*, Vol.51, No.12.
- Schiller, Karl (1955), *Socialismus und Wettbewerb*, Verlagsgenossenschaft deutscher Konsumgenossenschaften.
- Zavlaris, D. (1970), *Die Subventionen in der BRD seit 1951*. *Deutsches Institut für Wirtschaftsforschung: Beiträge zur Strukturforschung*, Heft 14.

CHAPTER 5

STRUCTURAL POLICIES IN THE UK AND BRD TOWARDS THE COMPUTER INDUSTRY

by R.M. Grant and G.K. Shaw

A. Introduction

- 5.1 The differences in industrial policies that have been observed in the previous chapter reflect a number of factors including the different political and economic philosophies that have been influential in the post-war period, the poorer overall performance of the British economy, differences in economic structure and structural change and differences in the political and economic constraints within which policies have been formulated. In the case of the computer industries of the two countries and the policies towards them, it is the similarities rather than the differences which are most apparent. The structure of the industry and its importance to the economy has been similar in both countries, the problems of the industry in the two countries have been virtually identical and the objectives of government policy towards the industry have been much the same. The computer industry therefore provides a particularly interesting study in the policy approaches of the two governments to a technologically-based growth industry.

B. Motives for government support of the computer industry

- 5.2 Government support for the computer industry in the BRD and the UK has taken place because of the importance of computers to industry and government in the modern economy and the contribution of computers to technological advance and economic growth. The OECD has compared the political and economic significance of the computer in the advanced economy with that of steel in industrialising economies [OECD (1969)]. Steel was regarded as a foundation for almost all other manufacturing industries and was of major importance in defence in the construction of ships and armaments. The computer's significance to industry, defence and public administration is the enormous expansion it makes possible in the processing of information. The UK Ministry of Technology noted in 1970 that 'now we have reached the stage where (the computer) is accepted as an integral part of the activities of government, banking, insurance, industrial management, transport control, retailing, production, engineering design, and scientific research and development' (Select Committee on Science and Technology, 1970, Vol.1). In industry, as in government, information is the basic input required for management and the introduction of computers has improved the quality of management decision making, increased the efficiency of production and distribution processes, and has revolutionised the operation of the financial sector. In defence, computers are vital for strategic and tactical planning and control, and for specific applications such as the flight control of ballistic missiles. The changes which computer technology has brought to industry have been referred to as the 'second industrial revolution'. Indeed, it may be that the computer revolution is only the first stage of a wider electronic revolution. The importance of the electronic technology to the future development of Europe has been recognised by the Commission of the European Communities: 'A strong capability in these related industries is essential to Europe's future' because:

- i. The character of our society will depend on our skill in using these new technologies, with their almost limitless possibilities.
- ii. Most industries and many services will become dependent on these technologies.
- iii. The remarkable growth rate of the market for these industries means that by 1980 they will be responsible, together, for over 6 per cent of Europe's gross national expenditure. [Commission of the European Communities (1976) Vol.1 p.1].

- 5.3 It is this rapid rate of growth of the computer and electronic industries as compared with the relatively sluggish growth of manufacturing industry as a whole in West Germany and UK during the 1970s which identifies this sector as a major source of employment and economic growth for the next decade. The rate of growth of the computer industry has been such as to develop from infancy in the early 1950s to being the world's third largest industry (after petroleum and automobiles) in 1977. The growth of output of computers and associated equipment in the UK and the BRD is shown in Table 5.1. The growth of the computer industry has provided an important stimulus to growth and technological advance in related industries — components, telecommunications, consumer electronics and medical equipment. The increase in computing power and fall in computing cost made possible by the micro-processor suggests that the potential spinoff from electronic technology to the economy as a whole has yet to be fully realised.

- 5.4 Governments' concern to encourage and protect their domestic computer industries is heightened by the key strategic role of computers and computer technology. This was explained by a British government minister: 'What is certain, is that the role of the computer and its ancillaries will continue to expand and to

penetrate both wide and deep into the nation's activities . . . it is not surprising therefore that the computer and the national capacity to move forward into this "computer age" should be a matter of deep pre-occupation not only to the British Government, but to all the Governments of Western Europe and to Japan. There is also evidence of the same pre-occupation in Russia and the countries of Eastern Europe and it is safe to assume the same will apply either now or in the near future in most other countries of the world.' [Select Committee on Science and Technology 1970, Vol.1, (S.C.S.T.)].

- 5.5 Concern by the two governments over the development of their domestic computer industries also reflects the domination of the world computer industry by American companies. In the late 1960's OECD estimated that US-owned companies accounted for about 90 per cent of computer installations in the western world, with one company, IBM, possessing about three-quarters of the world market by value (c.f. Table 5.2). IBM was the fourth largest US corporation in terms of capital employed and the IBM subsidiaries in France, Germany, UK and Italy form by far the largest European manufacturer of computers. In no other European industry is the dominant position of US multinationals more apparent or has given rise to more national concern than computers. At the same time, however, both governments have been wary at putting at risk their access to American computer technology. The British government explained the problem as follows: 'We are confronted with a powerful and pervasive technology which will rapidly become decisive in most of the nation's activity — but with the danger of its being entirely under the control of American owned companies. Should one therefore adopt a chauvinistic attitude to repel the invader and seek to create an entirely indigenous industry? But to do this would not only undermine longstanding and important trading relationships with the USA. It would also deny the UK the very kind of technological input it needs. Yet to fail to produce an indigenous industry would expose the country to the possibilities that industrial, commercial, strategic or political decisions made in America would heavily influence our ability to manufacture, to trade, to govern or to defend'. [S.C.S.T. (1970)].

C. The computer manufacturing industries of the UK and the BRD

- 5.6 The size and growth of the computer industries of the two countries are compared in Table 5.1. By the mid-1970s the electronic data processing (EDP) industries were of approximately the same size. Up to 1975 the UK computer industry achieved a higher rate of sales growth than the German industry, but since 1975 the German industry has grown substantially faster.
- 5.7 Foreign trade in computers in relation to the size of the domestic market and the output of the domestic computer industry is important in both countries. Table 5.3 shows imports and exports of computers. The figures must be treated with caution. The trade classification differs between the two countries, and the classifications have been revised over the period. Although the UK industry has exported a higher proportion of its output, the German computer industry appears to have been more successful in competing with imports — the market share of imports is much larger in the UK than BRD. Moreover, while BRD has had a strongly favourable trade balance in computers since 1974, that of the UK has been adverse.
- 5.8 The structure of the computer industry in both countries reflects a single dominating factor — the enormous research and development expenditure required for any company to keep abreast of technological change in the industry. As a result, in both the UK and the BRD, the domestically-owned sector of the industry has developed by merger and rationalisation culminating in the formation of a single manufacturer of large and medium-sized mainframe computers. In the BRD Siemens acquisition of the computer interests of Telefunken-AEG made it the sole German-owned manufacturer of a range of computer systems. In the UK, the formation of ICL in 1968 was the climax of a long series of mergers and acquisitions among domestic manufacturers.
- 5.9 In meeting the 'American challenge' in the market for medium and large computers, the UK has been in a far stronger position than Germany. As was noted by the UK Select Committee on Science and Technology [1970, Vol.1]: 'The UK is the only country outside America which has a significant indigenous computer industry capable of development into a world class international enterprise.' But while ICL held almost half the UK market in 1969, its market share has fallen compared with Siemens growth of its share of the German market (See Table 5.4). The problems facing the European computer manufacturer when competing against the US-owned multinationals is illustrated by Table 5.5. As a percentage of sales revenue, ICL's R and D expenditure exceeds that of the major manufacturers yet IBM's R and D budget was twice the size of ICL's total sales revenue.
- 5.10 ICL has developed and marketed its computers independently of other companies. Siemens on the other hand has developed its computers primarily in association with other companies. These associations have been unsuccessful and under these difficult circumstances Siemens' ability to expand its share of the West German computer market has been remarkable. Between 1963 and 1971 Siemens manufactured the RCA

Table 5.1

COMPUTER PRODUCTION AND EMPLOYMENT, BRD AND UK

		1971	1972	1973	1974	1975	1976	1977
BRD								
Computers	DMm	—	1691	1515	1277	935	1085	2045
	£m	—	210	233	212	172	240	505
Peripherals	DMm	—	1722	1310	1659	1439	1572	1820
	£m	—	213	202	275	265	347	450
Total computer sales	DMm	2419	3412	2825	2936	2374	2657	3865
	£m	285	423	435	487	437	587	955
Employment (thousands)		33	34	39	41	40	36	38
UK								
Computers	DMm	—	1048	864	729	690	724	765
	£m	—	130	133	121	127	160	189
Peripherals	DMm	—	1177	1195	1434	1543	1805	1862
	£m	—	146	184	238	284	399	460
Total Computer sales (MLH 366)	DMm	1576	2306	2292	2450	2652	2674	2697
	£m	186	286	353	416	489	591	675
Employment (thousands)		58	50	51	45	43	44	45
Note: The exchange rates used were as follows:								
		1971	DM1 = £0.118		1972	DM1 = £0.124		
		1973	DM1 = £0.154		1974	DM1 = £0.166		
		1975	DM1 = £0.184		1976	DM1 = £0.221		
		1977	DM1 = £0.247		1978	DM1 = £0.262		

Source: UK Business Monitor; UK Census of Production, 1972; Production Produzierender Gewerbe

Table 5.2

THE WORLD COMPUTER MARKET: SHARES OF INSTALLED GENERAL PURPOSE COMPUTERS BY MANUFACTURER (BY VALUE) AT 1.1.75

	World	Western Europe	USA	West Germany	UK	France	Japan
IBM	56.60	54.40	68.76	61.56	39.72	58.46	35.50
Honeywell	8.19	10.22	8.96	7.00	9.58	15.04	1.02
Univac	6.52	5.68	7.61	5.29	4.80	3.97	7.50
Comecon manufacturers	5.17	—	—	—	—	—	—
Japanese producers	4.69	—	—	—	—	—	50.23
Burroughs	4.64	3.28	5.74	1.09	5.26	3.77	3.22
ICL	3.14	8.3	—	—	31.14	2.97	—
Unidata ¹	2.68	8.82	—	17.56	—	9.91	—
NCR	2.41	2.03	2.87	0.98	2.89	1.29	1.83
Others	5.96	7.26	6.06	5.45	6.61	8.19	0.70

Note: 1 = Includes Siemens

Source: Third data processing programme of the Federal Government, 1976-1979

Table 5.3

IMPORTS AND EXPORTS OF COMPUTERS

		£m				
		1974	1975	1976	1977	1978
Analogue and hybrid machines	IMPORTS	5.0	1.9	2.6	3.5	3.3
	EXPORTS	1.6	1.3	0.5	2.6	5.2
Computer systems	IMPORTS	11.7	16.2	25.0	28.6	39.5
	EXPORTS	47.7	43.6	72.0	95.0	108.3
Central processing units	IMPORTS	66.3	69.7	113.3	135.3	170.7
	EXPORTS	42.8	42.5	64.8	126.8	112.2
Central memory units	IMPORTS	19.8	30.6	36.3	42.5	53.5
	EXPORTS	32.1	33.2	41.7	49.3	34.5
Punches, verifiers and calculators	IMPORTS	5.7	5.1	5.3	4.7	4.6
	EXPORTS	2.0	2.6	3.8	4.0	9.2
Other independent units for computing and data storage	IMPORTS	11.7	9.8	—	22.2	25.5
	EXPORTS	3.7	4.4	—	7.2	8.0
TOTAL IMPORTS		164.9	177.7	240.5	309.9	394.0
TOTAL EXPORTS		206.4	193.6	312.2	408.2	411.2
<i>UK</i>						
Automatic data processing machines	IMPORTS	41.0	49.3	89.0	91.6	94.6
	EXPORTS	46.2	54.8	69.9	70.8	141.7
Central processing units	IMPORTS	12.6	18.4	17.3	33.1	69.3
	EXPORTS	4.3	5.0	10.7	6.7	34.8
Peripheral and other units	IMPORTS	115.4	134.8	227.6	337.5	378.3
	EXPORTS	114.9	152.9	191.8	263.3	273.5
Parts	IMPORTS	177.8	180.8	218.5	229.8	297.2
	EXPORTS	104.1	119.3	134.7	168.3	192.9
TOTAL IMPORTS		345.8	383.3	552.4	679.4	879.4
TOTAL EXPORTS		269.5	332.0	407.1	509.1	642.9
Business monitor figures of computer exports		208.0	242.2	317.3	337.6	

Note: Deutsche marks have been converted to £ sterling at the rates shown in Table 5.2

Sources: *Aussenhandel, nach Waren und Ländern* (Spezial handel); *UK Overseas Trade Statistics*; *Business Monitor*

Table 5.4

MARKET SHARES BY VALUE IN UK AND WEST GERMANY, 1969 and 1976

	UK		West Germany	
	1969	1976	1969	1976
IBM	28	46	46	
Honeywell	8	8	2	7
ICL	49	26	1	1
Siemens	—	—	13	19
Univac	—	5	7	5

Sources: Stoneman (1975) p.21, Soris Report (Turin June 1970), *Financial Times*, 19 February 1979 p. 17.

Table 5.5

SALES, PROFITS AND R AND D FOR SOME MAJOR COMPUTER MANUFACTURERS, 1976

	<i>Sales (\$m)</i>	<i>Pretax Profits (\$m)</i>	<i>Profit/Sales Ratio</i>	<i>R & D (\$m)</i>
IBM	16,304	4,519	28	1,012
NCR	2,313	173	7	94
Burroughs	1,902	315	17	108
Sperry Univac	1,438	96	7	159
Honeywell	1,428	117	8	126
Control Data	1,358	92	7	59
Digital Equipment	736	119	16	58
ICL	502	40	8	50

Note: * = Group totals

Source: *Economist*, 13.8.77, p.64

Spectra 90 series under licence. In 1971 RCA abandoned its computer interests and, together with Philips and CII, Siemens formed Unidata. In 1974 Unidata folded following CII's decision to merge with Honeywell-Bull. Since 1974 Siemens has concentrated on the independent development of a range of computers plug-compatible with IBM. In March 1978 Siemens entered the small office computer market and later in 1978 agreed with Fujitsu, Japan's leading computer manufacturer, to market Fujitsu computers in Europe.

5.11 In the manufacture of small computers the UK's superiority in large computers is reversed; German manufacturers have been far more commercially successful. Table 5.6 shows the two countries' production and trade in this sector of the market.

Table 5.6

THE MARKETS FOR AND PRODUCTION OF MINI COMPUTERS AND SMALL BUSINESS SYSTEMS IN 1974

	<i>Market £m</i>	<i>Production £m</i>	<i>Exports £m</i>	<i>Imports £m</i>
WEST GERMANY				
Mini Computers ¹	9.7	5.4	1.8	5.7
Small business systems	72.0	87.0	34.0	19.0
UK				
Mini Computers ²	9.3	4.4	0.6	5.5
Small business systems	35.0	25.0	7.5	11.0

Note: 1. General purpose mini computers costing up to \$40,000
2. e.g. Systems sold by Mixdorf, Philips, NCR, Olivetti

Source: Commission of the European Communities 1976, Vol.III, p.91.

The comparative success of the German manufacturers may, in part, reflect the larger size of this sector of the market in the BRD. In 1973 the numbers of installed computers were estimated as follows:

	<i>Very Small</i>	<i>Small</i>	<i>Medium</i>	<i>Large</i>	<i>Total</i>
West Germany	3,584	8,196	2,233	417	14,330
UK	1,978	4,461	1,244	310	7,993

Source: Commission of the European Communities, 1976, p.67

5.12 Despite the entry of large computer manufacturers (including IBM, ICL and Siemens) into the small computer market, this market is supplied primarily by specialist companies, notably the US-based Digital Equipment Corporation. The principal German manufacturers are Nixdorf (with about 35 per cent of this market), Kienzle, Triumph-Adler (owned by Litton) and Dietz. In the UK specialist domestic manufacturers of small computers such as Computer Technology Ltd, have not obtained a large market share, as shown in Table 5.7.

Table 5.7

NUMBERS OF MINI COMPUTERS INSTALLED IN THE UK AT THE BEGINNING OF 1977

Digital Equipment Corp. (US)	4,337
Data General (US)	2,250
OAL (US)	1,800
GEC (US)	1,688
Ferranti (UK)	791
Computer Technology (UK)	445

Source: *Financial Times*

5.13 One of the most significant features of the computer market in the two countries has been the growing importance of peripheral equipment — terminals, printers and magnetic memory units. Tables 5.2 and 5.8 show that in both UK and BRD the output of peripherals now exceeds in value the output of central processing units and complete systems. In both countries the market for peripherals is dominated by US suppliers and their subsidiaries; Table 5.8 shows the share of the market supplied by imports was 82 per cent in the BRD and 77 per cent in the UK.

Table 5.8

THE MARKETS FOR AND PRODUCTION OF COMPUTER PERIPHERALS IN 1974

	Market £m	Production £m	Exports £m	Imports £m
WEST GERMANY				
Local computer ¹ peripherals	560	104	19	475
General purpose ² terminals	96	56	20	60
UK				
Local computer ¹ peripherals	260	60	5	205
General purpose ² terminals	100	44	14	70

Note: 1. Discs, drums magnetic tapes, fast printers etc.
2. Visual display, teleprinters, heavy terminals.

Source: Commission of the European Communities, 1976, Vol.III, p.89.

C. Other sectors of the computer industry: Computer services and integrated circuits

5.14 While the computer industry is normally identified with the manufacture of EDP hardware, there are two related sectors which from their importance to the national economies and public policy cannot be ignored. The first is computer services (the supply of software, data processing services and consultancy) the second is electronic components, notably integrated circuits.

5.15 As the price of computer hardware has continued to fall in real terms so the relative importance of the labour intensive computer service industry, as measured by value of output, has grown. Table 5.9 shows the growth in total revenue of the UK computer services industry. Official statistics on the output of computer services tend to be under-estimates. It is generally agreed, however, that software accounts for over half the total costs of bringing a computer system into operation, adding the value of other computer services would imply that the output of services exceeds the value of the output of hardware.

Table 5.9

SALES BY THE UK COMPUTER SERVICE INDUSTRY

Tot		1971	1972	1973	1974	1975	1976	1977
Total billings	£m	69.2	79.7	104.0	128.6	164.3	220.7	265.4
of which:								
UK public service clients	£m	7.7	11.1	13.8	15.2	18.4	30.3	33.1
Foreign clients	£m	2.5	3.9	4.8	5.7	7.6	10.6	13.6

Source: Business Monitor SDQ9

- 5.16 The importance of integrated circuits derives less from the value of their output (see Table 5.10) as from their role as the principal component for computers and the primary vehicle for the transfer of electronic technology to other sectors of the economy. American companies dominate a world market characterised by fierce competition in technology and price. Of a total world market for integrated circuits estimated at \$3,150 million in 1976, US companies were estimated to have 62 per cent (Commission of the European Communities, 1976, Vol.III, p.95). The largest manufacturers are Texas Instruments, Motorola, Fairchild and RCA. IBM is also a large manufacturer but only for its own use. In Germany the manufacture of integrated circuits is led by Siemens and AEG-Telefunken. Siemens sales of integrated circuits amounted to about \$75 million in 1978. In Britain the manufacture of integrated circuits is a relatively under-developed area of electronic component manufacture. UK companies with interests in integrated circuits are Plessey, Ferranti and GEC. The UK accounts for 18.2 per cent of the Western European integrated circuit market as compared with 37.2 per cent for the BRD. Both West Germany and the UK have large negative balances in the trade of integrated circuits (Table 5.10).

Table 5.10

PRODUCTION, EXPORTS AND IMPORTS OF INTEGRATED CIRCUITS AND OTHER MICRO-CIRCUITS

			1973	1974	1975	1976	1977
Manufacturers' sales	BRD	DMm	276	308	282	336	444
	UK	£m	30.4	40.8	37.4	49.0	73.6
UK Exports		£m	7.2	15.0	14.3	21.1	41.2
UK Imports		£m	27.1	43.0	46.6	70.5	99.2

Source: Business Monitor PQ 36.

D. Policies of the BRD and UK governments towards computer technology and the computer industry: an overview

- 5.17 BRD policies towards the computer industry have been in the form of three electronic data processing programmes between 1967 and 1979 which have covered financial support to the industry for R and D, research programmes undertaken by universities and institutes and the training of manpower for the effective use of computer technology. The programmes have been implemented by the Federal Ministries for Economics and Finance and the Federal Ministry for Education and Science. UK policies towards the computer industry and EDP technology have comprised a number of policy measures including some schemes offering financial assistance to individual manufacturers and for the development of particular types of products, preference in public procurement, the finance of research by universities and other public sector organisations. Unlike West Germany, British policy has shown little evidence of overall co-ordination. While support programmes for the industry are administered by the Department of Industry (between 1964 and 1972 by the Ministry of Technology) which also acts as the sponsoring department for the industry, central government procurement and policy on the use in government of computers is controlled by the Civil Service Department, computer education and training is the responsibility of the Department of Education and the National Enterprise Board (NEB) has also been involved in providing finance to the industry.

- 5.18 Probably the most noticeable single difference between the UK and West German policies towards their domestic computer industries is the much greater amount of financial assistance by the Federal government to the computer industry. Table 5.11 shows government expenditure on policies to develop EDP in West Germany, UK, France and Belgium. Comparing support for the computer industry and government expenditure on research, expenditure by the UK government between 1971 and 1975 was far below that of the West German and the French governments.

Table 5.11

STATE AID FOR ELECTRONIC DATA PROCESSING, 1971-1975

	Assistance to hardware industries	Application and research	Education
W. Germany	DM705.4 million (£112.9m)	DM784.6 million (£125.5m)	DM919.9 million (£147.2m)
UK	£37.1 million	£18.44 million	N.A.
France	FF870 million	FF616 million	FF420 million
Belgium	BF1950 million	BF186.6 million	N.A.

Source: Commission of the European Communities, 1976.

Table 5.12

THE DISTRIBUTION OF GOVERNMENT EXPENDITURE ON ELECTRONIC DATA PROCESSING IN WEST GERMANY

1st programme 1967-1970

2nd programme 1970-1975

3rd programme 1976-1979

R & D SUPPORT TO HARDWARE MANUFACTURERS				R & D SUPPORT TO HARDWARE MANUFACTURERS		DM 554.3m
Min. of Economics & Finance	DM112.4m	Min. of Economics & Finance	DM 188.0m	System architecture and programme languages		DM 73.0m
Min. of Education & Science	DM128.2m	Min of Education & Science	DM 514.7m	Data processing technology		DM 76.3m
DATA PROCESSING APPLICATIONS				Remote peripherals		DM 62.0m
	DM 57.0m	Min. of Economics & Finance for software packages	DM 79.0m	Small Systems		DM 149.0m
		Min. of Education & Science for systems and development	DM 479.0m	Medium and large systems		DM 194.0m
BASIC RESEARCH & SPECIAL PROGRAMMES				APPLICATIONS		DM 561.6m
	DM 42.0m		DM 226.6m	Information systems		DM 165.0m
DATA PROCESSING EDUCATION				Medical information		DM 141.3m
				Teaching		DM 15.5m
Higher education	DM 43.0m	Higher education	DM 757.9m	Computer aided design		DM 66.0m
Professional training centres	DM 4.0m	Professional training centres	DM 162.0m	Process control		DM 94.8m
				Tele-processing		DM 31.5m
				Aid to users		DM 42.0m
				Shape recognition		DM 5.5m
				TRAINING		DM 264.2m
				Supra regional research programmes		DM 86.5m
				Scientific data exchange		DM 6.0m
				Regional computing centre		DM 168.0m
				Professional training centres		DM 3.7m
				<i>Gesellschaft für Mathematik = und Datenverbreitung</i>		DM 194.8m
TOTAL	DM386.6m	TOTAL	DM2409.9m	TOTAL		DM1574.9m
R & D SUPPORT FOR ELECTRONIC COMPONENTS						
1969-1970	DM 2.2m	1971-1975	DM 189.8m	1976-1978		DM 184.0m
				1979		DM 200.0m

5.19 In view of the similar objectives of the two governments in relation to their EDP industries and the similar problems faced by both industries, close parallels in the EDP policies of the two countries might be expected. In both countries governments have sought to accelerate the technological development of their indigenous computer industries by means of subsidy. The primary means of achieving this have been R and D subsidies to the manufacturers of computer hardware and the financing of research by public sector bodies (universities and special research centres such as the Gesellschaft für Mathematik und Datenverarbeitung and the National Computing Centre). However, UK policies differ from those of the BRD in being more selective and more interventionist than those of the BRD. Thus in providing support for R and D most UK expenditure has been made available exclusively to ICL, whereas BRD support has been made available to a range of firms. Also, UK policy has extended beyond the offer of grants and loans to private firms to direct intervention in private industry (e.g. government was responsible for the merger which created ICL) and to the launching of new firms (the NEB has been responsible for launching new micro-electronics and software firms). Unlike West Germany, the UK has pursued a particularly active policy of directing public purchases of computers towards domestically owned companies.

5.20 Differences between the policies of the two countries are also apparent in the distribution of government aid between the different sectors of the industry. In the UK, support has been concentrated on mainframe computers (i.e. the basic product range of ICL). In West Germany, on the other hand, assistance has been distributed more widely to cover small as well as large computers, peripherals and, most notably, software and electronic components. It would seem, therefore, that while the UK government policy between 1968 and 1975 was concerned chiefly with the survival of ICL, the approach of the German government has been to encourage the development of the EDP industry as a whole.

Table 5.13

UK GOVERNMENT FINANCIAL AID FOR THE COMPUTER INDUSTRY

	1969/70	1970/71	1969/70 £m	1970/71 £m	1971/72 £m	1972/73 £m	1973/74 £m	1974/75 £m	1975/76 £m	1976/77 £m	1977/78 £m
International Computer (Holdings) Ltd			4.0	3.3	2.3	12.0	9.5	10.2	8.3	3.3	—
Advanced Computer Technology Project and other shared-cost computer projects			0.7	1.0	0.7	0.8	2.3	1.0	0.7	0.9	0.6
Software products scheme and systems and software development			—	—	—	1.5	0.8	0.4	0.4	0.3	0.5
Micro-electronics applications and production schemes			—	—	0.3	0.9	1.3	1.2	1.7	2.1	2.4
Electronic component sectoral scheme			—	—	—	—	—	—	—	—	4.0
TOTAL			4.7	4.3	3.3	15.2	13.9	12.8	11.1	6.6	7.5
Also, government support for:											
Computer Aided Design Centre			0.5	0.5	0.4	0.7	1.0	1.3	1.0	1.1	1.1
National Computing Centre			0.6	0.6	0.6	0.8	1.1	1.2	1.2	1.2	1.2

Sources: Research and Development Requirements Boards Reports, Trade and Industry 27 May 1977; Commission of the European Communities (1977)

E. Government financial aid to the manufacturers of computer hardware

The UK

5.21 British government financial support for the computer manufacturing industry has until recently consisted primarily of assistance to ICL, the part-publicly owned UK computer firm established in 1968 from a government-sponsored merger of the major UK computer manufacturers, ICT and English Electric Computers. The resulting company, International Computer (Holdings) Limited (ICL) was owned 53.5 per cent by ICT shareholders, 18 per cent by English Electric, 18 per cent by Plessey and 10.5 per cent by the government. Government was to appoint one director to the Board of ICL but was not to interfere in the day-to-day management of the company.

5.22 Total finance provided by government amounted to £17m over 5 years. This included:

- (a) £3½m for ordinary shares of £1 each in ICL, 2 shillings payable on issue and the balance in 1972;

- (b) £13½m from the Ministry of Technology over 5½ years as a grant towards R & D expenditure.

This sum was agreed on the basis of ICL's estimates of its required expenditure on R and D in order to maintain technological competitiveness with US manufacturers, and the funds which it was able to provide from its own resources. The intention was that by 1971 ICL should have developed its technology and its sales to the point where support for ICL's research and development, over and above allocations of funds for the development of specific projects, would be necessary.

- 5.23 During 1971 it became evident that ICL could not be expected to maintain technological competitiveness with American companies without considerable support from government in the development of a new range of computers. On 3 July 1972 the Government agreed to provide ICL with £14.2 million over the period to September 1973 to assist ICL with the launch of its new series. The amount of this support took account of ICL's need to converge to two product lines originating from ICT and English Electric, and the financial pressures on ICL due to rising costs and the world wide recession in computer orders. On 4 July 1973 it was announced that the government would provide a further £25.8m to support R and D over the period October 1973 to September 1976. These sums of financial support were in principle repayable by a levy on sales. Again the government re-affirmed its intention that R and D support was temporary and noted that if the support was successful 'then in the company year 1976-77 ICL expects to have reached a level of size and profitability adequate to make further R and D support unnecessary' (S.C.S.T. 1973, Minutes of Evidence, p.28).
- 5.24 This support programme for the period 1972-76 was based on an appraisal of ICL's requirements and resources undertaken by officials advised by management consultants and merchant bankers. The sum of £40m in aid was based upon ICL's R and D expenditure on its 2,900 series of computers and the company's forecasts of its sales and cash flow over the period. The amount was to be recovered by a levy on ICL's pre-tax profits during the 7 year period in excess of 7.5 per cent of turnover up to a maximum of 25 per cent of pretax profit and subject to an overall maximum of £40m (discounted at 10 per cent per annum). Monitoring was by the Department of Industry CSE division with the assistance of a firm of management consultants. Payments of instalments of aid were conditional upon 'the Department being satisfied that the progress of the R and D programme and the financial and general state of the company are reasonably consistent with the expectation of commercial success; that the company is providing a reasonable contribution to the R and D programme from its own resources, and that it does not without the consent of the Secretary of State pay more than a minimum dividend' [G.M. Field and P.V. Hills (1976)]. Since direct support ended in September 1977, ICL has not received finance from government specifically to support its R and D programme, though ICL does benefit from schemes which are available to the industry as a whole.
- 5.25 Government finance for more general programmes of R and D in the computer industry has been comparatively meagre. The principal scheme, the Advanced Computer Technology Project set up in 1963 to encourage co-operation between computer companies and government research laboratories in basic research, was aimed at developing new components and techniques in the computer field. The project was initially aimed towards pre-prototypes of new computer systems for future commercial production. In 1965 the scope of the scheme was widened to include all aspects of computer systems including peripherals and software. Selection of projects is undertaken with assistance from the ACTP Advisory Committee which includes representatives from the computer industry, the Department of Industry, government research establishments and the National Computing Centre. Government involvement is on a 50-50 cost sharing basis. All contracts contain a clause for the repayment of government assistance by way of a levy on sales or royalties arising from the projects. Expenditure on computer R and D through ACTP and other shared cost R and D schemes has been noticeably low as indicated in Table 5.13.
- 5.26 UK suppliers of computers have also benefited indirectly from the subsidies which have been provided to purchases of computers. The 1966 Industrial Development Act introduced investment grants to all firms purchasing computers whether or not these firms were engaged in manufacturing. In 1970 these grants were replaced by investment allowances. The purpose of these incentives was to encourage the adoption by industry of EDP technology rather than to support the national computer industry — the incentives were paid whether or not the computers were purchased from UK or foreign-owned suppliers.

THE BRD

- 5.27 Direct Federal government support for hardware manufacturers has been exclusively in the form of grants and loans for R and D by manufacturers. The Federal Ministry for Education and Science supports basic research into EDP technology of a long run nature, the Federal Ministries for Economics and Finance concentrate on financing the applications of innovations and technological knowledge to the development and production of marketable products. Table 5.12 shows the budgets of the three programmes. Under the first programme, assistance was initially in the form of 20 year loans at 3 per cent, these loans then became

Table 5.14

PUBLIC SECTOR COMPUTER INSTALLATIONS IN NUMBER AND VALUE: BROKEN DOWN BY MANUFACTURERS
IN THE UNITED KINGDOM

<i>Manufacturers</i>	<i>Central Administrations</i>			<i>Local Administrations</i>			<i>Public Corporations</i>			<i>Total</i>	
	<i>number</i>	<i>value £ million</i>	<i>% by value</i>	<i>number</i>	<i>value £ million</i>	<i>% by value</i>	<i>number</i>	<i>value £ million</i>	<i>% by value</i>	<i>number</i>	<i>£ million</i>
National											
ICL	247	94.1	50.0	235	44.0	54.2	176	57.1	37.4	658	195.2
GEC	268	11.2	6.0	18	1.0	1.2	105	6.3	4.1	391	18.6
Ferranti	125	7.3	3.9	3	0.3	0.4	113	7.8	5.1	241	15.4
Computer Technology	115	2.3	1.2	2	0.1	0.1	43	0.9	0.6	160	3.3
Plessey	3	0.5	0.3	3	0.8	1.0	1	0.1	0.0	7	1.4
Digico	41	0.2	0.1	10	0.1	0.1	30	0.2	0.1	81	0.4
Others	22	1.1	0.6	3	0.1	0.1	15	0.5	0.4	40	1.7
TOTAL	821	116.7	62.1	274	46.7	57.1	483	72.9	47.7	1578	236.6
Foreign											
IBM	86	31.3	16.6	85	18.2	22.4	118	50.5	33.0	289	100.0
Honeywell	83	3.9	2.1	43	6.2	7.6	81	8.1	5.3	207	18.2
Univac	14	6.0	3.2	12	2.3	2.9	24	6.6	4.3	50	14.9
CDC	15	13.8	7.3	—	—	—	3	0.2	0.1	16	14.0
Burroughs	76	6.1	3.2	32	1.6	1.9	7	0.7	0.5	115	8.4
DEC	264	4.3	2.3	147	1.9	2.3	147	1.9	1.3	556	8.1
NCR	10	0.4	0.2	63	3.1	3.9	23	1.1	0.7	96	4.6
Xerox Data	12	2.0	1.0	—	—	—	5	1.3	0.9	17	3.3
Phillips	20	0.2	0.1	29	0.3	0.4	12	0.1	0.1	61	0.6
Others	186	3.6	1.9	52	1.1	1.4	580	9.0	5.8	818	13.7
TOTAL	766	71.6	38.0	463	34.7	42.4	1000	79.5	52.0	2229	185.8
TOTAL GENERAL	1587	188.3	100.0	737	81.0	100.0	1483	152.4	100.0	3807	421.8

Source: Commission of the European Communities, 1976, Vol.III, p.119

interest-free covering 25 per cent of project costs and repayable only in the event of commercial success of the project. The major recipients of support under the first programme were the two domestically owned manufacturers of medium and large computers: Siemens and Telefunken-AEG. In the second and third programme not only were the budgets for R and D support greatly increased but the percentage of project costs covered by government finance more frequently exceeded the basic 25 per cent level. Under the third programme assistance may be 25 per cent, 33 per cent or 50 per cent of production and development costs dependent upon the degree of risk of the project. The highest rates relate to basic research and grants were repayable if the project was commercially successful. Since 1973 repayment conditions have no longer been maintained. Following the first EDP programme support for computer hardware manufacturers has been increasingly directed away from the large computer manufacturers and towards small computers. Under the second programme over DM400 million was intended for Siemens, but this fell to around DM280 million in the third programme. In the third programme R and D support for medium and large systems was budgeted at DM194 million as compared with DM149 for small systems. The policy of assisting R and D into the small computer sector sharply contrasts with UK policy where government has provided only the most meagre support to specialist manufacturers of small systems. The German government's emphasis on the small computer sector is particularly significant in view of the precarious position of the German large computer sector following Siemens's disastrous associations with other companies and the large R and D requirement of Siemens following its decision to follow a 'go it alone' policy of developing IBM compatible equipment. German R and D support also contrasts with that of the UK in the support it has offered for the development of peripherals. In the third programme a budget was specifically allocated to the development of peripherals. As Table 5.1 shows, in both the UK and West Germany, the rate of growth output of peripherals has far outstripped that of computer systems and central processing units.

F. Computer research by public sector bodies

- 5.28 In both the BRD and the UK the development of EDP technology has been regarded as too important to be left entirely to the private sector and in both countries major contributions to basic research have taken place both in universities and research institutes. Publicly financed EDP research in the BRD has been mainly at the Gesellschaft für Mathematik und Datenverarbeitung (Institute for Mathematical and Data Processing) (GMD), Bonn. Under the third EDP programme the budget for the GMD totalled DM194.8 million. UK government expenditure on EDP research in public sector institutions has been a fraction of that in the BRD. Expenditure by the Science Research Council on computer-related research in the universities has averaged about £1 million annually during the 1970s. R and D expenditure by the Computers, Systems and Electronics Requirements Board in government research organisations increased from £2.4m to £4.4m between 1974/5 and 1977/8. The principal government financed organisations engaged in research on computer applications are the Computer Aided Design Centre, the National Physical Laboratory and the National Computer Centre.

G. Support to the computer industry through public procurement policy.

- 5.29 Government policy regarding the purchase and use of computers in the public sector is of great importance to the computer industries of both countries since government is the most important single customer for computers and its level of purchases is the most important factor affecting the prosperity of the industry as a whole. In the UK the public sector market for computers was valued in 1974 at £421.8 million (35.1 per cent) out of a total UK computer market of £1,199 million. In the BRD public sector demand accounted for about 12.5 per cent of a total market worth about £11,850 million at the beginning of 1975. The public sector is of particular importance to manufacturers because of its demand for very large systems and its willingness to lead the private sector in installing advanced technology and new computer systems. Clearly a discriminatory public sector procurement policy offers a particularly potent means of support for indigenous computer manufacturers and European governments have justified such preference on the grounds that the US government has traditionally pursued a 'buy American' policy on computers. In fact, US procurement policy has followed a somewhat more complex strategy, for, not only has preference been given to domestic manufacturers, but, in addition, the Federal government has sought to counteract the dominance of IBM by offering the bulk of its business to smaller manufacturers.
- 5.30 Central government policy in the UK has, since 1965 been to purchase computers from British firms where reasonably possible and to encourage other public sector bodies to do likewise. Until 1968 the government sought competitive tenders from a number of different manufacturers, then in 1968 the purchasing procedure was modified so that for each order detailed negotiations were held with only three suppliers. Following the computer merger a single tender policy was introduced. Government procurement policy was explained by the Civil Service Department as follows (S.C.S.T. 1970, Vol.1, p.445):

- '(1) To acquire large computers by single tender action from ICL, subject to satisfactory price, performance and delivery dates.

Table 5.15

DP SYSTEMS INSTALLED IN THE PUBLIC SECTOR IN THE BRD AT 1.11.1975 (SMALL SYSTEMS EXCLUDED)

	<i>Number (total)</i>	<i>Number of rent installations</i>	<i>Number of purchased installations</i>	<i>Monthly rental</i>	<i>Expenses for purchasing</i>
		(1)	(2)	(3)	DM millions (4)
1. IBM	87	80	7	13.5	37.8
2. CDC	4	—	4	0.1	3.6
3. UNIVAC	1	—	1	0.1	0.0
4. Honeywell-Bull	1	—	1	0.0 ⁽⁵⁾	0.0
5. DEC	3	—	3	0.0 ⁽⁵⁾	6.7
6. CII	1	—	1	0.0 ⁽⁵⁾	0.0
7. Telfunken	15	4	11	1.1	15.0
8. Siemens	60	48	12	5.9	35.7
TOTAL	172	132	40	20.7	98.8

Note: (1) Data-processing systems the elements of which are principally leased.
 (2) Data-processing systems the elements of which are principally purchased.
 (3) Expenses for leasing and services.
 (4) Expenses for purchased installations since 1971 and in operation.
 (5) Rounded

Source: Commission of the European Communities 1976, Vol.III, p.116

- (2) To acquire smaller computers by single tender action (normally from ICL) when they are intended to lead-in to the use of a large computer of the same family or where there are other reasons for seeking a compatibility or flexibility . . .
- (3) In all other cases to seek competitive tenders from not less than three firms including at least one offering a system of British manufacture: to evaluate the tenders objectively — and to award the contract on the merits of the evaluation, allowing preference in favour of any British machine provided that there is no undue price differential as compared with overseas suppliers, that the British machine is technically suitable and that no undue delay is involved.'

Table 5.14 shows that national manufacturers have gained a far larger share of the public sector market than of the private sector market. At the end of 1974 ICL accounted for about 46 per cent of the value of public sector computers.

- 5.31 In contrast to the UK, the BRD government has been scrupulously careful to avoid special preference to individual manufacturers, or even to national manufacturers as a group, in its purchasing policy. The computer purchases by the Federal government and Länder are subject to strict rules which require all purchases to be put out to tender. Tenders are assessed in terms of price and performance and only discrimination in favour of European suppliers is permitted. As a result European manufacturers at the end of 1975 had a larger share of the German public sector market (44 per cent) than of the total market (20 per cent). IBM was the largest supplier of computers to the German public sector with Siemens as a close second. How far the policy of European preference extends to giving preference to non-German European manufacturers is difficult to assess, but it is noticeable that Siemens and Telefunken are the only European manufacturers with a significant share of the German public sector market. Table 5.15 shows the breakdown of the German public sector market between suppliers. The European Commission has ruled that discriminatory purchasing of computers by governments must end by 1980.

H. Government support for software

- 5.32 Financial support by the UK government is relatively recent and the sums involved have been small. Despite the large value of software business in the two countries and its rapid growth in relation to the hardware industry, it has received much less attention from government than the manufacturing sectors of the EDP industry. This is particularly true in the UK where government support has traditionally been biased towards manufacturing industry and has tended to favour large rather than small firms. In 1965 the Advanced Computer Technology Project was extended to software, but little finance was provided for software projects. While ICL was able to benefit from general government support to develop its software services, specialist software firms received little or no government support. In 1973 the government established a software development scheme on a 50-50 shared cost basis. Between 1974/75 and 1977/78, however, total expenditure under the scheme amounted to only £1 million. More recently direct intervention by government into the software industry has taken place with the establishment of Insac Data Systems Ltd., a wholly owned subsidiary of the National Enterprise Board, which provides overseas marketing for UK software. An investment of £20 million over five years is envisaged.

5.33 In the BRD financial support for the development of software has been an integral part of government policy towards the EDP industry since the first EDP programme (1967-71), support for software development has been provided by the Ministries of Economics and Finance on the same basis as support for hardware development. The first payments for software development were made in 1970. Under the first programme software support by the Economics Ministry was as follows: 1970 DM3m (hardware DM30m), 1971 DM14m (hardware DM48m), (Select Committee 1971, Vol.III, p.32). Under the second EDP programme 1971-75 Economics Ministry support for software was budgeted at DM100m, compared with DM170m for hardware. The third EDP programme provides an even larger budget for computer applications.

I. Financial support for integrated circuits

5.34 Although the manufacture of integrated circuits is only a part of the electronic components industry with a modest production value, in both countries governments have introduced special schemes to encourage R and D into manufacture of and application of integrated circuits. This reflects the growth potential of this sector of the electronics industry and the importance of these components in transmitting electronic technology to other parts of the economy.

5.35 In the BRD support for R and D into electronic components has been the subject of four special programmes commencing in 1969 (see Table 5.11). Under the second, third and fourth programmes, the budgets for financial support have been almost identical – approaching DM200m. The major part of this budget has been for R and D into integrated circuits and in the current programme support is concentrated on the very large integrated circuits. In all of the four programmes the major part of the budget has gone to Siemens with AEG-Telefunken taking a significant share of the remainder.

5.36 In the UK, after virtually ignoring the electronic components industry, government departments and agencies now appear to be falling over one another to establish schemes to encourage the development and application of micro-electronic technology. As one industry expert has noted: 'never have so many politicians jumped on so small a thing as a micro-chip so late in the game' (Financial Times, 19 February, 1979, p.18). The principal schemes have been:

- i. R and D Requirements Board for Computers and Systems and Electronics: – £7.4 million was made available in 25 per cent grants and 50 per cent shared most agreements between 1974/5 and 1977/8.
- ii. The Electronic Components Scheme was launched by the Department of Industry under section 8 of the 1972 Industry Act. A £20 million budget was fully committed by the end of 1977.
- iii. The micro-electronics Industry Scheme was established in July 1978 with a five year budget of £70 million for 25 per cent grants and 50 per cent shared-cost projects for the development of micro-electronic products and processes.

5.37 The two principal government-backed new ventures in integrated circuits have been support for two projects aimed at the establishment of plants to build very large scale integrated circuits. One, Inmost, is an entirely new venture backed by £50 million from the NEB. The other is a joint venture by GEC and Fairchild (a major US producer) backed by the Department of Industry.

J. Examination of the differences in the policies towards computers and the computer industry

5.38 Our overview of UK and West German policies towards the computer industry identifies three major differences between the policies of the the two governments: the amount of financial support, the choice of policy instruments and the distribution of support between the different sectors of the industry. In this section we examine these differences and attempt to explain them in terms of the different approaches in industrial policy in the two countries.

(i) The level of financial support

5.39 As tables 5.12 and 5.13 show, Federal government expenditure on the computer industry in the BRD has far exceeded that of the British government. During the period 1971-75 West German state expenditure on support for the computer manufacturing industry and computer applications and research was at least four times greater than British government expenditure although the German computer industry was not much bigger than that of the UK. British support for its computer industry has also been small in comparison with that of the French and Japanese governments. The lower level of government support to the computer industry in the UK might imply that the development of the computer industry in the UK has taken

a lower priority in the UK than in West Germany. However, ministerial statements and the active intervention by government into the industry clearly indicate that this is not the case.

- 5.40 The level of UK support for the domestic computer industry compared to that in West Germany is brought into sharper contrast when compared with the far larger total budget for selective industrial support in the UK than in the BRD. Thus in the UK subsidies to the computer and electronics industry have been far less than the subsidies to shipbuilding, aircraft and motor vehicles. What emerges is that while German selective assistance for industry has been concentrated upon high technology growth industries and industries deemed strategically essential, UK subsidies have been primarily to financially weak industries and enterprises for the purpose of maintaining employment. This difference in the distribution of support between UK and West German industries reflects the greater weight accorded by the British government to the reduction of unemployment than to the stimulation of economic growth and priority of short-term over long-term objectives which has characterised post-war economic policy in the UK.
- 5.41 It could be argued that because the UK computer industry possessed for most of the 1960s a more secure basis of independent technology than that of Germany, the needs of the UK for government support of EDP research and development were smaller. Certainly in the manufacture of large computers, ICL has benefited from the technological expertise which has been built up over a number of years through the pursuit of an independent development strategy. Siemens, on the other hand, was forced to develop its own computer technology at a late stage after the failure of its associations with foreign manufacturers. If such an argument influenced the British government in determining its level of assistance to the computer industry, then it would have been based on a narrow perception of the computer industry which ignored the importance in the industry of small computers, micro-processes, peripherals and computer services — for in these sectors UK performance, as we shall see, has been unimpressive.

(ii) The choice of policy instruments

- 5.42 Two principal differences are apparent in the choice of policies which the two governments have used to encourage the development of their domestic computer industries. First, the range of policies introduced by the UK government has been wider than that of the Federal government and has involved greater direct intervention in the industry. In the BRD support for the computer industry has been entirely in the form of grants and loans towards research and development. In the UK, although most financial assistance has been in the form of R and D support, measures to support the domestic industry have included discriminatory procurement policies (almost exclusively to the benefit of ICL) and the provision of long-term finance (notably equity participation in ICL and the NEB in Inmos and Insac). The interventionism of the UK government is apparent in its promotion of the 1968 computer merger and its leading role in the establishment of the two micro-processor ventures, Inmos and GEC-Fairchild.
- 5.43 Second, UK support has been more selective than that of the BRD. The bulk of assistance for the computer industry prior to 1976 was to ICL. In the case of integrated circuits, assistance has been concentrated upon two new ventures with more limited support for the established manufacturers. Programmes which have been available to the industry as a whole, such as the Advanced Computer Technology Scheme, have been awarded only very limited funds. The EDP programmes of the Federal government have been selective in the sense that R and D support funds and officials retain some discretion in applying the criterion set out in programmes concerning the eligibility of applying firms for support and in determining the amount of support. In particular it has been argued that Siemens received a disproportional share of the total budgets. However, the German programmes have not been selective between individual firms in the sense that support has been available to the industry as a whole.
- 5.44 The more generalist, market-orientated support policies of the BRD government, as compared with the more selective interventionist policies of the British government, reflect major differences in the approach to industrial policy already referred to. As shown in Chapter III, the post-war economic policies of German governments have been based on economic liberalism with the competitive market rather than government as the principal regulator of economic activity. To the extent that selective subsidies represent government interference with the market economy, the Federal government's EDP programmes indicates a willingness to modify the principle of a market economy but with a minimum of government intervention and with the express purpose of establishing a self-sufficient EDP industry. Moreover, the Federal Government has argued that the goals of its EDP programme and the methods of achieving them have not been in conflict with the principles of workable competition. For instance, the fostering of German computer manufacturers has helped to create a more competitive market for computer equipment in Germany by reducing the dominance of IBM.
- 5.45 Competition has also been encouraged by making financial assistance available to all qualifying firms in the

industry rather than by concentrating support on particular firms, or, as has occurred in the UK, on a single firm. By assisting competing firms and avoiding concentration on a few particular sectors of the EDP industry, it is likely that the government's programmes have avoided the distortions in resource allocation which would have resulted from a more selective policy.

- 5.46 It may also be argued that the limiting of subsidisation to R and D is a further manifestation of the Federal Government's adherence to the principles of the market economy. The finance of R and D can be justified as a means for promoting workable competition. Not only is R and D a particularly risky investment where returns are long term and uncertain and the capital market is unwilling to supply finance on a large scale, but in addition there are important economies (of scale and of risk-spreading) available to large multinational firms which justifies initial assistance to smaller companies. Support for R and D might also be justified as a means of promoting the external benefits of advances in EDP technology for other industries such as communications and engineering.
- 5.47 British government policies towards private industry have not been affected by the same philosophic constraints as has German industry policy. While British policies have also concentrated on supporting R and D and have been regarded as temporary supports to enable the industry to 'stand on its own feet', UK governments have been willing to achieve their objectives by public ownership and by discriminatory procurement policies. However, in comparison with other industries which have received government support over a long period (aircraft, shipbuilding, motor cars, textiles) in the computer industry there has been a more limited willingness on the part of government to set aside the market and to involve itself directly in company decision making over such matters as investment programmes, employment policy and locational decisions. Although the government appoints two directors to the ICL board, there is no evidence of government using its power to influence decision making in the company.

(iii) The distribution of financial assistance

- 5.48 Probably the most significant difference between the policies of the two countries in terms of the influence on the development and performance of their computer industries is that while the BRD policies have been support programmes for the development of EDP industry as a whole, British policy was, until recently essentially one of backing ICL. This strategy of merging the industry into a single firm and then supporting it is one which has been a feature of UK government intervention in a number of industries including motor car manufacture, heavy electrical goods, ball bearings and sugar refining. Taken to its logical conclusion it means nationalisation, as has occurred in the steel, shipbuilding and aircraft industries. In the case of the computer industry the practical result has been the concentration of support on those products which have been manufactured by ICL: principally medium and large sized computer systems. Those products in which ICL has not specialised – small computers, peripherals and integrated circuits – have received limited amounts of support in comparison with the support given to large computers and also relative to BRD aid for these sectors of the industry. The UK software industry has similarly been almost completely neglected by government until quite recently. While programmes have been introduced in recent years for the support of software (1972) electronic components (1973) and micro-processors (1977/78) these measures lagged considerably behind BRD assistance for these sectors of the industry.
- 5.49 The concentration by the UK government on the large computer industry and ICL in particular and the late extension of government support to other sectors of the EDP industry reflects a number of factors. In the first place, government seems to have identified the EDP industry with the manufacture of large computer systems. While the increasing emphasis on small systems, minis and micro-processors could not have been easily forecast at the beginning of the 1970s, it is certainly true that even in the late 1960s government had not fully recognised the importance of even peripheral equipment manufacture and software. Indeed, even after the Select Committee on Science and Technology drew attention to the importance of these sectors (see Moorman 1971 and Report to the Select Committee 1971), the UK government was slow to formulate policies towards these sectors of the industry. The failure to recognise the significance of the manufacture of computer equipment other than large computer systems and the importance of the services sector was probably exacerbated by the tendency for government industrial policy to be concentrated upon large manufacturing companies. The large-firm bias of the British government was paralleled by a relative neglect of small and medium-sized firms. This contrasts sharply with West Germany which has operated an active policy of assisting small and medium-sized firms.
- 5.50 Since 1976 it is clear that a strong shift in the emphasis of British policy towards the EDP industry has taken place. The clearest evidence of this is the heavy assistance being given to the manufacture and application of micro-processors. In a speech to Eurocamp '78, Martin Lam of CSE Division, Department of Industry noted: 'The maintenance of an independent capability was the main objective when ICL was set up but more emphasis is now being placed on improving the balance of payments in the computer field and

in making sure that the benefits of present and future developments in the computing techniques, particularly micro-processors; are properly transferred to British industry generally, including sectors which have hitherto not been regarded as included in the computer industry'.

K. The effectiveness of policy towards the computer industry

5.51 The principal problem encountered in measuring the effects of government policy on the computer industry in each country is to estimate how the industry would have performed in the absence of government policy. The approach followed here is a modest one which compares the performance of the computer industry in the two countries in terms of growth, trade balance and technical progress and attempts to relate performance differences to differences in government policy in the two countries.

5.52 Tables 5.1 and 5.3 detail the output and imports and exports for the computer industry as a whole in the two countries. Although the UK industry has consistently failed to achieve a positive balance of trade in computer equipment, the rate of growth of output of the industry during the 1970s has compared favourably with that of the BRD. Thus, although the level of government financial support has been much lower in the UK than in the BRD, this has not had the effect of retarding the relative growth of the UK computer industry. The ability of the UK computer industry to export about half of its output between 1974 and 1977 similarly indicates that a relatively meagre subsidisation of R and D has not resulted in the UK computer industry falling behind its competitors in the technological race.

5.53 In the individual sectors of the industry, however, the comparative performance of the UK and BRD shows considerable variation. Probably the most interesting contrast is between performance in the manufacture of large computer systems and performance in other sectors of the industry. As we have noted, BRD support has been for the development of the EDP industry as a whole, whereas UK policy was concentrated on the manufacture of medium and large computers by ICL. These policies are clearly reflected in the performance of the two countries' industries. The most impressive performance by the UK computer industry has been the ability of ICL to withstand competition from IBM and the other US multinationals in the main computer market. In other sectors of the market, however, notably in small computer systems, peripherals and components (notably integrated circuits), UK performance has been poor. In contrast, the performance of the BRD computer industry has been more even: in medium and large sized computers Siemens failed to establish itself as a major international supplier but has succeeded in increasing its share of the domestic market. In small computers, office computer systems and process control computers, the German industry has been very successful with firms such as Nixdorf and Kienzle keeping the share of the market held by American and Japanese firms to the lowest for any European country. In integrated circuits Siemens and AEG are among the largest European manufacturers (after Philips).

5.54 Any assessment of UK computer policy must begin with an examination of the success of government policy towards ICL. By comparing the post-1968 performance of ICL with the performance of the constituent companies prior to 1968, Stoneman (1975) has attempted to measure the effects of the 1968 merger and the subsequent government support. Measuring the performance of British Computers in terms of their competitiveness with IBM computers, Stoneman found:

- (a) ICL's relationship between price and size of computer differs from that for IBM, but generally ICL computers have been sold at higher prices than those of IBM once quality is standardised;
- (b) There is no significant evidence of any change in the competitiveness of British computers relative to IBM's over the period 1960-1975 and no evidence that the 1968 merger affected the competitive position of the British industry.

ICL's maintenance of competitiveness with IBM was during a period when the rate of technological advance was accelerating and the requirements for R and D expenditure to maintain technological competitiveness were continually increasing. 'The cost of developing a range of fourth generation machines (e.g. the ICL 2,900 series) to replace those of the third (e.g. ICL 1,900 series) is much greater than that required to replace second generation machines'. [Stoneman (1975), p.15]. The development costs of the ICL 2,900 series were estimated at £160m. Given ICL's sales revenue and pre-tax profits since its formation, it is implausible to conclude that sufficient finance for the development of the 2,900 series could have been generated internally by ICL and doubtful whether the funds could have been obtained on the capital market.

5.55 ICL has also been fairly successful in maintaining its share of the UK market. Although between 1969 and 1973 its market share fell, it has since then succeeded in maintaining its share of the market against its three major US competitors – IBM, Honeywell and Burroughs. Stoneman's conclusion is that 'the UK computer industry has been able to hold its own against the US companies . . . this performance has been

achieved in a situation where IBM spends more on R and D than ICL's total turnover. The efficiency of their R and D process is therefore of commendable quality' [Stoneman (1975), pp.21-27].

- 5.56 Despite the success of ICL in the market for medium and large computers, the relatively poor performance of the UK in other sectors of the computer market raises doubts as to the wisdom of the selective approach of the UK government. This is particularly so in view of the trends in the industry away from large computer systems and towards smaller machines. At the same time the market for central processing units has become increasingly competitive in price and technology with growing competition to IBM from smaller American manufacturers such as Amdahl and Intel and from Japanese companies such as Fujitsu and Hitachi. In the rapidly growing market for small systems, the costs of the central processor represents something between 5 and 10 per cent of total system cost. The rest is peripherals, communications equipment and so on. It is in the peripherals field that the UK is particularly weak. It has been estimated (Financial Times, 21 February 1978, p.26) that the UK peripherals market is expanding at the rate of about 30-40 per cent a year of which a large proportion of the product is imported. While most of the major computer manufacturers have increasingly entered the peripherals field. (ICL which has been forced to concentrate its R and D and investment has concentrated on central processors through jointly NCR and CDC, and ICL has established CPI to develop peripherals. The other specialist UK manufacturer of peripherals is Crico, now owned by the NEB.)
- 5.57 BRD performance in peripherals has been far more impressive and, despite strong US competition, BRD manufacturers have achieved a consistently favourable trade balance. The extent to which the peripherals industry has benefited from government support for R and D is impossible to assess, but it is clear that in some areas it is West Germany's leadership in certain areas of technology, apart from any marketing skills, which has been the key to success. Thus BASF's hold on magnetic media technology has been a vital part of the company's success in international markets. The situation in integrated circuits is similar. Heavy support by the German government for the development of micro-electronic technology seems to have been an important factor in establishing West German companies in the forefront of the electronic component market – though almost certainly lagging behind the USA and Japan. In the UK separate attempts by the Department of Industry and the NEB to establish companies to manufacture micro-electronic circuits seem to be a classic case of 'too little, too late'.
- 5.58 It has been claimed that the widespread provision of public R and D support throughout the EDP industry, often for competing developments by competing companies, wastes public money. Indeed, the funds supplied to AEG-Telefunken for the development of large computers were certainly wasted when the company gave up its interest in this field. However, to be selective in the allocation of government support requires that the government is able to forecast, with some accuracy, future developments in the data processing market. In fact, the pace of technological advance is so rapid that such forecasting can be little more than guesswork. In this event, the prudent policy may be to provide government support to all research which looks promising. While the failure rate is likely to be high, such a policy can be justified in terms of the vital importance of EDP technology for technological progressiveness not only in the computer industry, but in communications, engineering, consumer electronics and, ultimately, industry as a whole.
- 5.59 It is apparent that exercises in industrial planning, involving the selective subsidisation of particular firms and projects requires government to forecast, with some degree of accuracy, user demand and technological change over the medium term. Two issues arise here. First, how does the performance of government in forecasting the technologically and commercially successful projects of the future compare with that of the private sector? Second, is there a danger that the selective application of subsidies may involve high risks in industries where the rate of technological advance is rapid? Thus, might not a more prudent policy be to provide more general R and D subsidies which do not distort competition within the industry?
- 5.60 The UK policy of concentrating assistance on ICL may not only have meant a lack of government support for the other sectors of the computer industry, but may have positively hindered the development of other firms. Smaller firms both in the hardware and software sectors have been particularly critical of the British government's policy of buying large computers exclusively from ICL. While ICL and the government have regarded the single tender policy as necessary to provide ICL with a secure home market base for its international operations, it may be that the benefits to ICL from the policy have been outweighed by the costs to other firms in the industry. ICL preference in larger computers has often meant that ICL is called on to provide complete systems, and software as well. Thus specialist suppliers of peripherals and software have felt that they have been excluded from the public sector market. Software suppliers have been particularly critical of the British government's reliance on its own resources for programme development and where external contracts have been offered they have often been allocated in a single package with the order for the computer system. The Select Committee noted: 'Too many software houses the

symbol of Government neglect. was the London Airport Cargo EDP scheme where, in circumstances strongly suggesting government intervention, ICL having secured the contract for the project subcontracted the software implementation to an American-owned software house.' (1971, Vol 1, paragraph 171)

- 5.61 Given a commitment to selective aid policies, the comparative neglect of the software industry by the UK government in comparison with the generous support offered by the BRD government would seem to have been a major omission. British software expertise has been generally regarded as second only to that of the Americans, and it is a sector where the Japanese and, to a lesser extent, the Germans have invested extremely heavily in order to develop their own software services industry. The growing cost of software in relation to hardware has provided considerable opportunities for the UK software houses, but the potential to increase overseas earnings, so it is claimed, has been limited by the fragmented nature of the industry.

L. Conclusions

- 5.62 In the UK and BRD the objectives of government policy towards the computer industry and computer technology have been similar: to support the industry because it is a growth industry, to encourage the development of computer technology under domestic ownership and control because of the economic and strategic importance of this branch of technology, to encourage exports and limit imports of computer equipment, to encourage the assimilation of EDP technology by other industries.
- 5.63 Nevertheless, the policies of the two countries show some differences. While both governments have been concerned chiefly with supporting R and D into computer technology, in the BRD such support has been provided to the EDP industry as a whole, in the UK the policy has focused on support for ICL. Not only has UK policy been more selective, it has also been more interventionist; UK policy measures have included public ownership, industrial restructuring and discriminatory public purchase policy; West German policies have been concerned exclusively with financing R and D. West German policy has taken the form of three medium term programmes for the data processing industry. UK policy has not been provided as and when needed by the company and the recent shift of emphasis towards micro-processors, small systems and peripherals has been in response to recognition of deficiencies in the UK's EDP performance.
- 5.64 Again, these contrasts in policy reflect general differences between the conduct of industrial policy in the two countries: UK industrial policy tending to be more selective, more interventionist, more concentrated upon large firms, and heavily influenced by short-term factors. German industrial policy has been less *dirigiste* and has sought to be compatible with the competitive market economy by avoiding direct structural intervention and discrimination between individual enterprises.
- 5.65 West German expenditure on support for its computer industry has greatly exceeded that of the UK despite the fact that public subsidies to private industry are, in aggregate, far greater in the UK. This limited support for the computer industry in the UK reflects the greater priority given to the maintenance of employment than to the encouragement of growth and technological change.
- 5.66 In both countries the computer industry has achieved a rapid growth of output and exports and at the same time there has been heavy import penetration, notably from the USA. In the manufacture of medium and large computers, Britain has built on its early development of computer technology to develop a profitable, growing and internationally competitive indigenous manufacturer. Following a more hazard-strewn path, Siemens has achieved a similar position. With regard to small computers, microprocessors, peripherals and software, the performance of the West German industry has been superior to that of the UK, despite an early lead by the UK in many aspects of electronic technology.
- 5.67 The differences in performance of the different sectors of the EDP industry in the two countries partly reflect public policy. The 'success' of ICL must, in part, be a result of government policy, first in creating the company and second in supporting it by finance and preference in government contracts. The weak performance of the other, and more important, sectors of the industry must also reflect, in part, the comparative lack of government support in these sectors. In West Germany the major strengths of the EDP industry has been in those sectors which are weakest in the UK – small systems, peripherals and integrated circuits – and it is notable that these sectors have been heavily supported under the Federal government's programmes.
- 5.68 The low level of public support for the UK computer industry in relation to that of the German computer industry and in relation to other UK industries raises questions about the appropriateness of the priorities of UK industrial policy. The more general EDP support measures of the BRD as compared with the ad hoc selective support measures in the UK raises the question of whether the quality of government forecasting and project selection in industries subject to rapid technological change is sufficient to justify the

greater risks of selective policies. From the evidence received in this Chapter, it would appear that the neglect of government of some of the most important sectors of the UK computer industry — notably small systems, peripherals, computer services and electronic components — provides an argument for more general industry support on the German model. The deficiencies of UK policy in relation to that of the BRD may also reflect the better information and more balanced forecasting which is encouraged by policy decision-making which is firmly based on medium-term programmes for the industry as a whole.

REFERENCES

- Der Bundesminister für Forschung und Technologie (1976), *Drittes DV — Programm 1976-1979*, Bonn.
- Commission of the European Communities (1976) *A Four Year Programme for the Development of Information in the Community*. COM (76) 524, Vols. I-III, Brussels.
- G.M. Field and P.V. Hills 'The Administration of Industrial Subsidies' in A. Whiting (ed.) (1976), *The Economics of Industrial Subsidies*, H.M.S.O., London.
- German Chamber of Industry and Commerce (1978). *The German Computer Industry — A Review*. London.
- E. Moonman (ed.) (1971) *British Computers and Industrial Innovation. The Influence of the Parliamentary Select Committee*. George Allen & Unwin, London.
- O.E.C.D. (1969) *Gaps in Technology: Volume 1 Electronic Computers*. Paris.
- Select Committee on Science and Technology (1970). *The UK Computer Industry*. Session 1969-70. Vols. I & II. (1971) *The Prospects for the UK Computer Industry in the 1970's*. Vols I, II & III, H.M.S.O. (1973) *Second Report on the UK Computer Industry (First Part)*. Session 1972-73, H.M.S.O.
- P.S. Stoneman (1975) *Merger and Technological Programmes: the case of the British Computer Industry*. Warwick Economic Research Papers No.79.

CHAPTER 6

STRUCTURAL POLICIES TOWARDS THE SHIPBUILDING
AND SHIPPING INDUSTRIES OF THE BRD AND THE UK

by R.M. Grant & G.K. Shaw

A. The relationship between the shipping and shipbuilding industries

- 6.1 Although shipbuilding and shipping are quite distinct industries, their problems have been similar and policies towards one industry have an important influence on the other. Therefore policies towards the two industries are considered together. There are close parallels in the competitive factors which influence the two industries. Both industries have to compete in an international market in which Japan is the largest supplier and in which fierce price competition is provided by developing, also by Comecon countries. In shipbuilding Japan has accounted for almost one half of world output during most of the 1970s (see Table 6.1); in shipping Japan has the largest merchant fleet including the flag of convenience countries. Brazil and South Korea in shipbuilding and Liberia and Panama in shipping are important sources of low-cost competition. In both industries Comecon countries represent a growing source of competition. The economic fortunes of the two industries tend to be closely correlated. Fluctuations in the demand for shipping caused by cycles in world trade obviously create fluctuations in shipbuilding demand. Fixed costs represent, for both industries, a high proportion of total costs, so excess capacity (such as exists at present) encourages vigorous price competition. The close vertical relationship between the two industries also means that policies affecting one industry have important indirect effects on the other. Thus an important form of assistance given to the shipbuilding industries of UK and BRD has been subsidies paid to customers. The spillover effects of support policies are not always beneficial. Assistance to the world shipbuilding industry aimed at maintaining output and employment in each country has greatly exacerbated the problem of excess capacity in the world shipping industry.
- 6.2 Although the two industries are closely related and face common economic problems, structural policies towards them differ because of their different positions within the national economic structure. The shipbuilding industry is an important employer both in UK and BRD and its employment is geographically concentrated. Shipbuilding is also an important customer of other industries, notably steel. The shipping industries of BRD and UK are less integrated into the national economic structure. A high proportion of employees are non-national and in consequence fluctuations in the level of business do not have such important consequences for the national employment situation. The shipping companies purchase ships and other inputs freely between countries according to relative prices, so that the fortunes of the supplying industries of the two countries are not entirely dependent upon the domestic shipping industries. As a result, the maritime policies of the two countries have been concerned more with shipbuilding than with shipping. This is particularly true in the UK where the level of financial assistance to shipbuilding and the extent of structural intervention has been greater than for almost any other manufacturing industry, while policy towards shipping has comprised limited general support measures. This contrast of policies is less evident in the BRD. First, the Federal Government has not been willing to adopt such interventionist industrial policies as the UK Government. Second, German shipping policy has the important strategic objective of maintaining and expanding its merchant fleet. This is a reflection of the small size of Germany's fleet (less than one third of UK tonnage), particularly in relation to Germany's very large overseas trade, (see Table 6.3).

B. The structure of shipping and shipbuilding in the UK and West Germany

- 6.3 Although in both countries the maritime sector is of great importance to the national economy, the relative importance and performance of shipbuilding and shipping varies between the two countries. In the UK, shipping is the more important industry in terms of its earnings, assets, employment and contribution to the balance of payments. Indeed, following the fall in the international position of the UK shipbuilding industry from 2nd to 7th place during the past 20 years (see Table 6.1), Britain's claim to be one of the world's leading maritime nations is based on the importance of the UK merchant fleet which, excluding the flags of convenience, is the largest after that of Japan (see Table 6.2).
- 6.4 In the BRD the relative roles of shipping and shipbuilding are reversed. Shipbuilding is more important than shipping in terms of earnings, employment and balance of payments contribution. Germany has the 4th largest shipbuilding industry in the world in terms of 1977 output, but only the 11th largest merchant fleet (see Tables 6.1 and 6.2).
- 6.5 The small size of the German shipping fleet is surprising in view of the position of Germany as the world's largest trading nation after Japan. The reasons are largely historical — the loss of most of Germany's merchant fleet during the Second World War and the subsequent partition of Germany and Europe which

Table 6.1

THE SHARES OF WORLD SHIPBUILDING COMPLETIONS

	1956	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
World Total (million GRT)	6.29	16.84	18.74	20.98	24.39	26.75	30.41	33.54	34.20	33.92	27.53
of which: %											
Japan	24.04	49.06	48.09	48.00	45.07	48.01	48.05	50.04	49.08	46.08	52.05
West Germany	17.03	7.02	9.05	6.03	8.01	5.02	6.03	6.04	7.03	5.05	5.08
Sweden	7.07	6.05	6.07	7.03	7.06	7.06	7.05	6.05	6.04	7.04	8.04
Netherlands	6.03	1.06	2.06	3.01	2.03	2.08	2.08	2.08	3.00	1.09	0.09
France	4.04	3.07	3.07	4.01	4.05	3.08	3.09	3.01	3.04	4.09	4.00
Italy	4.03	3.00	1.09	2.06	3.06	3.04	2.08	2.08	2.03	2.01	2.08
Norway	3.00	3.06	3.03	3.04	3.06	3.01	3.02	2.09	3.01	2.02	2.01
Denmark	2.02	3.01	3.02	2.05	3.00	3.06	3.03	3.02	2.08	3.01	2.06
USA	2.00	2.02	2.05	1.08	2.00	1.08	3.02	2.02	1.04	2.04	3.07
Spain	1.02	2.07	3.04	3.01	3.04	4.00	4.03	4.07	4.07	3.09	6.06
Comecon countries	*	*	*	5.07	5.06	5.01	4.09	4.02	5.00	5.06	5.08

Table 6.4

UK SHIPBUILDING: OUTPUT AND EMPLOYMENT

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Completions of merchant ships number	152	138	144	134	139	137	134	144	140	104
GRT ('000)	1046	814	1297	1259	1208	1069	1189	1203	1460	1008
Estimated value (£m)	116	137	180	180	220	230	228	270	375	262.2
For overseas registration (£m)	51	38	34	51	59	61	62	98	144	133.2
Total sales of shipbuilding and marine engineering—MLH 370 (£m)				551.8	648.3	749.9	810.0	946.4	1279.5	1365.0
Employment ('000)			182.7	177.3	179.9	181.6				

Source: Business Monitor. Employment data from Census of Production

Table 6.2

THE MAJOR SHIPPING NATIONS OF THE WORLD, 1977

	<i>GRT</i> (million)	<i>DWT</i> (million)	<i>Per cent</i> (World GRT)
Liberia	80.0	156.0	20.3
Japan	40.0	65.9	10.2
UK	31.6	51.7	8.0
Greece	29.5	49.3	7.5
Norway	27.8	49.2	7.1
Soviet Union	21.4	23.0	5.4
Panama	19.5	31.6	4.9
USA	15.3	22.1	3.9
France	11.6	20.1	3.0
Italy	11.1	17.7	2.8
West Germany	9.6	15.6	2.4

Source: Verband Deutscher Reeder, Seeschifffahrt 1977.

Table 6.3

IMPORTANCE OF SHIPPING TO THE NATIONAL ECONOMIES

		1970	1971	1972	1973	1974	1975
Share of national trade carried by home fleet (%)							
<i>UK</i>							
Imports		31	32	31	30	29	31
Exports		47	44	40	43	44	46
<i>WEST GERMANY</i>							
Imports		25	23	21	17	15	18
Exports		39	37	34	28	25	27
Employment ¹ (millions)							
UK		—	—	—	—	83	89
West Germany		491	46	39	35	32	32
Revenue (US\$millions)							
UK		—	3299	3199	4044	4955	—
West Germany		2038	2160	1906	2007	2659	2778

Note: ¹ Including nations and non-nationals.

Source: US Department of Commerce Report 1977, pp.III.27 and VI.23-24

affected Germany's traditional Baltic trade.

- 6.6 The result of the different sizes of shipping fleets is that a much larger proportion of the UK's foreign trade is carried by the national fleet, and that the UK fleet must rely much more upon international cross-trading than the German fleet (see Table 6.3). As regards the shipbuilding industries, the UK purchases a much larger proportion of its ships abroad than do the Germans, and the German shipbuilding industry must look much more to export sales than the UK shipbuilding industry.
- 6.7 Although shipbuilding was one of the most rapidly growing sectors of world manufacturing industry between 1960 and 1975, shipbuilding in the UK has been a declining industry. Despite some short-lived booms during the 1960s and 1970s the trend in tonnage output has been downward, (see Table 6.4). The performance of the UK industry in respect of price, quality and the meeting of delivery dates has been poor in relation both to low-cost competitors (Far East, Brazil, Spain) and to high-cost competitors (Scandinavia, Germany, France and USA). The factors which characterise declining industries in Britain:— weak management, poor industrial relations, a concentration on short-term problems to the neglect of longer-term planning and budgeting, and a failure to respond to the changing requirements of the market have all been evident in UK shipbuilding.

Table 6.5

WEST GERMAN SHIPBUILDING: OUTPUT AND EMPLOYMENT

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977
Completions of merchant ships number	239	296	279	263	267	233	196	215	195	187
of which inland	37	87	84	85	105	93	58	42	32	18
GRT ('000)	1323	1779	1539	1990	1541	2053	2238	2386	2154	1618
of which inland ('000)	41	87	116	137	172	140	73	46	48	27
Value of new ships produced (DM millions)	2070	2547	2467	3072	3282	4190	3988	4575	5097	5454
of which inland (%)	1.4	2.6	3.5	3.5	4.9	3.9	2.4	1.7	1.6	1.1
Turnover of shipbuilding industry (excluding non-ship building activities) (DM millions)	2645	3178	3220	4018	4027	4891	5743	6293	6621	6545
Export turnover of industry (DM millions)	1336	1663	1305	1859	2182	3001	2793	4255	4188	3885
as % of turnover	45.2	47.7	36.2	41.5	48.2	55.6	44.7	60.5	56.6	53.0
Export tonnage ('000)	843	1413	750	1086	880	1357	869	1747	1479	1180
Employment annual average ('000)	80	81	80	80	78	74	75	78	74	70

Source: Verband der Deutscher Schiffbauindustrie.

Table 6.6

LABOUR COSTS IN SHIPBUILDING 1977 (DM PER HOUR)

West Germany	18.92
USA	17.76 (\$ = DM 2.32)
France	12.23 (100F = DM 47.26)
Italy	11.83 (L1000 = DM 2.632)
Japan	10.57 (100 Yen = DM 0.867)
UK	8.09 (£1 = DM 4.051)

Source: Verband der Deutschen Schiffbau Industrie

The competitive position of the shipbuilding companies of the BRD has also been handicapped by the rising international value of the mark and the lack of a large maritime fleet. The ability of the German shipbuilding industry to expand despite the difficulties it has faced reflects primarily the ability of the industry to use its commercial and technological expertise to build sophisticated and technologically advanced ships for specialised use, such as container ships, roll-on-roll-off ships, gas carriers, ferries, refrigerated ships and factory ships. The German yards have been in the forefront of technological advance in production methods and have maintained a high rate of investment which has allowed the introduction of more productive working methods (such as the series production of larger ships). Innovation, investment and diversification of the German shipbuilding industry has been assisted by the fact that the shipbuilding companies tend to have extensive interests outside the shipbuilding industry. Of the six largest shipbuilders, four are general engineering companies. Yet, despite the successful development of the shipbuilding industry over the post-war period, Germany is one of the countries most heavily hit by the current world shipbuilding crisis. Table 6.7 shows the principal shipbuilders of the BRD.

Table 6.7

MAJOR GERMAN SHIPBUILDING COMPANIES

	Employment 1976	Location of yards
Howaldtswerke-Deutsche Werft	14,700	Kiel and Hamburg
AG Weser	8,290	Bremen and Bremerhaven
Blohm and Voss AG	6,700	Hamburg
Bremer Vulkan Schiffbau und Maschinenfabrik	5,606	Bremen
Thyssen Nordseewerke GmbH	4,750	Emden
Flender Werft Atkiengesellschaft	1,988	Lübeck
Flensburger Schiffbau — Gesellschaft	1,807	Flensburg
JJ Sietas Schiffswerft	1,568	Hamburg
Schiffbau Unterweser AG	1,544	Bremerhaven

Source: *German Shipyards for Ocean Going Vessels* — Verband der Deutschen Schiffbauindustrie

- 6.9 In shipping the relative superiority of German over British industrial performance that characterises shipbuilding (and many other manufacturing industries) is not apparent. Britain, despite its falling share of world trade, has rapidly expanded its merchant fleet and has remained the world's second largest ship-owning nation. Indeed, during the 1970s the growth of the UK fleet did not lag far behind that of the Japanese fleet, even without the enormous partially-captive cargo market available to Japanese operators. Between 1970 and 1975 the West German shipping fleet expanded at only one third of the rate of the British fleet. Tables 6.8 and 6.9 show the two countries' share of the world fleet and their tonnage growth. Nevertheless, the replacement rate of the merchant fleet of the BRD has been extremely high with the result that the German fleet is among the youngest of the world. A concentration on modern, labour-saving ships offering a highly efficient service has been the principal strategy of German shipowners to overcome their cost disadvantages vis-a-vis other shipping nations.

C. The shipping and shipbuilding industries in crisis

- 6.10 The most important factor influencing the development of maritime policies of the British and West German governments since 1975 has been the slump in world demand for shipping and ships combined with rapid growth in world shipping and shipbuilding capacity. In Germany the threat to the existence of its shipping and shipbuilding posed by the 1970s crisis has resulted in the introduction of support measures the justification of which stretch the philosophy of the non-interventionist social market economy to the limit. In Britain the crisis precipitated the nationalisation of the shipbuilding industry. To understand the current support policies of the two countries requires a brief analysis of the major factors responsible for this situation.

Table 6.8

UK AND BRD SHARES OF WORLD MERCHANT FLEET (DEADWEIGHT TONNAGE) AND AVERAGE AGE OF FLEET

		1966	1968	1970	1972	1974	1975
<i>National deadweight registration as per cent of world fleet</i>							
Total	UK	11.5	11.0	11.3	10.9	10.5	9.9
	W. Germany	3.3	3.4	3.6	2.9	2.7	2.4
Tankers	UK	12.0	12.4	13.6	12.7	12.0	10.9
	W. Germany	1.7	1.9	1.9	1.7	1.7	1.9
Bulk carriers	UK	9.9	8.9	8.6	9.9	9.9	9.7
	W. Germany	3.9	3.5	3.7	3.0	2.8	2.7
Freighters	UK	11.2	10.2	9.7	8.4	7.6	7.2
	W. Germany	5.0	5.4	6.3	5.4	4.2	3.8
<i>Average age of fleet (years)</i>							
	UK	12	11	11	10	10	10
	W. Germany	11	10	9	6	7	7
	World	17	13	13	12	12	12

Source: US Department of Commerce Report, 1977.

Table 6.9

GROWTH OF NATIONAL FLAG FLEETS

		1970	1971	1972	1973	1974	1975	1978
Total ships (no.)	UK	1772	1713	1627	1596	1609	1576	—
	West Germany	993	958	797	702	668	611	—
DWT (million)	UK	37.1	40.7	43.5	47.8	53.0	54.9	—
	West Germany	11.7	12.5	11.5	11.4	13.6	13.5	9.7
GRT (million)	UK	24.1	25.8	27.2	29.4	32.2	33.2	30.9
	West Germany	77.8	8.2	7.6	7.5	8.5	8.3	9.7

DELIVERIES TO THE FLEET (GRT)

Total	UK	2.8	2.9	3.3	3.7	3.7	3.0	1.6
	West Germany	1.2	1.1	0.8	0.7	1.3	0.4	0.02
Tankers	UK	1.9	1.7	0.7	1.8	2.7	2.3	—
	West Germany	0.4	0.1	0.05	0.1	1.1	0.3	—
Bulk carriers	UK	0.6	0.8	1.8	1.4	0.8	0.6	—
	West Germany	0.2	0.4	0.2	0.4	0.1	0.1	—
Freighters	UK	0.4	0.4	0.8	0.5	0.1	0.1	—
	West Germany	0.6	0.6	0.6	0.2	0.1	0.03	—

Source: US Department of Commerce Report, 1977.

- 6.11 *Demand Factors:* Three influences have combined to promote a substantial and prolonged fall in the demand for freight carrying services. First, 50 per cent of all bulk freight is in the transportation of iron ore and coal for the steel industry. Hence any decline in the demand for steel, as witnessed during the world depression commencing in 1974, exerts an immediate impact upon freight rates. Second, in the dry bulk freight trade, much depends upon Soviet grain harvests. A shortfall in agricultural output and the necessity for substantial wheat imports has given a considerable fillip to transportation rates in the past but over the recent years of depression such a stimulus has not been forthcoming. The most significant demand factor, however, has been the OPEC-induced rise in the price of oil which has drastically curtailed the demand for oil tanker services. More and more countries have attempted to economise on oil imports by turning to alternative sources of fuel or by exploiting domestic energy sources. The impact upon freight rates was not just confined to oil as ship owners reacted by using tankers to carry alternative cargoes. To these influences on the demand for freight transport one has to add the decline in passenger transportation services which have not helped the shipowners' plight. The rapid technological and cost-reducing innovations in air-passenger services have virtually eliminated demand for sea travel whilst at the same time improving air freight services. Significantly, Hapag-Lloyd one of Germany's leading shipping lines, found it necessary to diversify into plane chartering activities in the attempt to 'reclaim back passenger traffic'.
- 6.12 *Supply Factors:* Independently of demand conditions, supply influences conspired during the mid-1970s to promote a world-wide fall in freight shipping rates, to such an extent that it became uneconomic to put newly-built ships on ocean-going voyages. One factor has been the tendency for the industry to over-react to favourable demand conditions and buoyant prices. This arises from the inelastic nature of short-term supply conditions for obviously tonnage cannot be increased substantially overnight. Consequently, any increase in demand tends to have a disproportionate impact upon freight prices causing freight profits to spiral. Excess profits promote new entry and new orders for ships which ultimately depress freight rates, but the countervailing adjustment does not come into play until considerable excess capacity has been generated owing to the time lag in the supply response. This is precisely the situation which prevailed in the creation of the surplus in tankers. The 1960s witnessed a steady growth in the consumption of oil and oil-related products. There was consequently a steady rise in the demand for shipping to transport oil and by 1973 tanker freight charges had risen to 420 (1947=100). The closure of the Suez Canal in 1973 encouraged shippers to order tankers of a size which took full advantage of scale economies in tanker transport. Tankers of 250,000 dwt, were ordered and built. During 1973-74 the world tanker tonnage more than doubled. Such were the economies of scale and so buoyant were oil freight charges that it was possible to recoup the outlay of a super tanker in a comparatively few voyages.
- 6.13 Such conditions would inevitably have produced an eventual surplus of tankers even without the OPEC-induced fall in demand for oil. The resulting drastic fall in oil freight rates has led to tankers being completed and laid up without ever seeing service. For example, in 1975 six tankers were completed in West German yards at a total cost of DM600 million to be immediately laid up, the reason given being that it would be more expensive to put them out to sea. Since 1975 such lay-ups have become common in UK and West Germany. In addition, other freight rates have been adversely affected as disillusioned tanker owners have abandoned oil transportation and switched to carrying bulk dry good traffic, in particular, iron ore, coal and corn. The rapid generation of the tanker surplus on the scale observed would not have been possible without the creation of new shipyards. The new yards, specially designed to accommodate the super breed of tanker, were built quickly particularly in Japan where the government provided considerable financial backing. Indeed, shipbuilding became looked upon as a growth centre for the economy as a whole as well as a source of rapidly expanding export orders. Between 1960 and 1970 Japan's output increased from 1.7 million to 10.09 million GRT and by 1975 it totalled 16.9 [see EIU (1977)]. By 1975 Japan was producing more than 50 per cent of world output and this apparent success stimulated other far Eastern competitors, especially in Taiwan and South Korea. Excess capacity in bulk carriage now exceeds some 12 million tons or approximately 10 per cent of total world transportation. Nor will surplus capacity be readily eliminated. The current world fleet is relatively young; whilst there is doubtless room for scrapping, the fact remains that 80 per cent of all vessels over 18,000 dwt are less than ten years old.
- 6.14 Two other influences played their part in generating excess capacity. One was the rise in competition from the Eastern bloc countries; Comecon is now responsible for some 12 per cent of world freight tonnage and handles 20 per cent of the world's seaborne cargo. As these figures suggest, the Comecon countries are price competitive in their quotation of freight charges, partly, it is alleged, because their need for foreign currency earnings over-rides cost factors. The other influence was the rapid pace of technological change in shipping, notably the introduction of containerisation, lighter-abroad ships, roll-on-roll-off ships and various types of specialised carriers. While the rapid obsolescence induced by technology has been to the benefit of shipyards, the increases in ship productivity exacerbated the problem of excess carrying capacity. Other innovations have included the application of nuclear power to merchant shipping. The *Otto Hahn*, Germany's first nuclear ship produced an operating deficit of DM7 million, 90 per cent of which has been borne by the

Federal government. The unwillingness of the government to continue support means that the vessel is now destined for scrapping.

- 6.15 German shipowners, who have shown themselves remarkably willing to adapt and diversify their activities in the wake of increased structural change, also face additional difficulties. Crewing regulations on German ships are such as to render her operation and labour costs nearly as high as the United States and virtually double that on Greek and British ships. Indeed, it was recognition of these higher costs associated with operating under the German flag which justified the initial assistance granted to shipowners. In addition, the upward pressure upon the DM has increased the difficulties of selling ships built in West German yards (not least to West German shipowners). The decline of the US dollar has also caused a fall in shipowners' profits. This is because 80 per cent of all freight charges are quoted in US dollars and thus the net revenue of German shipping lines falls in proportion with the comparative decline of the US dollar against the D. Mark. Moreover, it has long been the convention to quote insurance cover in US dollars, and hence implicitly the replacement value of the vessel. The continued decline of the US dollar thus implies a rising percentage of indebtedness against the insured asset which is unwelcome and indeed unacceptable to those providing mortgage cover.
- 6.16 In addition to the problems of oceangoing and coastal shipping, inland waterways are of considerable importance in the BRD. Inland shipping employs close on 30,000 people and it is a source of concern that future prospects for such traffic are decidedly bleak. The current recession, beginning in 1974, seriously reduced demand it is now estimated that at least 20 per cent of domestic inland tonnage is surplus to requirements. By far the greatest fear, however springs from the threat of competition from the Eastern European fleets following the completion of the Rhine-Main-Danube Canal scheduled for 1982. The Eastern shipping barges are mainly laid-up during the severe winter months but will now have the incentive to transfer to the Danube and other Western Europe waterways during the winter if they can cover only average variable costs. The increased competition in conditions of excess capacity will inevitably lead to a lowering of freight rates, especially if the Eastern bloc countries follow their oceangoing precedent and set rates primarily with a view to foreign exchange earnings and without regard to covering operating costs. At the present time, there appears to be no concerted government policy to cope with the difficulties of the inland shipping lines, despite the fact that the position of the inland boat owners is also threatened by the highly efficient but heavily subsidised German rail network. In contrast, the inland waterways of the UK are of comparatively minor importance.
- 6.17 The future prospects for shipping and shipbuilding in the two countries are far from encouraging. While the setting of conference rates for general cargoes provides a protection to shipowners from the full forces of competition, in the market for new ships a scarcity of new orders appears likely for a considerable period. In neither country has the shipbuilding industry adjusted to the new world situation. Even prior to the current crisis, the UK shipbuilding industry was maintained only by government subsidies and the nationalisation of the industry appeared to be as much a device for channelling greater public aid to the industry as a means of achieving 'orderly' contraction and regeneration. During its first year of operation, British Shipbuilders has made a loss of nearly £150 million. German yards have been even harder hit by the famine of orders as Table 6.10 shows. Forecasts by the Chairman of the German Shipbuilding Industry, Herr Bartels, that a 30 per cent reduction in capacity would now be necessary appears almost optimistic. Present orders suggest that the industry may be operating at around one third of capacity in 1979 with virtually no work at all available in 1980.

Table 6.10

WORLD SHIPBUILDING ORDERS, 1975-1977

	31.12.1975	31.12.1976	(G.P.T, millions) 31.12.1977
West Germany	4.2	2.4	1.1
UK	4.9	2.9	2.2
Japan	31.4	18.2	9.9
Sweden	6.5	4.0	2.1
France	4.9	3.0	2.0
Brazil	3.6	3.2	2.9
USA	5.0	4.7	3.6
Spain	4.3	3.8	1.9
World	82.3	55.4	36.7

Source: Verband der Deutschen Schiffbau industrie e.v.

D. The objectives of government support policies towards shipping and shipbuilding

6.18 The rationale for maritime support policies have been similar in the UK and West Germany. The differences are primarily those of emphasis reflecting the different conditions affecting the shipping and shipbuilding industries in each country and the different priorities accorded to objectives. In the case of shipping the purposes of the support policies can be listed as follows:

- i. *To maintain and increase the contribution of the industry to the balance of payments.* As the revenue from overseas business is in foreign currency earnings and the business of domestic importers and exporters would fall to foreign fleets if not carried by domestic shipping companies, almost the entire earnings of shipping companies may be viewed as a positive contribution to the balance of payments. For the UK it is considered vital to preserve the international position of its shipping fleet in order to maintain the contribution of the industry to the invisible account of balance of payments. In West Germany support for the domestic fleet is directed towards limiting and reducing the adverse foreign exchange balance represented by shipping. Because of the heavy dependence of UK shipowners on third country trade, UK support of its shipping fleet must be cautious because of vulnerability of the fleet to any retaliation from other countries in the form of cargo preference. West Germany, on the other hand, because of its large share of world trade, might be expected to derive substantial benefit from a protectionist shipping policy. The fact that the German government and German shipping industry have consistently supported the maintenance of freedom of entry to international shipping is an indication of commitment to the concept of workable competition. At the same time the German government has sought to pursue the interests of its domestic fleet through the negotiation of bilateral shipping agreements with certain other countries.
- ii. *To offer security to foreign trade.* The economies of both UK and West Germany are heavily dependent on foreign trade — for imports of food and raw materials and export earnings from manufactured goods. For Germany a large proportion of exports and imports travel by sea, and for the UK almost all foreign trade is by sea. For foreign trade to be wholly dependent for transportation on foreign registered vessels makes the national economy liable to disruption from political crises or commercial and labour relations problems entirely outside the control of that country. The claimed need for a national merchant fleet to provide security for foreign trade has been a particularly important objective of Germany's shipping policy. The desire to provide security for vital segments of Germany's foreign trade is reflected in the special assistance given to certain types of ship, notably large oil tankers.
- iii. *To enhance the competitiveness of export industries.* In the case of West Germany, the ability to deliver export goods quickly and efficiently is seen as essential to its export effort. Because of the high wage costs of German industry and rising international value of the mark, the competitiveness of German exports have become increasingly dependent upon quality, reliability and speed of delivery. Thus efficient shipping services are viewed as complementary to efficient export industries. For this reason government policy has been orientated towards making Germany's shipping fleet the most up-to-date and technically advanced in the world. For the UK on the other hand, the quality of shipping services is not a constraint on export performance. The UK's poor record in the prompt delivery of export orders stems from inefficiencies at the manufacturing level and, to a lesser extent, delays in dock handling.

The achievement of the goals of foreign exchange earnings from shipping and the maintenance of a national fleet to provide security to foreign trade require that national fleets are able to compete in a world freight market against 'flag of convenience' fleets with low wage crews and the subsidised fleets of the Comecon countries. For this reason both the UK and West Germany have felt it necessary to subsidise their national fleets, partly by concessions on indirect taxes to lower operating costs, but primarily by grants, tax relief and loans for the purchase of new ships. Assistance for new ship purchases lowers capital costs, may boost efficiency by having a modern fleet and can also be directed to benefit domestic shipbuilders. Support policies have also sought to maintain shipping companies against the strong fluctuations in profitability which result from the high level of fixed costs in the industry combined with variations in world trade. In West Germany the capital gains reserve and a carry-forward provision for losses are designed to counter the effects of the cyclical nature of shipping demand.

6.19 In terms of the percentage contribution of shipbuilding to GNP or in terms of the percentage of total labour force employed in the industry, shipbuilding is a minor industry. However, for a number of reasons, shipbuilding has been of considerable importance in the structural policies of both West Germany and Britain, and the reasons advanced for support are as follows:

- i. *Employment considerations.* In both UK and West Germany, shipbuilding is geographically concentrated. In UK the major locations are the estuaries of the Clyde, Tyne, Tees and Mersey and at Belfast. In West Germany the main centres are Hamburg, Bremen, Bremerhaven, Emden, Kiel and Lübeck. Changes in the

employment in the industry have concentrated effects which are amplified by the importance of shipbuilding as a customer for steel, marine engines, cables and ships' fittings. The employment objective would appear to be the dominant motive behind UK support for its domestic shipbuilding industry and reflects the high levels of unemployment in the shipbuilding areas of the UK. The strength of the employment motive has led the government to continue to support certain shipyards even where the possibilities of reaching profitability in the long run have appeared to be extremely slim. Thus the Harland and Wolff and Govan (formerly UCS) companies have been heavily subsidised because of high local unemployment and consequential political backlash in the West of Scotland and Northern Ireland. By mid-1976 total loans and grants to Harland and Wolff amounted to £137 million – about £25,000 per employee. In West Germany employment considerations have not been paramount in influencing policy towards shipbuilding for unlike British shipbuilding, the industry has been expanding and the major shipbuilding areas do not suffer from high unemployment. However, in the current world shipbuilding crisis the likelihood of large scale bankruptcy and closures have resulted in the government's introduction of short-term support to prevent a sudden rise in unemployment and to allow an orderly adjustment of the industry to the new market conditions.

- ii. *Export earnings.* In UK and West Germany shipbuilding is a significant export industry. Between 1975 and 1977 exports as a proportion of the value of completed ships were 57 per cent for West Germany and 40 per cent for UK. Where government believes its currency to be overvalued in relation to foreign trade in manufactured goods, as has been the view both in UK and West Germany, there is an incentive for government to subsidise export-orientated manufacturing industries, particularly since direct subsidisation of exports would contravene GATT and the Treaty of Rome.
- iii. *The encouragement of growth industries.* Although in the UK the trend of shipbuilding output and employment has been slightly downward over the past two decades, world trade has steadily expanded over the period and the demand for ships has shown a strongly upward trend. Thus for most countries, including West Germany, shipbuilding has been regarded as a growth industry. Even in the UK modest growth in shipbuilding might take place if the yards could be modernised and reorganised and labour relations improve. The Geddes Report of 1966 suggested that a doubling of UK shipbuilding output would be possible if the necessary gains in efficiency could be attained. The idea that government finance for British shipyards was aimed at the investment and modernisation necessary to create long run prosperity has been a common justification for heavy public expenditure on the industry.
- iv. *The safeguarding of the industry against periodic recessions.* As a capital goods industry the shipbuilding industry is subject to volatile fluctuations in demand. Because profit margins are normally narrow due to international competition, production does not normally have to fall far below capacity operation before fixed costs cannot be covered. To maintain industry capacity, therefore, governments have accepted the need to provide finance to the yards to assist them during periods of recession.
- v. *Subsidisation of domestic shipbuilding in order to match the assistance given by other countries to their shipbuilding industries.* The growing competition of low-cost shipbuilding countries to the long-established shipbuilding countries and the general excess-capacity in shipyards during the current recession has encouraged an international subsidy race aimed at safeguarding national shipbuilding industries from the full brunt of the recession.

6.20 This 'subsidy race' displays the characteristics of the 'prisoners' dilemma'. For the shipbuilding nations as a whole, competitive subsidisation has resulted in a failure to reduce shipbuilding capacity and has added to the long-term adjustment problem of the industry while intensifying the problem of over-capacity in the shipping industry. Yet for national reasons each country is unwilling to limit subsidisation for fear that its domestic shipbuilding industry will be forced to bear a disproportionate share of the necessary reduction in world yard capacity. It is difficult to divide the shipbuilding nations into 'leaders' and 'followers' with regard to their subsidisation policies. On the basis of US estimates (see Table 6.11) the UK appears to offer particularly generous assistance to its shipbuilding industry, while Germany's support is comparatively small.

6.21 Limited subsidies to the shipbuilding industries which do not involve a distortion of competition between particular West German yards are thus viewed as entirely consistent with the BRD government's principles of maintaining workable competition in the industrial sector. Where West German firms compete in an international market then the maintenance of workable competition means that the BRD government must, at least partially, match the generous support given by other countries to their national shipbuilding industries. While the Federal government has been keen to limit its support to the shipbuilding industry and to ensure that assistance does not discriminate unfairly between different yards, financial assistance at state level has been of an ad hoc nature and has not followed any consistent principles.

Table 6.11

ESTIMATED GOVERNMENT FINANCIAL ASSISTANCE TO SHIPPING AND SHIPBUILDING, 1970-75

	SHIPPING		SHIPBUILDING	
	Amount (\$ millions)	% of revenue	Amount (\$ millions)	% of revenue
Japan	208	4.3	88	0.9 – 2.0
UK	320	9.2	69	14.6
Norway	269	9.8	40	6.5
Sweden	128	8.4	33	3.8
Germany	99	4.3	61	2.6
France	121	9.0	179	24.1

Source: US Department of Commerce Report (1977), pp.1-2.

E. UK government policy towards the shipbuilding industry

- 6.22 Prior to nationalisation in July 1977, the shipbuilding industry was subject to more government intervention and received more government financial support than any other private sector industry. Calculating the total amount of public subsidy to the industry involves considerable difficulty, for assistance has been provided through numerous departments and agencies in a variety of forms (including grants, loans, equity, tax relief, credit guarantees) the aggregation of which involves considerable difficulties. In the case of shipbuilding, however, the fact that most loans were never repaid and most equity finance went to yards whose commercial value was low, has meant that it has been possible to aggregate these forms of finance and treat them as grants. Table 6.12 shows the US Department of Commerce's estimate of government finance to the industry between 1965 and mid-1976. An alternative breakdown of government assistance to the industry for recent years is given in Table 6.13.

Table 6.12

PUBLIC GRANTS, LOANS, AND EQUITY PURCHASES UNDER THE SHIPBUILDING INDUSTRY ACT AND 1972 INDUSTRY ACT (1965-JUNE 1976)

	Equity	Grants	Loans	Unexpended Provisions	Total
Private companies	—	6.3	16.9	—	23.2
Partly or wholly owned companies	26.9	17.3	46.4	29.0	119.6
Harland and Wolff	3.6	23.1	44.9	23.3	34.9
TOTAL	30.5	46.7	108.2	52.3	297.7

Source: US Department of Commerce Report (1977), pp.III-32.

The principal forms of assistance by government to the shipbuilding industry are described below.

- 6.23 *General regional assistance:* Throughout the post-war period shipbuilding has been a major beneficiary of UK regional support measures. Over 90 per cent of the industry has been eligible for investment grants, tax allowances and the regional employment premium. Between 1972/73 and 1977/78 regional development grants paid to shipbuilding amounted to £56.1m.
- 6.24 *Relief of indirect taxes:* Prior to 1963 the only selective support for the shipbuilding industry was 'Shipbuilders' Relief' — a refund of indirect taxes amounting to 2 per cent of the gross value of ships completed.
- 6.25 *Financial support by the Shipbuilding Industry Board 1967-1972:* Government intervention into the industry backed by heavy financial support followed the publication of the report of the Geddes Committee on the shipbuilding industry (1966). The report identified poor management, poor labour relations, inadequacies in marketing, purchasing, design and planning as the major problems of the industry and its principal recommendations were:
- (a) a re-organisation of the industry into larger companies accompanied by greater specialisation by individual yards;

- (b) a comprehensive government policy involving greater financial assistance.

The 1967 Shipbuilding Industry Act established the Shipbuilding Industry Board (SIB) to encourage and finance re-organisation and modernisation in the industry along the lines recommended in the Geddes Report. The establishment of the Board marks the inauguration of a comprehensive structural policy towards the industry.

6.26 The loans and grants offered by the SIB were on a selective basis, the purpose being to encourage modernisation of shipyards and assist re-organisation. Some finance did encourage large-scale re-equipment, but in the main the finance was concentrated on the biggest loss makers, [Upper Clyde Shipbuilders (UCS), Harland and Wolff and Cammell Laird] for the purposes of providing working capital and covering losses. The Booz-Allen and Hamilton Report (p.88) estimated that only one third of SIB assistance was used for capital investment. Table 6.13 shows financial assistance to the industry from the SIB and government departments between 1967 and 1972. The table also indicates the remarkably high rate of subsidy to Cammell Laird, UCS and Harland and Wolff.

6.27 *Support under the 1972 Industry Act:* With the 1972 Industry Act the SIB was wound-up and since 1972 virtually all assistance to the industry has been within the framework of this Act (excepting payments to Harland and Wolff by the Northern Ireland Ministry). The principal schemes are as follows:

- i. **Constructions Grant Scheme (1972-74)** provided grants for the construction of new ships and mobile offshore installations at the rate of 10 per cent for 1972, 4 per cent for 1973 and 3 per cent for 1974. The final payments under the schemes were made in 1978.
- ii. **Selective regional assistance:** section 7 of the Act provides for selective financial assistance for projects which create or maintain employment in the assisted regions. Under this section £3m was supplied in loans and £3.3m in grants in the period up to 31 March, 1978.
- iii. **Special assistance under Section 7.** In addition to the measures described above, selective payments have been made since 1972 to the following yards.
 - **Govan Shipbuilders** — between June 1972 and March 1978 £63.5 million was advanced to the company, although much of this sum was in loans, these loans were converted to equity or grants.
 - **Cammell Laird** — loans of £19.4 million were advanced.
 - **Sunderland Shipbuilders** — after the acquisition of the company, together with the other shipbuilding interests of Court Line in 1974 for £16 million, further loans of £15 million were made to Sunderland Shipbuilders.
 - **Austin and Pickersgill** — loan of £9 million in 1975/76.

Special assistance to **Harland and Wolff** was provided by the Northern Ireland Ministry. By mid-1976 aid to the company had totalled £137 million.

- iv. **Cost escalation insurance:** In 1976 the government introduced a cost escalation insurance to cover shipbuilders against increases in costs on ship contracts.
- v. **Shipbuilding intervention fund, 1977:** In February 1977 a £65 million intervention fund was announced for the industry under the Industry Act. The scheme was to provide selective assistance to individual yards to enable them to quote competitive prices for particular orders (the principal objective is to be competitive with Japanese tenders). The major application of the scheme so far is the £28 million from the fund to gain the £115 million Polish ships order (this was in addition to the normal ECGD finance).

6.28 *Credit assistance for the buyers of ships:* In addition to direct assistance to shipbuilders, government schemes to assist the buyers of UK produced ships are aimed primarily at making British yards more competitive with those of other countries. Under the Export Credit Guarantee Scheme the government guarantees and subsidises loans made to foreign buyers for the purpose of buying ships from UK yards. The Home Credit Scheme was introduced in 1963 to provide similar financial terms to UK shipowners purchasing from domestic yards. The enabling legislation, the Shipbuilding Credit Act, was passed in the following year. Under the scheme loans are made by the clearing banks but lending above a certain limit is refinanced by the government and the difference between the rate of interest on the loans and commercial rates is covered by the government. Table 6.14 shows the growth of lending under the scheme.

Table 6.13

FINANCIAL ASSISTANCE TO UK SHIPBUILDERS, 1967-1972

	<i>SIB Grants</i>	<i>SIB total payments</i>	<i>Payments from Government departments</i>	<i>Total assistance¹ as per cent of sales</i>
	(£m)	(£m)	(£m)	(%)
Appledore	0.35	0.35	1.10	2.2
Austin and Pickersgill	—	—	—	2.0
Cammell Laird	—	—	21.50	23.8
Doxford	—	0.1	—	2.0
Gavan/UCS	6.25	12.79	52.30	23.0
Harland and Wolff	7.04	15.04	26.64	21.8
Robb Caledon	0.10	0.51	—	2.4
Scott Lithgow	1.77	5.25	—	3.6
Swann Hunter	5.82	5.84	—	5.9
Vosper	0.09	0.10	—	n.a.
Yarrow	0.35	1.57	4.50	n.a.
Others	0.05	0.71	1.90	n.a.
TOTAL	21.16	42.93	116.84	n.a.

Note:

- 1 From G. Denton, *Financial Assistance to British Industry in Cordell and Fels* (1976). This column relates to the years 1967 to 1971 and the assistance includes SIB payments, ad hoc assistance and shipbuilders' relief.

Source: Report by Booz-Allen and Hamilton (1973) — except for final column (see note 1).

6.29 Since 1975 the terms of export credit have been governed by the OECD Export Credit Understanding for Ships.

6.30 *Re-organisation and the extension of public ownership:*

A principal objective of the SIB was the re-organisation of the industry into fewer companies. In its Report for 1968/9 the Board announced that of twenty-seven of the shipbuilding companies covered by the Geddes Report, twenty-one had merged into seven groups and two had left shipbuilding. Table 6.15 shows the re-organisation over the period. But when, after re-organisation and SIB financed yards still faced bankruptcy, government often responded by offering further finance in the form of equity participation. The main reason for part or entire public ownership was the avoidance of unemployment. A popular view was that the introduction of public ownership would provide a better atmosphere for the resolution of disputes between management and labour over pay and working methods. In view of the poor managerial quality of some companies it was considered that government ownership would provide an opportunity for introducing more dynamic and up-to-date management methods. Public ownership was also seen as a way of improving co-operation between shipbuilding companies over R and D, design and purchasing.

6.31 The rescue of failing shipbuilding companies by equity purchases resulted in forms of public ownership that contrasted sharply with traditional approaches to nationalisation: public ownership was often partial with arms-length arrangements between government and management. The majority holding which government took in Fairfields Shipbuilding and Engineering Ltd in 1965 was followed by the company adopting radical methods of management and industrial relations. During the early 1970s as other shipbuilding companies ran into serious financial difficulties so government ownership expanded. Between 1970 and 1975 the government acquired:—

- 50 per cent ownership in Cammell Laird Shipbuilders Ltd.
- 100 per cent of Govan Shipbuilding Ltd.
- 47.6 per cent ownership of Harland and Wolff Ltd.
- 100 per cent ownership of Scotstoun Marine Ltd.
- 100 per cent ownership of Appledore Shipbuilders Ltd.
- 100 per cent ownership of Sunderland Shipbuilders Ltd.

Table 6.14

UK HOME CREDIT SCHEME

	1972/73	1973/74	1974/75	1975/76	1976/77	1977/78
Proportion of vessel cost covered by guaranteed loan	80%	80%	70% ¹	70%	70%	70%
Maximum repayment period (years)	8	8	7 ¹	7	7	7
Maximum interest rate (%)	7.0	7.0	7.5 ¹	7.5	7.5	7.5
Guarantees, outstanding at year-end (£m)	601.9	642.4	795.9	895.5	932.4	884.4
Estimated annual benefit to borrowers ²	16.3	28.2	71.2	76.5	71.6	51.9

Note: 1. From 1 July, 1974

2. Based on average difference between the rate of interest on guaranteed loans and the industrial bond yield.

Source: Industry Act, 1972. Annual Reports

Table 6.15

RATIONALISATION IN THE UK SHIPBUILDING INDUSTRY FROM 1965

EAST SCOTLAND

Henry Robb Shipbuilders
Caledonian Shipbuilding &
Engineering Co.
Burntisland Shipping Co*

Robb Caldeon
Shipbuilders

LOWER CLYDE

Scott's Shipbuilding &
Engineering Co.
Lithgows Ltd.
Greenock Dockyard Co.

Scott Lithgow

UPPER CLYDE

John Brown & Co.
Yarrow & Co.
Connell & Co.
A. Stephen & Co.*
Fairfields
Barclay Curle & Co.*

Upper Clyde
Shipbuilders

Yarrow Shipbuilders

Govan Shipbuilders

ULSTER

Harland & Wolff

TYNE & TEES

Vickers Ltd.
Swan Hunter & Wigham
Richardson
Hawthorn Leslie
J. Readhead & Sons
Furness Shipbuilding
Smith's Dock Co.

Swann Hunter
Shipbuilders

British Shipbuilding
Ltd.

WEAK

Austin & Pickersgill
Bartram & Sons
Wm. Doxford & Sons
J. Laing & Sons
J.L. Thompson & Sons

Austin & Pickersgill

Doxford & Sunderland Ltd.

MERSEY

Cammell Laird & Co.

SOUTHAMPTON

J.I. Thornycroft & Co. Ltd

Vosper Thornycroft

BARROW

Vickers Ltd. (Shipbuilding Group)

OTHERS

Blyth Dry Docks & Shipbuilding*
Appledore Shipbuilders Ltd.

* finished shipbuilding between 1965 and 1972

— 100 per cent ownership of North East Coast Ship repairers Ltd.

6.32 In July 1974 the government announced in Parliament its intention of taking the whole of the shipbuilding industry into public ownership under a single national shipbuilding company. The Aircraft and Shipbuilding Bill was introduced in 1975 and passed in 1977. The purposes of nationalisation were:

- (a) to finance the industry so as to maintain employment and allow the industry to survive the shipbuilding recession;
- (b) to provide the investment funds required for the necessary modernisation of British yards;
- (c) to enable re-organisation in order to exploit scale economies in certain activities and improve management.

F. UK government policy towards the shipping industry

6.33 While some of the financial aids paid to UK shipowners are unambiguously subsidies to the shipping industry, in the case of certain aids it is difficult to apportion the benefit between the shipowner and the shipbuilder. In the case of subsidies for ship purchases restricted to purchases from UK yards, the principal beneficiary will be the shipbuilder, since the effect of such subsidies is to bring down UK prices to those charged by lower-cost shipbuilding nations, thus shifting orders from foreign to domestic yards.

6.34 *Subsidies for ship purchases:* Under the 1966 Industrial Development Act, investment grants were introduced for expenditure on fixed assets by manufacturing industry. Section 5 of the Act introduced 20 per cent grants towards purchases of ships by UK owners which was increased to 25 per cent between 1967 and 1968. The programme was cancelled in 1971 as a result of the unexpectedly high cost of the grants and the general shift in government policy from investment grants to investment tax allowances. However, payments under the scheme continued after 1971 because of ships already on order. The grants were available to UK shipowners and UK subsidiaries of foreign shipowners for new vessels registered under the British flag. The objectives were the expansion of the UK fleet, the encouragement of modernisation and efficiency of the British fleet and increased orders for UK shipyards. The programme was remarkably successful in encouraging the expansion of the UK fleet, but a large part of new orders still went to foreign shipyards. Table 6.16 shows expenditure on investment grants for ships.

Table 6.16

INVESTMENT GRANTS ON UK SHIP PURCHASES

<i>Financial Years</i>	<i>Expenditure (£ million)</i>
1967-1968	22.7
1968-1969	48.1
1969-1970	75.7
1970-1971	66.1
1971-1972	115.6
1972-1973	97.5
1973-1974	105.0
1974-1975	59.5
1975-1976	46.4
1976-1977	21.0
1977-1978	4.9

Source: Industry Act 1972, Annual Reports.

6.35 *Depreciation Allowances:* Free depreciation became available to UK shipowners in 1965, the benefits being codified under the 1968 Capital Allowances Act and then revised in October 1970. As capital investment by shipping companies increased during the late 1960s and early 1970s so the write-off provisions have become increasingly valuable. One effect of the generous depreciation allowances has been to encourage non-shipping companies to become shipowners. Thus the Clearing Banks have formed subsidiaries to purchase ships and lease them to shipping companies. The subsidy element in free depreciation schedules is difficult to calculate but if the shipping company's total tax liability does not alter, the benefit occurs from the shifting forward of allowances. Table 6.17 estimates the subsidy element in the depreciation scheme.

6.36 *Home credit scheme:* The scheme is described in paragraph 6.28 above where it is noted that the intended beneficiary of the favourable credit terms is the UK shipbuilding industry. However, to the extent that the subsidised credit terms are greater than the minimum financial inducement necessary for the ship buyer to switch his order from an overseas to a UK yard, then he also benefits.

Table 6.17

ESTIMATED BENEFIT FROM FREE DEPRECIATION ON SHIPS

	<i>Net fixed capital expenditure</i>	<i>Estimated benefit¹</i>
1971-1972	286.5	31.5
1972-1973	298.0	32.8
1973-1974	428.5	47.1
1974-1975	496.5	54.6
1975-1976	428.5	47.1
1976-1977	418.4	46.0

Note: 1. 11 per cent of capital investment — assumes 8 per cent cost of capital, 8-year straight-line depreciation compared with depreciation taken at end of first year.

Source: US Department of Commerce (1977) page III-25.

G. West German Government policy towards the shipbuilding industry

6.37 In comparison with other European countries, the level of financial assistance by government to the maritime sector has been low in the BRD (see Table 6.11). Also in contrast to the UK, German financial support has been concentrated upon shipping with relatively little support for shipbuilding. Since 1976, however, the seriousness of the fall in shipyard orders has resulted in much heavier financial support of the West German shipyards. Table 6.18 shows the US government's estimate of total financial assistance to shipbuilding between 1971 and 1975.

Table 6.18

TOTAL WEST GERMAN FINANCIAL ASSISTANCE TO THE SHIPBUILDING INDUSTRY

	<i>(DM million)</i>				
	1971	1972	1973	1974	1975
Modernisation funds, border loans, interest subsidies, KW & ERP loans, inventory loss reserves, tax credits, R and D support	95.7	104.6	173.7	180.1	192.9

Source: US Department of Commerce Report (1977), pp.VI-18.

6.38 As with UK maritime aid, allocating the benefits of financial support measures between shipping and shipbuilding is not straightforward. In general, assistance to the shipbuilding industry is administered by the Federal Ministry of Economics, while assistance to shipping is by the Ministry of Transport. However, subsidies for new ship purchases which are limited to purchases from German yards will principally benefit the shipbuilding companies.

6.39 The Subsidy Reports list financial and tax allowances according to whom they are paid. The support for shipbuilding shown in the Reports is modest, but to it should be added subsidised credit available to purchasers from German yards, relief of indirect taxes to shipbuilders, and those aids paid to shipping companies which are to the benefit of shipbuilders (notably construction grants).

Table 6.19

PRINCIPAL FINANCIAL AIDS BENEFITING SHIPBUILDING IN THE BRD

	<i>(DM millions)</i>									
	1970	1971	1972	1973	1974	1975	1976	1977	1978	
Grants for shipbuilders ¹	27.6	29.5	37.1	66.9	98.9	99.6	83.7	83.1	106.9	
Construction grants ¹	87.3	81.9	56.3	60.0	60.0	118.3	150.1	155.0	255.0	
Subsidy element in credit assistance for buyers ¹	156.5	156.5	156.5	303.5	303.5	303.5	329.4	329.4	329.4	

Note: 1 = From Subsidies Reports

2 = From US Department of Commerce (1977) p.VI.43.

- 6.40 The general and selective schemes benefiting the shipbuilding industry of the BRD are described below. It should be noted that the conventions of the BRD government have been followed in distinguishing between aids to shipping and shipbuilding, and some of the major assistance to German shipyards (notably construction grants) are described in the section on shipping.
- 6.41 *Regional assistance measures:* The principal beneficiaries of regional assistance measures have been those shipyards located in the Eastern Border region. The Lübeck-based companies Flender Werft A.G., D & K Orenstein and Koppel A.G. and Schlichting Werft GmbH have received low interest loans (6 per cent) of about DM497.8 million. These were special ERP investment loans offered during the period 1966 to 1971. No further loans have been made since 1971. The subsidy element in these loans was calculated by the US Department of Commerce at DM15.2 million. (For a calculation of total shipbuilding aid, see Table 6.19).
- 6.42 *Credit assistance at favourable rates of interest:* The credit for foreign buyers has been supplied through 9 successive shipbuilding assistance programmes. Export credit is supplied through a special government credit institution, the Kreditanstalt für Wiederaufbau (KW). The financing is from the ERP programme and from the Federal Government. By estimating the difference in the average rate of interest on these loans and the market rate of interest, it is possible to estimate the subsidy element in these loans. The US Department of Commerce has calculated the subsidy element on budgeted funds as follows:—

(DM million)								
1970	1971	1972	1973	1974	1975	1976	1977	1978
156.5	156.5	156.5	303.5	303.5	303.5	329.4	329.4	329.4

The acceptance of the OECD agreement on export credits for ships has limited assistance to shipbuilding more in West Germany than in most other OECD countries because of the lower rates of interest prevailing in West Germany than in countries with higher rates of inflation. The minimum rates of interest specified by OECD have not been far below actual market rates of interest in Germany.

- 6.43 Special assistance has been available to less developed countries for purchases from German yards. The programme is administered by the Ministry for Economic Co-operation which in 1976 and 1977 made available DM300 million for purchases from German industry. Loans to German shipowners from the ERP for ship purchases have been small. The loans are not limited to purchases from German yards although in practice most have been used for purchases from German yards. The amount of loan is shown in Table 5.21. Because the greater part of the German merchant fleet's ship purchases are from German yards, a large proportion of the aid schemes for German shipping companies provides an indirect benefit to German shipyards. This is particularly true of the construction subsidies and tax arrangements. The increase in the construction subsidy on new ships from 12.5 per cent to 17.5 per cent in 1977 was aimed primarily at protecting West German shipyards rather than assisting German shipping companies.
- 6.44 *Tax allowances:* These have taken the form of:
- Customs Duty exemption — imports of materials for the building of oceangoing ships are exempt from customs duty. Since most of the inputs for Germany's shipbuilding industry are domestically produced, the benefit is trivial.
 - Reserve funds against inventory losses — special reserve funds against inventory losses provide a tax benefit for shipyards. Between 1970 and 1974 the 9 largest West German shipbuilding companies increased their reserve funds by DM68.7 million of which (HDW) was responsible for DM39 million (US Department of Commerce, 1977 page VI-40).
- 6.45 *R and D support:* The Ministry of Science and Technology provides grants of up to 25 per cent towards selected R and D projects in the shipbuilding industry. Among the projects supported have been gas transporters, ice breaking ships and cargo carrying catamarans. The US Department of Commerce Report (1977) pp. vi-43) estimates that between 1970-1975 R and D support amounted to about DM4.5 million per year. The Federal Government's finance for R and D into shipbuilding would appear to be a little less than that of the UK Government.
- 6.46 *Yard modernisation assistance:* Low interest loans to shipbuilders have been available from (ERP) funds. These loans are available to all industries, but allocation to shipbuilding has been particularly important.
- 6.47 *Public ownership:* The Largest German shipyard, HDW, is 75 per cent owned by Salzgitter, the steel con-

glomerate owned by the Federal Government, and 25 per cent owned by the State Government of Schleswig-Holstein. The arrangement does not appear to have resulted in any preferential treatment of HDW by Federal or State governments, although HDW's balance sheet has benefited from Salzgitter's exemption from having to pay a dividend on its shareholding.

- 6.48 *Aid through State Naval Contracts:* Military contracts have been used to assist individual yards during the present crisis. Thus the Ministry of Defence brought forward orders for five ships to assist the industry — notably the Blöhm and Voss yard which was facing bankruptcy in 1977 prior to the government order. In 1976-1977 HDW took DM1260m of Defence Ministry orders, equivalent to 18 per cent of its sales.
- 6.49 *Assistance from State Governments:* In addition to Federal support for the shipbuilding industry there has been substantial support by state governments in the shipbuilding areas for their local industries. The principal shipbuilding states are shown in Table 6.20 following.

Table 6.20

DISTRIBUTION OF GERMAN SHIPBUILDING INDUSTRY BY STATE

(by production value 1977)

Schleswig-Holstein	29.7 per cent
Hamburg	17.8 per cent
Lower Saxony	15.8 per cent
Bremen	32.7 per cent
North Rhine-Westphalia	2.0 per cent

Source: *Deutscher Schiffbau 1977*. Verband der Deutschen Schiffbauindustrie e.v.

State government support was increased through a joint project which linked Länder support of the shipbuilding companies to the larger Federal programme. The 1977 Federal government budget DM450 million was earmarked for construction grants. To supplement this sum the coastal states (Hamburg, Bremen, Lower Saxony and Schleswig-Holstein) agreed to supplement this fund with state grants for projects not backed or insufficiently backed by the Federal government. (Verband Deutscher Reeder, Seeschiffahrt 1977 p.18). In addition selective assistance to local shipbuilding companies has been given by all five of the main shipbuilding states. This assistance has taken a variety of forms. Hamburg shipyards have benefited from state ownership of the shipyard land and heavy public investment in infrastructure at the freeport (interview at Economics Ministry, Bonn. September 1978).

H. West German Government Policy towards the Shipping Industry

- 6.50 As has been explained above, West German policy towards its shipping industry has been to make the West German fleet competitive in international trade with the fleets of lower-cost nations, to make the German merchant marine the most modern and the most efficient in the world, to increase the proportion of Germany's trade carried in German ships for strategic reasons, to increase Germany's control over her own foreign trade and to assist the balance of payments. It is notable that German shipping assistance has been more selective than that of Britain. Aid has been restricted to particular types of ships and different rates of assistance have been paid according to types of ship. Financial assistance has been designed to encourage modernisation of the fleet through a more rapid scrapping and replacement of vessels. The principal aids are listed below.
- 6.51 *ERP loans to German shipping companies:* These have been much less significant than the finance given to foreign buyers. The loans have had a maximum of DM5.9 million per loan which covers only purchases of small ships. Table 6.21 shows the terms of the loans.

Table 6.21

ERP FINANCING ASSISTANCE TO GERMAN SHIPOWNERS

	(DM millions)					
	1971	1972	1973	1974	1975	1976
Authorised loans	23.1	23.1	45.0	45.0	45.0	45.0
Per cent financing	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%
Interest rate	6.0%	6.0%	6.5%	7.5%	7.5%	7.5%

Source: US Department of Commerce Report (1977, pp.VI-8).

6.52 Special Depreciation of Ships: Additional depreciation against tax is allowable on new ships to the amount of 30 per cent of the purchase cost over 5 years in addition to the normal depreciation by a straight line method. The 30 per cent additional depreciation for 1971 to 1974 was increased 40 per cent for 1975 to 1978. The effect on depreciation of a ship is shown in Table 6.22 following.

Table 6.22

DEPRECIATION UNDER THE SPECIAL DEPRECIATION PROGRAMME

	1	2	3	4	5	6	7	8	(per cent) Total after 8 years
Straight line depreciation	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	66.64
With special depreciation (1971-1974)	14.33	14.33	14.33	14.33	14.33	4.05	4.05	4.05	83.80
With special depreciation (1975-1978)	16.33	16.33	16.33	16.33	16.33	2.62	2.62	2.62	89.51

Source: US Department of Commerce Report, 1977, pp.VI-10

6.53 The tax advantages of shipowning have encouraged other firms and individual investors to become ship-owners, leasing the ships to operating companies. The average annual value of the depreciation provisions have been estimated by the US Department of Commerce at DM78.7 million for 1973 to 1975.

6.54 Other tax benefits: Some additional tax benefits have been: —

- i. Taxes on gains from ship sales may be deferred for two years and are not levied at all if the capital gains are used for the purchase of a new ship during the two year period (Table 6.22).
- ii. Preferential tax rate on foreign earnings. Up to the end of 1973, 50 per cent of foreign earnings from shipping were taxed at half the normal rate (i.e. 37.5 per cent instead of 50 per cent). From 1974 80 per cent of foreign earnings were taxed at half the normal rate (30 per cent instead of 50 per cent).

6.55 Construction subsidies: Construction subsidies are grants paid to German shipowners to cover a proportion of the costs of new vessels whether ordered from German or foreign shipyards. From 1965 to 1974 the subsidy amounted to 10 per cent of new ship costs. In 1975 it was increased to 12.5 per cent. From 1976 the subsidies could be combined with other aid measures, e.g. interest relief, to a maximum total subsidy of 17 per cent. In 1977 a special subsidy of 5 per cent was added to the base subsidy of 12.5 per cent and the new subsidy of 17.5 per cent was continued in 1978. The procedure under successive programmes has been for the government to establish the total budget and the percentage rate of the subsidy, to invite applications for assistance, then to decide the proportion of planned tonnage acquisitions which can be covered by the subsidy. In addition to the standard subsidies on ship purchases, in 1974 a special subsidy of 15 per cent was introduced for very large tankers. The purpose was to expand the proportion of Germany's petroleum imports carried in German ships. The total value of grants to the shipping companies is shown in Table 6.23.

Table 6.23

GRANTS TO BRD SHIPPING COMPANIES FOR NEW SHIP PURCHASES

	1970	1971	1972	1973	1974	1975	1976	1977	1978
	87.3	81.9	56.3	60	60	118.3	150.1	155	255

Source: Subsidies Report, for 1978 German Tribune 15.5.77

6.56 Preference in Trade: In coastal trade between German ports, foreign flag ships are not permitted if German flag vessels are available at competitive rates. Also the BRD government's permission is required for cargo pooling arrangements with non-German shipping companies.

6.57 Short term assistance to meet financial crisis: The severity of the late 70s depression in the world ship-building industry and the particular problems of the German-owned shipping companies, e.g. their relative-

ly high costs, has led the BRD government to provide special short-term assistance to avert the threat to the long-term existence of the fleet. The most noticeable factor in the shipping market in 1976 and 1977 was the extension of the highly depressed conditions in the tanker industry to the bulk-carrier sector. To avoid liquidity crises and mass sell-offs by German bulk carrier owners, the government provided Federal guarantees for loans against bulk carriers.

I. Comparison and assessment of the structural policies towards shipping and shipbuilding

- 6.58 The comparison of the policy measures of the two countries is of interest not just in relation to the industries considered here, but also because the differences in policy are representative of the different approaches to structural policy in the two countries. In the case of shipbuilding policies the heavier subsidisation and the more interventionist stance of UK policies is a reflection of the political differences of governments in the two countries towards economic policy, notably the priority attached to employment maintenance by the UK government. The shipping industries of the two countries provides an interesting contrast. Not only is the level of financial support similar between the two countries, but it is the government of the BRD which had been more interventionist and selective in its policies than that of the UK. This difference reflects to some extent the importance attached in the BRD to the strategic role of the German merchant fleet, particularly in relation to the country's export trade, whereas the primary consideration for UK industrial policy — regional unemployment — is absent in the case of shipping. The comparative lack of selective intervention by the UK government in its shipping industry can also be attributed to the concentration of UK industrial policies on the manufacturing sector of the economy.
- 6.59 In assessing the effectiveness of the structural policies towards the maritime industries several difficulties present themselves. The objectives of policy measures are not always apparent from policy statements. In particular, both in the BRD and the UK, governments have been reluctant to admit that shipbuilding aids have been primarily for the purpose of protecting domestic shipbuilding capacity and maintaining employment. The most substantial offers of finance for UK shipyards have supposedly been for the modernisation and re-equipping of shipyards to enable them to raise their productivity towards international levels. Yet it is clear that subsidies have been used primarily to cover current losses and provide working capital for the purpose of maintaining employment in the medium-term. In the BRD, grants for purchases of new ships are classified as subsidies to the shipping industry, although the intended beneficiaries are domestic shipyards.
- 6.60 The allocation of the benefits of maritime aids between the shipping and shipbuilding industries presents some difficult problems. Subsidies to foreign owners on purchases from domestic yards are intended for the benefit of domestic shipbuilders. Subsidies to domestic shipowners on purchases of ships whether from domestic or foreign yards benefit domestic shipowners. Subsidies to domestic shipowners which are tied to purchases from domestic yards will tend to benefit both owner and builder. In all three cases the division of benefit between purchaser and supplier is dependent upon the relative importance of the price and quantity effects of the subsidy.
- 6.61 As with all policy interventions, the problem of assessing the influence of policy is in identifying how industry performance would have differed had the policy not operated (Cf Chapter VII paragraph 7.13 below). Special difficulties arise in assessing the influence of structural policies because of the two-way relationship between performance and policy: it is the sub-optimal performance of the industry which creates the need for structural intervention and moulds the form of policy instruments, while the operation of the policies themselves will impinge upon industry performance. A view which merits particular attention in relation to shipbuilding policies is that the reaction of industry to policy intervention is such as to counteract the effects of the policy instruments with the result that government policies have had very little long-term impact on the industry.
- 6.62 *Shipbuilding policies:* At first glance, the predominant feature of a comparison between structural policies towards shipbuilding in the BRD and UK is the similarity of the policy instruments employed. In both countries a major form of aid has been credit assistance in the form of interest subsidies and credit guarantees for domestic and foreign ship buyers. Construction grants and relief of indirect taxes to shipbuilders are paid in both countries. The principal differences in shipbuilding policies lie in the relative importance of different instruments, the higher level of subsidisation in the UK and selectivity in the application of the policy instruments.
- 6.63 The far heavier degree of financial support for the UK shipbuilding industry is primarily a reflection of the greater 'needs' of the UK industry, assuming that neither government would be willing to allow the major part of its domestic shipbuilding industry to close completely. Tables 6.4 and 6.5 indicate the great differences in the performance of shipbuilding in the UK and BRD. Between the five year periods 1955-59 and 1973-77, the tonnage output of UK yards fell at an average rate of around 1 per cent. This compares with

an average annual rate of growth of about 6 per cent for German yards and 10 per cent for world output. Of the world's leading shipbuilding nations, Britain was the only one to fail to achieve significant output growth before the current crisis. In both UK and BRD shipbuilding has been subject to strong cyclical movements and even the UK has had periods of output growth – notably 1969-71 and 1973-76. This great discrepancy in performance took place despite the large size and steady growth of the UK merchant fleet as compared with the reliance of German yards on overseas orders.

- 6.64 Decline resulting from lack of international competitiveness does not alone justify maintenance by means of government subsidies. Explanation of government's willingness to prevent the contracting of the UK shipbuilding must take into account the location of the major shipyards in areas of high unemployment (see paragraph 6.19), yet even this factor does not fully explain the remarkably high level of financial support for UK shipbuilding as compared with other industries in similar situations (e.g. textiles). An important factor is likely to be the strong influence which the industry was able to exert as a result of the concentration of the industry into a single company in each shipbuilding area (e.g. UCS – Clyde, Cammell Laird – Merseyside, Harland and Wolff – Belfast), together with the traditional importance of the industry as a major exporter and symbol of British industrial prowess, and the militancy of shipyard workers.
- 6.65 The concentration of UK shipbuilding aids on selective grants, loans and equity funding for individual yards, as compared with the concentration of BRD aids on general support for the industry, partly reflects the importance of the employment objective in the UK. The least-cost means of achieving short-run employment targets is not to distribute aid generally to the industry, but to concentrate support on those yards facing closure. UK policy has followed this approach with the heaviest proportional support going to the financially weakest and commercially least-successful yards – notably Harland and Wolff, UCS and Cammell Laird. Whether such policies are the most economical means of maintaining employment over the longer term is questionable. To investigate the effectiveness of UK as compared with West German policy measures, it is necessary to investigate more closely performance in the two countries.
- 6.66 The success of the German shipbuilding industry, at least up until the current crisis, has been in spite of the handicaps of very high labour costs and a rising international value of the mark. The competitive strength of the German shipyards appears to be more the result of managerial competence rather than of government policy. The high labour costs of the German companies has been offset by specialisation on particular vessel types where quality construction, technical expertise and high levels of capital per worker could be exploited to their fullest advantage. Government subsidies have assisted the shipyards in meeting world competition but have been insufficient to shield the industry from price competition from low-cost producers. Nor have they had the effect of concentrating resources in particular sectors of the shipbuilding industry or in different companies. Where the Federal government did move from general support measures to more selective assistance, for instance in encouraging the construction of very large tankers, the inducement to participate in this highly competitive sector of the market which was experiencing a short-lived boom, was undoubtedly detrimental to the industry.
- 6.67 The effectiveness of the heavy and selective support of shipbuilding by the UK government must be judged not solely in terms of the success of government in preventing the closure of any major shipyard between 1967 and 1978, but also in the effectiveness of UK policy in solving the basic structural problems of the UK shipbuilding industry and providing a secure basis for future existence and development. The sources of poor performance of the UK industry have been the subject of a number of detailed studies (e.g. Geddes Report 1966, Booz-Allen and Hamilton Report, 1973). Three principal factors have been identified:
- (1) Low labour productivity. UK employment in the industry since 1972 has exceeded that of Germany, despite the fact that Germany's output has been about 60 per cent greater in tonnage terms, and even greater in value terms. Comparisons have shown German labour productivity in terms of production tonnage and value per employee to be about three times the UK level. Nor has UK labour productivity increased significantly over time. An analysis of productivity during the period 1967-1971 showed that the increase in average output per employee in UK yards was entirely the result of increased vessel size. (Department of Trade and Industry, 1973, p.154).
 - (2) Poor delivery performance. The major reasons for the poor international reputation of UK shipbuilding and the preference of UK shipowners for purchases from foreign yards is the unreliable delivery record of UK yards. Between 1967 and 1971 of total UK ship completions:
 - 48 per cent were delivered on or before the contracted date;
 - 13 per cent were up to one month late;
 - 18 per cent were 2-3 months late;
 - 12 per cent were 3-6 months late; and
 - 9 per cent were over 6 months late.

(Department of Trade and Industry 1973, pp.102-103). The principal causes of this poor delivery record have been identified as poor production planning and industrial relations disputes.

- (3) Low level of capital investment. Despite heavy (government financed) investment at certain yards, the level of investment in fixed capital has been low in UK yards relative to West Germany and to other shipbuilding nations.
- 6.68 Government policies since the 1960's have done little to solve these aspects of the poor productive performance of UK shipyards. Although the inadequacies of management, work practices, industrial relations and capital equipment were highlighted by the Geddes Report, subsequent government policies have frequently provided an environment for the continuation rather than the elimination of these inadequacies. While major injections of public funds into ailing shipyards have frequently been conditional upon the abandonment of restrictive working practices and the adherence to established procedures for resolving industrial relations disputes, such conditions have not been effective. Where the offer of government rescue did encourage trade unions to abandon restrictive labour practices and accept flexible working arrangements, such concessions were often purchased with special bonus or productivity payments to workers, as occurred at Fairfields Ltd. [Broadway (1976), pp.21-22]. Where the greater part of government finance for the industry is used for keeping unprofitable yards in business, then the incentives for management and workers to increase efficiency and profitability are blunted and, as the theory of X-inefficiency would suggest, the tendency is for average costs to rise above their minimal point. The failure of government policies to resolve the deep-seated problem of UK shipbuilding is clearly identified in the 1979 corporate plan for British Shipbuilders Ltd. The report notes that the yards are 'among the least productive in the world' with output per employee 50 per cent below typical Western European ratios and delivery performance has deteriorated sharply over the period 1973-1978.
 - 6.69 This lack of impact of government policy on efficiency and productivity may seem surprising in view of the extent of structural re-organisation stimulated by government intervention. Since the Geddes Committee's formation in 1966 the UK shipbuilding industry was reduced from 28 to 6 companies, which were amalgamated into a single corporation with the establishment of British Shipbuilders in 1977. Despite the amalgamations and managerial re-organisations at the highest level, there have been few yard closures and little attempt to exploit benefits of specialisation, for example, by the re-location of orders. The history of Upper Clyde Shipbuilders provides a clear example of how sweeping organisational and managerial changes can have only limited effect at production level [see Broadway, (1976)].
 - 6.70 Measured against the objective of maintaining employment in the industry, structural policy has been fairly effective. In the absence of government assistance the shipyards of the Upper Clyde, Belfast and the Mersey would almost certainly have faced closure by the early 1970's, while in the current crisis it is doubtful whether more than a few yards could survive. At the same time, however, there is a clear conflict between the maintenance of employment in the short and medium-term and providing the foundation for self-sustaining viability which can secure employment in the long-term. It would appear that by providing selective support to unprofitable shipyards, the government has maintained almost intact the size, structure and distribution of the UK shipbuilding industry, but in doing so it has only delayed the necessary rationalisation of the industry. It might also be argued that structural policy in discriminating in favour of the least profitable yards (and therefore impeding the progress of certain more profitable and progressively-managed yards) has conflicted with the objective of securing employment in the industry in the long-term.
 - 6.71 *Shipping policies:* The effectiveness of the policies towards the shipping industries of the BRD and UK are more similar than in the case of shipbuilding. The differences that exist are the reverse of the differences in the shipbuilding industries of the two countries. Thus it is the UK that has had the larger and more internationally successful shipping industry while the German fleet has been concerned mainly with the foreign trade of the BRD. Comparing policies, it is the Federal government which has adopted more interventionist policy instruments aimed at inducing structural changes within the industry.
 - 6.72 The growth of the German fleet has been modest during the 1970s. The BRD's share of the world merchant fleet has fallen, and only a small proportion of foreign trade of the BRD is carried by the home fleet. The competitive disadvantages faced by the German fleet must be borne in mind, namely high wages costs, rising value of the DM and competition from COMECON fleets. While the performance of the German merchant marine must be considered reasonably satisfactory in such a competitive international market, the ability of the UK fleet to maintain its international position over the post-war period and to expand rapidly over the decade 1966-1976 is more impressive. This is particularly so in view of the fact that the UK fleet has achieved its growth largely through expanding its share of trade between countries, as growth of UK trade provided no basis for expansion of business. In 1974, 63 per cent of the receipts of the UK shipping industry were provided by cross-trading.

- 6.73 Aid to shipping has involved similar measures in both countries, tax concessions and subsidies for the purchase of new ships being the principal instruments. In both countries aid has been more limited than that to shipbuilding, particularly in the UK. Indeed it could be argued that the support given to shipbuilding has increased the difficulties of the shippers by encouraging the growth of excess shipping capacity. Subsidies to foreign shipping companies for the purchase of new ships have been particularly damaging to the domestic shipping industries. The shipping industry of the BRD has complained that 'as yet, shipyards are in effect the sole beneficiaries since the grants reduce their internationally uncompetitive prices' (Verband Deutscher Reeder, Annual Report for 1977).
- 6.74 Financial aid by both governments has been mainly in the form of general measures available to the industry as a whole with a comparative absence of selective assistance. In contrast with shipbuilding, and indeed most other industries, the support measures of the BRD have been more selective than those of the UK. The Federal government has identified particular structural objectives in relation to shipping which have been implemented by means of financial incentives. Incentives for new ship purchases and scrapping aids have encouraged modernisation of the fleet and incentives have been provided for the maintenance and expansion of particular types of shipping, for example, special inducements for tankers and the guarantees made available in September 1977 to maintain bulk carriers in the merchant fleet. The success of replacement in the BRD shipping industry is indicated by the low average age of the fleet (see Table 6.24).

Table 6.24

AVERAGE FLEET AGE IN YEARS

	1970	1971	1972	1973	1974	1975
Japan	9	7	7	6	7	7
UK	12	11	11	10	10	10
Norway	10	8	8	8	8	8
Germany	11	10	9	6	7	7
France	12	11	11	10	10	10
World	17	13	13	12	12	12

Source: US Department of Commerce Report, 1977 pp.1-13

- 6.75 The chief characteristics of UK aid to shipping are the relatively low level of support and the absence of selective intervention that is discriminatory between companies. The level of aid as a percentage of revenue has been on a comparable level to that received by the fleets of other nations but has been far below the level of support for shipbuilding. The absence of direct intervention by government with policies which are selective by companies is unusual for the UK industry faces intense international competition and strongly cyclical demand. Where shipping companies have run into financial difficulties there has been little effort by government to provide emergency support. Thus when the Court Line became insolvent, the British government allowed the sale of its shipping interests while nationalising its shipbuilding subsidiaries. The contrast between UK policy towards shipping and towards shipbuilding reflects in part the greater prosperity of the shipping industry but also the relatively weaker political pressures on government for support to the shipping industry. It has frequently been observed that UK economic policy has been heavily influenced by the electoral ambitions of government and by pressures from sectional interest groups. One result has been for industrial policy to be strongly affected by unemployment. Because the UK shipping fleet is widely distributed (unlike shipbuilding which is highly geographically concentrated), the constituency system of Parliamentary representation means that political pressures for financial assistance are weaker for shipping than for shipbuilding. Similarly, the geographical dispersion of the shipping industry means that an increase in unemployment in the industry tends to have a smaller electoral impact than an increase in unemployment in shipbuilding. The international character and environment of the UK shipping industry also means that it is less likely to appeal to the national government for a solution to problems than will the shipbuilding industry. This is particularly true of British shipping companies whose dependence on cross-country trade encourages a vigorously independent attitude towards national governments.

J. Conclusions

- 6.76 Study of policies in the UK and BRD towards the shipping and shipbuilding industries provides some interesting comparisons, not just between the two countries, but in the case of the UK between the two industries as well. Given the difficulties of identifying the relative importance of the different objectives of the governments in supporting their maritime industries and the difficulties of evaluating the precise effects of the policy interventions, it is not possible to draw clear conclusions on the effectiveness of different policy tools. Nevertheless, inferences may tentatively be drawn, some of which may be applicable to industries other than shipping and shipbuilding.

- 6.77 First, the examination of the impact of the policy measures of the two governments on the shipping and shipbuilding industries invites caution as to the ability of structural policies to achieve the long-term policy goals of employment maintenance, growth and balance of payments contribution. The history of UK policy towards the shipbuilding industry is particularly relevant in this context. Despite heavy and increasing financial support for the industry between 1967 and 1978, measurable economic benefits appear small. The inferior performance of UK shipbuilding in relation to the BRD and other shipbuilding nations would seem to be the result of inadequate investment, inadequate research, poor financial and cost controls, inadequate production planning, poor marketing and chaotic labour relations. These same problems appear to be as prevalent in 1978 as in 1966 despite over a decade of intense government interventions accompanied by structural reorganisation and to enormous injections of public funds.
- 6.78 So far as short-term policy objectives are concerned, government intervention and heavy financial support have achieved one important goal. As a result of government policy the company structure of UK shipbuilding has been re-organised and the heavy support has achieved its objective of maintaining industry employment, though only in the short-term. As far as long-term performance is concerned the objective of increasing international competitiveness by new investment and greater efficiency has been a remarkable failure. The greater part of grants and loans for investment have been used to finance losses and provide working capital and where substantial new investment has taken place, e.g. Harland and Wolff, Sunderland Shipbuilders, and the results have been disappointing. It could be argued that the short-term maintenance of employment in inefficient firms has inhibited progress in the industry which has only increased the size of the long-term performance improvements in industry but structural policy may be counter-productive. An assumption behind UK shipbuilding policy has been that publicly financed re-equipment of yards and support for losses in the short-run can enable more efficient production methods to be introduced which will enable the companies to move towards being self-supporting in the longer term. The experience of UK shipbuilding fails to support this assumption and evidence from the most heavily assisted yards lends support to the contrary hypothesis that short-term inhibits managerial change and encourages the maintenance of inefficient work practices at all levels in the employment hierarchy.
- 6.79 Secondly, the experiences of the industries allows a comparison between the relative effectiveness of general support measures available to the industry as a whole and more interventionist policies which aim to support particular activities or particular companies. Both countries have directed financial support at both the industry generally and at particular firms and activities. While the former should not affect resource allocation within the industry, the latter is designed to reallocate resources between products or between firms. Although selective support policies have the ability of achieving government objectives more directly and possibly with less waste of expenditure, an essential requirement of such policies is that the government can correctly identify the sectors of the market or the companies where increased resources are required in order to achieve the policy objectives. If the policy objective is the maintenance of employment in the short-term, then a selective policy of providing emergency support to companies in danger of insolvency is likely to be a less costly means of achieving any employment objective than a general support for the whole industry. If, on the other hand, the objective is to encourage growth and profitability in the industry by taking full advantage of market opportunities, there is no *a priori* reasons why the government's decisions on the allocation of resources should be more efficient than those of the market and company managers. Indeed, attempts by both the British and West German governments to direct resources into particular areas of the shipping market seem in retrospect to have been misguided. Both British and German governments encouraged the domestic shipbuilding industries to expand their production of large tankers just before the world slump in this sector of the market.
- 6.80 Thirdly, the comparison of the maritime aids and interventions by the governments of the UK and BRD reflects the different political structures and constraints existing in the two countries. The propensity of British governments to intervene selectively to support particular industries and enterprises arises in part from the electoral sensitivity of governments which is the product of a finely-balanced two-party system where changes in government can arise from changes in the majority party in a relatively small number of parliamentary constituencies. The influence exerted on government by a few particularly large trade unions may also increase sensitivity to unemployment. The contrasting government structure in the BRD means that the political forces impinging on the policy process are different and it is possible that economic policy is less subject to short-term political pressures. First, the Federal structure of government may result in weaker direct pressure on the Bund for selective interventions. Second, the greater formalisation and openness in the process of economic policy formulation (as indicated by the role of the Export Council, the influence of the independent economic research institutes and the more formal tripartite arrangements with industry and unions through the 'concerted action' programme) may tend to shield government from sectional interests. Finally, the adherence by the post-war governments of the BRD to a set of principles embodied in the philosophy of the social market economy and formally established in policy guidelines (the 1966 and 1968 *Principles of Sectoral Policy*) provides a sharp contrast to the virtually unlimited powers of industrial intervention which the UK government conferred upon itself in the 1972 Industry Act.

CHAPTER 6 : REFERENCES

Broadway, F. (1976) *Upper Clyde Shipbuilders. A study of government intervention in industry . . . the way the money goes*, Centre for Policy Studies, London.

Business Statistics Office *Business Monitor*, PQ370, HMSO

Competition from East Bloc Fleets. (1976) *Inter Economics*. Contributions from B. Kroger and H. Kern.

Denton, G. (1976) Financial assistance to British Industry. (In W. M. Corden and G. Fels, *Public Assistance to Industry*, Macmillan.

Department of Trade and Industry (1973) *British Shipbuilding, 1972. A report to the Department of Trade and Industry by Booz-Allen & Hamilton International BV*, HMSO.

Department of Industry (1974) *Public Ownership of shipbuilding and associated industries: Discussion Paper*.

Department of Industry *Research of Development Requirements Boards Reports*, 1973–4, 1974–5, 1975–6, 1976–7, HMSO.

Economic Intelligence Unit (1977) Shipping and Shipbuilding in Western Europe. *Economic Trends*, No. 50.

H. P. Drewry (Shipping Consultants) Ltd *Support for the World Shipbuilding Industry*, London.

US Department of Commerce (Maritime Administration, Office of Policy & Plans) *The Maritime Aids of the Six Major Maritime Nations*, Washington

Verband Deutscher Reeder *Shipping 1977 and 1976*. Hamburg.

Verband der Deutscher Schiffbauindustrie ev *Die Subventionierung des Schiffbaus in den Konkurrenzländern*, Hamburg.

Verband der Deutscher Schiffbauindustrie ev (1976) *German Shipyards for Inland Waterway Vessels and Small Ships*. Hamburg.

Verband der Deutscher Schiffbauindustrie ev *Deutscher Schiffbau 1976 and 1977*, Hamburg

PAPER A.3

APPRAISING SELECTIVE FINANCIAL ASSISTANCE TO INDUSTRY:
LESSONS FROM THE RECENT EXPERIENCES OF THE
UNITED KINGDOM, SWEDEN AND WEST GERMANY.

by

R. M. Grant*

Abstract

The ability to forecast and evaluate the impact of selective financial assistance is crucial to the formulation of effective policies of selective industrial intervention. A survey of institutions and methodology across the three countries reveals inadequacies in the quality and the extent of governments' appraisal of industrial assistance measures. The principal problems of quantitative appraisal are identified and discussed and suggestions are made for improvements in the procedures and methods of appraisal, with the purpose of improving the formulation and the implementation of policies of selective industrial assistance.

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Introduction: the growth of selective assistance to industry and the importance of policy appraisal

Selective subsidies to industry have played an increasingly important role over the past decade in the economic policies of all the mature Western economies. The growth of these subsidies is a major feature of the resort by the older industrialised countries to more direct instruments of industrial intervention in grappling with the post-1973 problems of stagnation and structural adjustment in the face of growing ineffectiveness of the traditional tools of macroeconomic management in achieving the basic goals of economic policy (OECD 1979, pp.71-75).

Prior to the 1970s, subsidies to industry were primarily general investment incentives and incentives to regional development which were available on a universal basis. The diversity and widespread impact of the economic problems facing the industrial sectors of the developed countries during the 1970s has encouraged a more flexible approach to industrial intervention, while the desire to control the growth of public expenditure has encouraged the replacement of general by selective subsidy measures.

In the UK, for instance, the proportion of government industrial support in the form of general subsidies fell from 68.5 per cent in 1970/71 (chiefly investment grants and the regional employment premium) to 32.9 per cent in 1980/81 (chiefly regional development grants). A similar change has taken place in Sweden where regional development subsidies and general employment subsidies have been supplemented, and to some degree supplanted, by sectoral assistance schemes to shipbuilding, iron and steel, textiles and clothing, the wood products industry, manual glass manufacture, as well as by support measures for individual enterprises. By 1979 sectoral and firm-specific subsidies amounted to 56.7% of total industrial subsidies (Carlsson 1981). In Germany direct subsidies and tax allowances to a small

number of industries (notably electronic data processing, coal mining, mineral oil production, shipbuilding and steel) have been substantial.

The large sums of money disbursed by the national governments of Britain, Sweden and Germany on selective support to industry and the important consequences of these policies for industrial structure and performance has given rise to increasing concern over the quality of decision making in allocating financial support, and, indeed, over the policies themselves. A growing body of evidence, mainly British and Swedish, is pointing to the ineffectiveness, if not the undesirability, of many past programmes of industrial support. In both countries the major part of selective financial assistance has been to declining industries and failing firms, where the support has served only to delay and complicate eventual contraction and restructuring (OECD 1979, pp.71-75, Peacock et al 1980, Hagner 1982, pp.58-59).

The concentration of selective support on sectors and firms with poor commercial prospects reflects the primacy accorded by governments to short-term employment objectives arising from the party political interests of government and the influence of producer pressure groups (both employer and trade union). Indeed the history of selective industrial assistance in Europe provides an illuminating case study in the economic theory of politics (Rowley 1980). Frequently selective subsidy decisions are in conflict with the overall economic strategy of the government. For example, the rescues of Rolls Royce and Upper Clyde Shipbuilders in 1971/2 and ICL in 1981 by avowedly non-interventionist British Conservative governments, and the support by German governments to shipbuilding in the late 1970s, steel in 1981 and AEG-Telefunken in 1982.

The haphazard development of selective support policies, their apparent conflict with other instruments of economic policy, and the political controversy which accompanies them, all point to the need for greater

efforts to be devoted towards their objective appraisal. Such appraisal should involve an identification of the effects of the assistance measures and an evaluation of these effects in relation to the government's policy objectives.

A vital distinction here is between ex ante appraisal, assessment of the desirability of a policy option on the basis of a forecast of its likely effects, and ex post appraisal, the assessment of a past policy decision on the basis of the identification and evaluation of its actual effects. For improving the efficiency of policy making, ex ante appraisal is of primary importance. Such appraisal may take place at any stage in the policy making process where decision making occurs. In the formulation of a subsidy programme, choices have to be made concerning the type of financial assistance, the sector towards which assistance is to be directed, and the criteria governing the offer of assistance. In the implementation of selective assistance by government departments and agencies, it is vital that selection of enterprises and projects for support and the amount of subsidy granted should be based upon an objective forecast of the effects of such support. Hence appraisal forms an integral part of the process of formulating and implementing policy concerning selective assistance to industry. Indeed, it is reasonable to argue that unless it is possible to forecast and evaluate with some accuracy the effects of government support to enterprises, then there is no sound foundation for a policy of selective intervention in industry.

Emphasis on the importance of ex ante appraisal is not to imply that ex post appraisal of selective assistance is of subsidiary interest. The forecasting of the effects of proposed grants of selective assistance can only be undertaken on the basis of the detailed observation and assessment of the impact of past policies. The German Federal Finance Ministry has

emphasised the important role of ex post appraisal in providing information feedback and has recommended that subsidy programmes should be subject to "continuous appraisal...to investigate whether results are keeping pace with the plan" and "concluding appraisal...to investigate whether results achieved correspond to the original or adopted plan" (Deutscher Bundestag 1977, pp.33-35).

In all three countries concern over the growth of financial support to industry and doubts about its effectiveness have encouraged strong pressures for improvements in the appraisal of the policies. In Britain, parliamentary committees have been particularly critical of the inadequate evaluation of industrial and regional subsidies: "clarity of purpose has frequently been absent...there should be more rigorous analysis... The government must consider whether an industry needs to be sustained and if so what should be its size and location and the length of time and total cost of such support". (Expenditure Committee 1972, para.262). A Swedish Commission of Enquiry on Industrial Assistance has similarly pointed to the need for improved policy formulation and the more realistic appraisal of the effects of selective support to "problem industries" and "crisis enterprises" (OECD 1982, pp.184-185). In Germany great emphasis has been placed upon the comprehensive reporting of federal subsidy measures through the biannual Subsidy Reports, but comparatively little attention has been devoted to appraising the effects and the effectiveness of the subsidies. Pressure for more widespread and thorough evaluation of subsidy measures has come from the Federal Finance Ministry. To the Sixth Subsidy Report was annexed "Possibilities and limitations of policy appraisal" (Deutscher Bundestag 1977 pp.32-35) in which the Finance Ministry stated the need for government departments and agencies to introduce methods of policy appraisal ("Erfolgskontrolle") and guidelines for appraisal were proposed which further elaborated in the subsequent Subsidy Report (Deutscher Bundestag 1979, pp.39-40).

The general impression that is conveyed by these introductory remarks is that despite the importance of selective financial assistance to industry as an instrument of economic policy and despite the enormous sums of public expenditure devoted to these programmes, little is known about the results of the policies, whether the policies are achieving their aims or whether the same aims could be better attained using alternative policies. The picture is undoubtedly complex. Since industrial subsidies are frequently indirect instruments of trade protection which offend the spirit, and frequently the letter, of international trading agreements such as GATT, EFTA and the Treaty of Rome, governments may have a vested interest in the opacity of their subsidy measures, thus discouraging their objective appraisal.

This article sheds new light upon the institutional procedures and methodology for appraising selective financial assistance to industry through a comparative review of the experiences of three countries: the United Kingdom, Sweden and West Germany. Conclusions are drawn as to the kinds of institutional arrangements conducive to efficient and effective appraisal of selective industrial assistance and the scope for improving techniques of appraisal.

Establishing objectives for selective industrial assistance: the relevance of the "policy model"

Policy appraisal involves evaluating the effects of a policy measure in relation to some objectives. Before the objectives of selective industrial assistance can be specified it is necessary that the government is clear as to the role of these subsidy measures within the government's overall economic strategy.

At the most general level, industrial policy is directed towards improving the performance of the industrial sector in relation to the macroeconomic goals of output growth, full employment, price stability and a satisfactory balance of international payments. The essential consideration is how government sees these goals being achieved:- whether by the individual choices of households and firms coordinated by the market economy, or by government choices formulated through a democratic political system and implemented through planned intervention in the economy.¹

In both of these "views of the economy" or "policy models" selective assistance to industry may play an important role, although the objectives assigned to them differ and different forms of policy appraisal may be appropriate.

The "market model" of economic policy is most closely associated with the policies of post-war German governments and also with those of British Conservative governments during the years 1970-72 and 1979-83. The "market model" is founded on a belief in the efficiency and political desirability of decentralised economic decision making coordinated through competitive markets. The principal role for government is to establish the basic conditions of competition and stability necessary for the market economy to maximise the economic welfare of society. Within this framework, industrial subsidies should not be assigned the duty of attaining specific quantitative goals but should be introduced where distortions or imperfections of the market mechanism prevent industry from optimising its performance.

The clearest statement of the role of industrial subsidies in a competitive market economy is found in the German government's published criteria governing the offer of different types of industrial assistance: the "Principles of Regional and Sectoral Structural Policy" (Deutscher Bundestag 1969a) and the "Principles of Structural Policy for Small and Medium-Sized Companies". (Deutscher Bundestag 1970a) These criteria were elaborated further in the "Structure Reports" of 1969 and 1970. (Deutscher Bundestag 1969b, 1970b). The basic consideration is that subsidies should not distort the competitive mechanism thereby impeding the adjustment process or causing mis-investment. Hence selective subsidisation is justified to correct or off-set distortions to competition which already exist. Assistance to particular sectors to retard the rate of adjustment is permissible where the problems are so severe that serious economic and social consequences would arise. It is important to note that while these principles can be used to justify subsidies to particular industries, subsidies to particular enterprises are generally excluded because of the distortion to competition which would result.

Ex-ante appraisal of subsidies within a market-orientated industrial policy is based upon the identification of the sources of market failure responsible for deficiencies in economic performance. These include externalities, monopoly and impediments to flows of resources and information. Appraisal is chiefly concerned with the extent to which selective subsidies achieve a correction to these distortions through eliminating divergencies between market prices and social opportunity cost. Hence the competitive market approach to industrial policy does not, in principle, require the detailed forecasting of the impact of selective assistance. So long as the subsidy represents a correction to a properly diagnosed market imperfection, then the market mechanism

can be relied upon to effect the increase in economic welfare.

The second type of policy model may be termed the "planning model". This has formed the basis of Swedish industrial policy and that of British Labour governments of 1964-70 and 1974-79, but has been most closely identified with the economic policies of France. While the market model envisages the government as creating the necessary framework for private industry to optimise economic performance, the planning model sees government as playing an integral and permanent role in the direction of industry and the achievement of desired levels of economic performance. The model is based on the rejection of the belief in the efficiency of the market system in optimising national economic performance. The deficiencies of the market mechanism are too serious to permit government policy to intervene merely by corrections to the price mechanism. The tendency of capitalist industry towards monopoly (nationally and internationally), the unreliability of the responses of firms and households to price signals, and the failure of risk-averse and poorly-informed managers and investors to exploit new productive opportunities, imply a central role for government in the direction of economic activity. Even where a market orientation is deemed appropriate in relation to purely domestic economic policies, the emergence of international, oligopolistically competitive markets for many industrial products requires that government and industry act cooperatively in adopting a national strategy in relation to world markets based upon the identification of comparative advantages, a forecasting of international economic trends and the choice of appropriate policies for competing internationally. This dichotomised approach to industrial policy - a competitive market approach to internal policies combined with national planning in relation to the external environment - is most closely

associated with Japan (Allen 1981, Hosomi and Okumura 1982), although recently some similar tendencies are apparent in British and Swedish industrial policy.

The role of selective financial assistance implied by the planning model is quite different than in a market model. In a market model selective assistance represents an adjustment to price incentives to which firms respond by changes in their market behaviour. In the planning model selective assistance is likely to be one of several policy instruments through which government seeks to influence an enterprise or industry towards some specified goals. Within the framework of industrial planning, cooperation between government and industry is close with the result that the two parties are not viewed as pursuing distinct and separate roles. As a result, financial assistance may operate, less as a market incentive, than a side-payment to the firm to gain compliance with government policy. For example the British government's financial assistance to Chrysler UK was less a subsidy to maintain the commercial viability of Chrysler UK, as a payment of the Chrysler Corporation in return for its maintaining its UK operation, continuing production at its Scottish plant, and pursuing the interests of the British government in respect of employment policy, regional policy and the balance of payments.

These characteristics of the planning approach: complementarity of policy instruments and consensus policy formulation by government, business and trade unions ('tripartism') is illustrated by the British Labour Government's Industrial Strategy of 1975-79. Sectoral intervention policies were based upon recommendations and appraisals by the National Economic Development Office and its Sector Working Parties, and they com-

prised a combination of selective financial assistance, planning agreements between government of major firms and the provision of entrepreneurship and venture capital by the National Enterprise Board (Grant 1982 pp62-71). In Sweden, selective assistance to firms and industries has occupied a similar role: it has been one instrument of industrial intervention along with government-industry cooperative planning, direct government restructuring (e.g. shipbuilding and steel) and informal government influence over the investment decisions of major enterprises. The implications of the planning model for the appraisal of selective industrial assistance are, first, that financial assistance cannot be evaluated as a policy instrument in isolation from the other aspects of government policy; Second, the tri-partite formulation of industrial and corporate strategies means that appraisal must relate to the plan as a whole and cannot isolate the contribution of government alone.

Despite the difficulties, the adoption by governments of a strongly interventionist approach to industrial policy, involving extensive government involvement in industrial structure and corporate decisions means that objective appraisal (both ex ante and ex post is even more important than is the case with market-orientated industrial intervention. This point has been clearly made by the Deputy Chief Economist to the British Treasury:-

The general economic policy conclusion I draw is that there is an urgent need to consider what constitutes a par or baseline situation. Should we take the situation where industry operates according to its own rules - maximising what entrepreneurs are alleged to maximise - as the baseline from which we are to consider government intervention designed to remedy specific shortcomings in the market economy, e.g. tendency to monopoly, failure to take account of externalities, market imperfections, etc? Or is the baseline position one where the Government is constantly involved in the affairs of industry - as is said to be the case in France - and is itself operating as an entrepreneur? The UK seems to be shifting from the first to the second. This given the growth in the content of what are thought to be the appropriate objectives of the State, may be

the right thing to do. But if so, the need to develop appropriate general criteria for government assistance to industry, and in particular to develop them in a way which ensures that success and failure can be monitored, becomes more important than ever. Unless objectives can be reasonably clearly set out and policies monitored so that their effectiveness known, policy is at the mercy of whatever plausible arguments hold the scene. (Byatt, 1975, p75).

The institutional arrangements for policy appraisal

While the potential for policy appraisal depends upon the state of development of appraisal methodology, the application of such appraisal and its influence on policy decisions depends substantially upon the institutional arrangements within which appraisal takes place. Appraisal of selective industrial assistance takes place at different stages in the policy places: the establishment of subsidy programmes is generally through the legislative process, or at minimum requires parliamentary approval, individual offers of assistance to specific enterprise are normally within the scope of ministerial discretion, finally, spending by government departments is subject to scrutiny by parliament and the public auditor. Hence in all three countries appraisal of industrial subsidies is spread across several different bodies. The focus of the following survey is on the principal differences in the institutional arrangements for appraisal between the three countries and different extent of formal recognition given to the appraisal function.

Ministerial discretion in the offer of selective assistance is greater in the United Kingdom than in Sweden or Germany. Under the Industry Act 1972 the Secretary of State for Industry is empowered to offer assistance in almost any form to virtually any enterprise so long as it can be justified in terms of regional employment (Section 7 of the Act) or the national economic interest (Section 8 of the Act). In consequence a heavy burden is placed

upon the Department of Industry to ensure that decisions on industrial support are based upon an adequate appraisal of their likely consequences.

In practice the burden of decision making and the necessary input of appraisal is reduced by administrative limits on the discretionary powers of the Secretary of State. Thus assistance under Section 8 is normally limited to specific subsidy programmes established in relation to particular industrial sectors or to particular types of project. Criteria for the selective assistance under Sections 7 and 8 relate to the commercial viability of the project, the need for government assistance for the fulfilment of the project, the creation of additional employment (for Section 7 support) including maximum limits of cost per job, and (for Section 8 support) a minimum project size and the requirement that the project furthers certain specified national economic objectives. (Dept. of Industry, 1982). The application of these criteria to requests for financial assistance is undertaken by the Industrial Development Unit with decisions on the granting of support by the Industrial Development Advisory Board (and its regional bodies for Scotland, Wales and the English development areas). These are independent agencies within the Department of Industry the senior staff of which are principally on secondment from private firms of accountants.

Broader scale appraisal of major applications for assistance within the wider framework of national economic policy objectives is undertaken by economists within the Department of Industry. In certain instances such advice may be supplemented by independent forecasts of commercial prospects and advice on corporate and industrial strategies commissioned from consultancy firms or from the Central Policy Review Staff, a senior research unit attached to the Cabinet Office (see for example, Ryder 1975; Central Policy Review Staff 1975). A further independent input into the ex ante appraisal

of new schemes of selective assistance is the National Economic Development Office and the sector Working Parties of the National Economic Development Council. The analyses and recommendations of these bodies were particularly influential in guiding the establishment of sectoral support schemes under Section 8 during the period 1975-79.

While ex-ante appraisal occupies a fairly formal role within the process of decision making over the granting of selective industrial assistance, no legislative or administrative requirements exist for ex post appraisal and such appraisal has been undertaken on an ad hoc basis. The principal bodies engaged in appraising the effectiveness of government spending on industrial support are two House of Commons Select Committees - the Industry and Trade Committee (formerly a sub-committee of the Expenditure Committee) and the Public Accounts Committee. The time and resources of these Committees is severely limited and for the most part they have concerned themselves with the detailed questioning of senior civil servants, commentary upon the results of appraisal exercises undertaken by the Department of Industry and recommendations for more comprehensive evaluations of subsidy measures. (see for example

The Department of Industry's own ex post appraisal includes the annual reporting of gross figures for the amount of investment and employment associated with subsidy projects (Department of Industry 1982) and more detailed studies on particular schemes (Department of Industry 1978).

The institutional arrangements in Sweden for the appraisal of selective industrial assistance bear many similarities to those in the United Kingdom, the chief differences being that ex ante appraisal generally occurs in a more formalised process of policy planning and greater emphasis is given to ex post appraisal.

Until recently, most selective assistance was for the purpose of regional economic development. The form and levels of financial assistance, the criteria and the budget allocation were determined as a part of the four-yearly and annual regional planning procedure undertaken jointly by the Ministries and the National Boards for Industry and the Labour Market, the counties and the municipalities. (Engelorecht et al 1979). None of the forms of regional support (including development aid, write-off loans, location loans, employment grants and special aid) are automatic, although the degree of selectivity varies between the different measures. Decisions on the granting of support lie chiefly with the County Administrative Boards or, in special cases, the government as a whole. The 1979 Act of Parliament on Regional Policy establishes criteria for the granting of regional support which are similar to the British criteria governing offers of selective regional assistance: projects must be shown to be commercially viable over the long-term, the aid offered is not to exceed the sum needed to initiate the investment and maximum levels of subsidy per job created are laid down (Industriedepartementet, 1978).

In the case of sectoral support measures, no formal system of ex ante appraisal exists. Support programmes for individual industries require legislative approval, so that appraisal, generally of a non-quantitative kind, takes place in the formulation of policy proposals and the debate over them in the Riksdag. In some cases Commissions of Inquiry are appointed by government to make policy recommendations. In addition independent assessments have been commissioned by government to examine the prospects and recommend strategies for certain problem industries and enterprises.²

The most notable feature of the Swedish procedure for appraising industrial assistance is the heavy emphasis which has been given to the ex post

appraisal of regional support measures and employment measures. Attached to the Ministry for Labour and the Ministry of Industry are Group for Labour Market Research and the Expert Group on Regional Studies. These are effectively permanent bodies whose function is to analyse policy problems and examine the effects of government policies. Their reports are usually highly detailed analyses of policy programmes and are generally published (e.g. Expert Group for Labour Market Research 1974, 1978; Expert Group on Regional Studies 1974, 1978). At the same time, these institutions for the evaluation of industrial intervention by government have failed to keep pace with the development of policies in this field. While the Expert Groups are concerned with regional and employment policies, much recent selective assistance to enterprises and sectors has been outside the framework of these policies. For this purpose the detailed and wide-ranging investigation by the Commission of Inquiry into Industrial Assistance was of particular importance.

In Germany there are few formal requirements for the appraisal of subsidies and despite the emphasis given by the Federal Finance Ministry to the need for the quantitative appraisal of subsidy measures, the response of the spending ministries has been limited. This may partly reflect the limited discretion exercised by Ministries in the offer of industrial assistance and partly the government's adherence to the "social market economy" model which views subsidies as a response to market imperfections.

Ex ante appraisal of proposed support programmes is not carried out as a separate activity but forms part of the process of policy formulation and development at the ministerial and parliamentary level. In the case of regional policy and some sectoral subsidy programmes (notably the development plans for electronic data processing) the plans involve a detailed consideration of financial assistance measures.

Very little work on ex post appraisal appears to have been undertaken within the German government. This may partly reflect the important role played by the five economic research institutes in the evaluation of economic policies. In the case of financial assistance to industry however very little work has been undertaken by the institutes. In a summary of published and commissioned research on the subject of subsidies during the period 1977 to 1980 annexed to the Seventh Subsidy Report, the majority of investigations were concerned with agriculture, construction and housing, with very little work which was directly relevant to industrial assistance. A major project has recently been completed on the structural adjustment of the German economy which has involved all five of the research institutes. Even here however, the appraisal of industrial subsidies has not been a major focus of the study.

The major issue concerning the optimal organisation for appraising selective industrial support which arises from this survey is whether appraisal is best undertaken within the government departments and agencies which formulate and implement industrial policy, or whether it should be undertaken by some independent body. The advantages of appraisal taking place within the government department responsible for industrial support is the access to information and the close coordination between appraisal and policy making which results. The principal advantage of independent appraisal is its objectivity.

In appraising applications for selective support from individual enterprises there is no real alternative to appraisal taking place within the departments allocating the assistance. However the system employed by the British government of an independent advisory unit within the government department permits the assessment of financial viability and the objective application of established criteria by expert staff without the danger of direct political interference.

The principal area of debate concerns the appropriate institutions for ex post appraisal of subsidy measures. Here the danger of internal appraisal by the

government department responsible for industrial policy is that appraisal will tend to justify the policies pursued - (there is some evidence of this in the British Department of Industry). In all three countries, the legislature's budgetary control occupies a critical role in evaluating expenditure on industrial subsidies, but here insufficient information and pressures on time and resources have meant that parliamentary bodies have been unable to undertake detailed, quantitative appraisals. Some of the most imaginative and thorough ex post appraisals of industrial and employment subsidies have been those undertaken by the Swedish Expert Groups. The attachment of special appraisal units to the policy making departments also ensures feedback from appraisal into the policy making process (see Gutzland, 1979).

The usefulness of universities and research institutes in the ex post appraisal of selective support is difficult to assess. In Sweden some useful cost-benefit analysis and a more extensive analysis of the impact of subsidies have been undertaken, but in Germany which has relied heavily on independent research into economic policy the studies so far completed do not appear to have been directed towards the principal issues of sectoral industrial support. However, in the development of methodology for policy appraisal the universities and research institutes possess a largely untapped potential. For example, in developing methodology for the appraisal of regional support measures, academic economists have played a leading role (e.g. Moore and Rhodes 1973).

Methodology for appraising selective financial support

The principal decisions which have to be made in formulating and implementing policies of selective financial assistance to industry concern which sectors and enterprises to support, the optimal level of subsidisation and the form which such assistance should take. In common with all other decisions involving the disbursement of public money, the guiding criterion for decision making is

is that of maximising over time the surplus of social benefit over social cost. For such decisions cost-benefit analysis (CBA) has been developed to a highly sophisticated level as a practical, quantitative technique for determining the desirability of individual projects and ranking alternatives.

While the principle of measuring and comparing social costs and benefits is as valid for decisions concerning industrial assistance as for any other public expenditure decisions, the technique of CBA has been developed primarily for the appraisal of individual investment projects within the public sector. The application of CBA to appraising selective industrial assistance involves a large number of thorny issues which relate partly to the inappropriate theoretical basis of CBA when applied to industrial subsidy decisions and, even more importantly, to the practical difficulties of identifying and measuring the full range of effects of industrial assistance measures.

Because of the complexities and heavy resource demands associated with full-blown cost-benefit appraisal of proposals for selective financial assistance, the authorities have turned to more restricted methods of ex ante appraisal - particularly for the purposes of standardised vetting procedures of applications for assistance.

To avoid the problem of CBA of combining in a number of policy objectives into a single objective function quantified in monetary units, cost-effectiveness analysis (CEA) has been employed for the ranking of support applications and determining eligibility cut-off points. CEA measures for individual projects the financial cost of achieving single objectives. Thus, in Sweden and the UK estimates of the subsidy cost p

job created and subsidy cost per unit of investment are used both in ex ante appraisal of the eligibility of applications for support and in the ex post reporting of the effectiveness of programmes of selective assistance. The use of CEA in assisting decision making in the granting of industrial subsidies has been advocated by the German Federal Finance Ministry (Deutscher Bundestag 1979, p.40).

A further method of appraisal used for the initial vetting of the eligibility of individual support applications is the analysis of commercial viability. In both the UK and Sweden the offer of selective assistance is dependent upon the commercial viability of the project or enterprise. For projects seeking investment support DCF analysis is used to evaluate the project. For rescue aid to floundering firms, aid is normally dependent upon the prospect of a future return to profitability. The intention is that government support should not be extended to enterprises which are likely to fail once support is withdrawn. Nevertheless, the validity of the commercial viability criterion is questionable on two grounds: first, where external benefits are substantial a financial loss is compatible with net social benefits, second, the viability criterion is not readily compatible with the additionality requirement employed by the British Department of Industry. The additionality requirement for selective support of new investment is that the offer of government support is essential for the project to be undertaken.

Both CEA and commercial viability analysis are of limited value in the appraisal of selective industrial assistance. The former is a useful indicator but only allows one policy objective to be considered at a time. The latter is crucial in establishing the longer term effectiveness of assistance measures, but doesn't provide guidance in determining whether policy measures are operating in the national interest. Hence

the remainder of this discussion focuses upon the overall appraisal of selective financial support, and in particular on cost-benefit approaches.

Experience in the application of CBA to selective financial assistance

Both in Sweden and the United Kingdom considerable experience has been accumulated in the application of CBA to selective industrial assistance, largely in relation to the rescue of failing enterprises. In Sweden studies have been undertaken by the Expert Groups and have been commissioned from independent economists; for the most part these studies have been published. In the UK studies have been made within government and with the exception of the Chrysler study (Expenditure Committee 1976) the studies have not been published.

The Swedish studies have, for the most part, been limited in scope and have concentrated upon the support of loss-making enterprises in areas of high unemployment for the purposes of maintaining employment. For example, in a study of a bankrupt clothing manufacturer, Algots Nord, estimates of the unemployment consequences of closure were made, and on the basis of the discrepancy between wage costs and the social opportunity cost of labour in the region, the maximum level of government subsidy for the continued operation of the enterprise was established (Expert Group for Labour Market Research 1978, pp45-50).

A rather more sophisticated approach to the cost-benefit appraisal of major applications for selective assistance has been employed by the British Department of Industry since 1976. Though unpublished, the principal features of the method are outlined in a recent OECD report (OECD 1982 pp197-199).

Starting from a DCF analysis of the project where all costs and revenues are valued at market prices net of all taxes, adjustment to social costs and benefits is made by replacing market prices with social opportunity costs - the most important of which is a shadow price for labour in the regional development areas. All shadow prices are set to converge to market prices over a variable time period.

The net effects of the project on output and employment are calculated by subtracting the displacement effects of the project. These are the reductions in output and employment in enterprises which compete in product and factor markets with the subsidised enterprises. The net present value of the benefits associated with the project are then compared with the cost of the selective assistance. Subsidy expenditure is treated as a real cost in recognition of the opportunity cost of public expenditure.

Problem in identifying the impact of selective financial assistance

While the methodology employed by the British Department of Industry shows considerable improvement to some of the rather simplistic CBAs performed in some Swedish examples of industrial assistance, the above brief sketch fails to illuminate the near-insurmountable difficulties encountered in the comprehensive appraisal of selective assistance measures. Nor have these difficulties been resolved by some of the theoretical and practical advances which have taken place in CBA methodology. Most of these advances relate to the evaluation of known effects, notably the calculation of shadow prices, the choice of discount rate and the appropriate decision criterion. However, the major problem facing the appraisal of selective industrial assistance is not the evaluation of the effects of subsidies, but the identification of the effects of

subsidies. The problem of estimating the impact of financial assistance is greater for ex ante than for ex post appraisal: ex post appraisal involves a comparison of the actual (subsidised) situation with an hypothesised nil-subsidy situation, ex ante appraisal requires a comparison of the forecast subsidised situation with a forecast nil-subsidy situation. Among the problems of estimation the following are of particular prominence:

(1) Forecasting the incentive effects of subsidisation on the recipient enterprise or industry

The first stage in the forecasting of the effect of financial assistance on a firm or industry, is to calculate the rate of subsidisation of the subsidised variable (generally investment or employment). Then with some knowledge of the price elasticity of response by the firm or industry, a forecast can be made of the change in output, employment, investment, etc. Such a calculation is particularly important where selective assistance takes the form of an incentive to the firm within the "market model" of industrial policy.

The calculation of rates of subsidisation is likely to be useful in:

- showing the differential effects of a subsidy measure between projects and enterprises which differ with regard to capital structure, profitability etc.
- comparing the subsidy implied by different types of financial assistance (e.g. grants, soft loans and tax allowances).
- aggregating different types of assistance to an enterprise or industry to give a total level of subsidisation enterprise or industry to give a total level of subsidisation (on an ex post or ex ante basis).

The calculation of a measures of subsidisation is no easy matter and a number of alternatives are feasible. Among the measures of subsidisation employed in the three countries are:

- (i) - DCF measures of investment incentives as a proportion of the amount of investment expenditure. (Mellis and Richardson 1976).
- (ii) Overall rates of subsidy. Particular attention has been given in Germany to the calculation of overall government assistance to each industry expressed as a proportion of output or value added. (Fels 1976, Juttemeier and Lammers 1979).
- (iii) Effective rates of trade protection and overall assistance. In their effects on international trade, subsidies are similar to tariff and other trade barriers in offering protection to domestic industries. The calculation of effective rates of tariff protection proposed by Corden (1971) can be extended, first, to include various non-tariff trade barriers and, second, to include subsidies so as to give "effective rates of total protection". Some estimates of these latter ratios have been produced for Britain and Germany. (Corden and Fels, 1976).

It is notable that, apart from one study commissioned by the Germany government (Juttemeier and Lammers 1979), little interest has been shown by governments in the overall allocation of selective assistance and other forms of industrial subsidy across industrial sectors.

(2) The indirect effects of selective financial assistance upon the recipient enterprise or industry.

Appraisal of the selective industrial assistance tends to consider only a small number of target variables. For example, in some of the Swedish

appraisals only the impact on employment in the subsidised firm was considered, and even in the more sophisticated studies only the direct effects on investment, output and employment were taken into account. It is certain however, that the impact of financial assistance upon recipient firms and industries is far more general than this, and some of the indirect effects may have feedback effects on the target variables.

Observation suggests that the indirect effects of selective assistance may, in the long term, be as important as the more immediate impact on jobs and investment. The offer of state assistance can generate expectations of continuing government support which encourages X-inefficiency in the form of managerial complacency and the adherence of shop floor workers to restrictive work practices. Evidence from the UK shipbuilding industry shows the tendency for continued state assistance to induce wage inflation at industry and company level which can effectively negate the employment protecting effects of subsidisation. (Broadway 1976, Peacock et al 1980, pp107-111).

In practice the effects of financial assistance are likely to spread over a wide variety of behaviour and performance variables including productivity, labour relations, product development and innovation, levels of inventory, marketing practices and so on. Only by undertaking a substantial number detailed ex post examinations at the level of the firm of selective subsidisation will it be possible to make valid generalisations about such effects.

(3) The effects of selective financial assistance outside the recipient firms. The ultimate concern of policy appraisal is with the net effects of assistance upon macroeconomic variables. This requires estimates of the

various effects of assistance outside the supported enterprise or industry. These wider effects comprise:

- (a) Displacement effects occur principally among competitors of the subsidised enterprise at product market level and also among competitors in input markets (primarily in the labour market) through a process of "crowding out".
Ex post appraisals in the UK of employment subsidies and selective aid to the wool textile industry have discussed displacement effects (Department of Employment 1977, 1978, Department of Industry 1978), but only in the field of regional policy does there appear to be quantitative estimates of displacement in the form of distinctions between the creation of investment and employment in the assisted areas, and its diversion from other areas (Marguand 1980).
- (b) Offsetting displacement effects are linkage effects - increases, in economic activity among the suppliers and customers of the assisted enterprise or industry. Linkage effects may be estimated through input-output coefficients. However the size of any linkage effects will be reduced by the extent of any displacement of economic activity in non-subsidised firms by supported firms.
- (c) Multiplier effects have been strongly emphasised in appraising the impact of regional assistance measures both generally and in relation to specific projects (see, for example, Greig 1972) At the national level, however, the estimation of multiplier effects is more problematic because of the questionable validity of Keynesian demand multipliers in terms

of real economic variables and the dependence of any multiplier effect upon the government's macroeconomic policy stance. In the past the assumption employed by the British Department of Industry in evaluating industrial assistance was that the Treasury aimed at a constant level of demand - hence an increase in expenditure would necessitate policy adjustments necessary to maintain a constant pressure of aggregate demand. An assumption more consistent with recent UK policy would be a "balanced budget approach", where any subsidy expenditure requires an off-setting increase in taxation to maintain a constant PSBR. More generally it would be possible to evaluate the macro effects of subsidies according to a range of alternatives for financing the necessary expenditure - taxes, the money supply or public borrowing. Whichever alternative is chosen, it is necessary that the net Exchequer cost of the financial assistance is calculated. This takes into account the gross cost of the subsidy together with returns to the Exchequer in taxes and savings in social security payments arising from the problems of industrial adjustment: to regulate adjustment where rapid industrial contraction imposed unacceptable sound costs, and to accelerate adjustment through the founding new industries and accelerating technical change in established industries. Hence for appraising government intervention the relevant comparison in many cases of selective assistance is between alternative time paths of adjustment rather than alternative equilibria. In these cases comparative dynamic rather than comparative static appraisal would seem appropriate.

The rate at which resources are reallocated has been taken into account in cost-benefit appraisal both in the UK, where shadow prices for inputs are adjusted at differential rates towards market prices, and in Sweden where average durations of unemployment have been calculated both regionally and occupationally. Little progress has been made, however, in placing the cost-benefit appraisal of industrial support measures within a fully dynamic framework. The only example of such an approach in the three countries was in relation to price support policies for German agriculture (Koester and Tangermann 1977).

(5) The range of policy alternatives considered in appraisal exercise.

One of principal limitations of the ex ante appraisals of selective assistance to insolvent enterprises and declining industries has been the limited number of policy options considered by government. In most cases appraisal only considered the preferred policy measure as compared with non-intervention (in the Chrysler UK appraisal, subsidisation of the company to continue at its current level of activity was compared only with closure). In practice the number of policy options is wide. For example, in Germany governments have resisted selectively supporting individual enterprises but have introduced employment subsidies and investment incentives in localities affected by the closure or decline of major enterprises (e.g. following major redundancies by Volkswagen in 1975 the government offered incentives to encourage the re-employment of displaced workers). The Swedish Commission of Enquiry on Industrial Assistance has pointed to the adverse dynamic effects that selective assistance to insolvent enterprises may have through inhibiting the adjustments necessary for long-run viability. Such evidence suggests that governments should consider a wider range of policy options when considering applications for selective assistance, including the possibility of allowing the bankruptcy of the problem enterprise and using financial assistance to encourage subsequent reconstruction through acquisition.

Conclusions

The survey of the experiences of three countries in appraising their policies of selective industrial assistance is, in most respects, disappointing in its findings. The need for the objective evaluation of selective assistance programmes and decisions is clear: selective industrial intervention has lacked a clear theoretical foundation to guide it (unlike other areas of microeconomic policy such as monopoly policy and environmental protection), decisions have been highly susceptible to political interference, and selective industrial assistance has accounted for a large and growing proportion of public expenditure in the three countries. Nevertheless, progress in the development and application of improved methods of policy appraisal have been slow. Consequently the paper has concerned itself more with the problems of appraisal than with the achievements. By examining the common difficulties experienced in the analysis of selective assistance decisions and revealing the deficiencies of past procedures and methodologies, some recommendations can be made for future progress in the field.

The first stage in the establishment of more effective analysis of selective financial assistance to industry must be the formulation of clear objectives for such policies. Clarifying the objectives of selective assistance necessitates a well-defined policy model which identifies the appropriate roles of government and the private sector and specifies how decisions are made in the industrial sector. If industrial intervention takes place within a market model, then the focus of appraisal must be on the sources of market failure and the appropriate subsidy or other policy instruments to correct these failures. Forecasting the effects of assistance measures within the approach necessitates an analysis of

the incentive effects of the measures and an understanding of the quantitative responses to the incentives. In the planning model a more direct relationship between selective industrial assistance and the target policy variables exists, but here the principal problem is the complementarity of the various instruments of industrial intervention giving rise to intractable identification problems.

The emphasis given in the paper to the institutional framework for policy appraisal is justified by the importance of this factor in determining the amount and quality of appraisal work and the impact of appraisal on policy decisions. Our survey suggests that ex ante appraisal should be closely coordinated with the formulation and implementation of policy, not least because of the superior access to information of the government department responsible for industrial policy. Independent analysis, by management consultants and economists for instance, may provide a vital input, particularly in examining the causes of unsatisfactory performance in the past and in appraising commercial prospects for the future, but the final appraisal of the national interest, must ultimately be carried out within the policy making department if it is to be influential.

At the ex post level there appears considerable scope for greater diversity in the organisations undertaking appraisal. Appraisal by government departments alone is inadequate because of the tendency to concentrate upon current policy problems and the lack of a sufficiently critical stance. However the creation of specialised internal appraisal units of highly qualified personnel has been notably successful in Sweden.

An obvious need is for improved communication and cooperation between government and independent bodies such as universities and research

organisations in policy appraisal. While in Germany there has probably been too great a reliance upon independent bodies for the appraisal of structural economic policies and a lack of adequate cooperation between the research institutes and government departments, in the UK there has been very little utilisation of the expertise available in universities and research organisations. This is partly due to the failure of the British government to make available information on its appraisal methods and their applications. The high level of communication and cooperation in the policy evaluation achieved in Sweden is based partly upon the readiness (and the obligation) of government to make information available to the public.

The greatest scope for improving the appraisal of selective financial assistance to industry lies in the development of better methods for policy evaluation. The principal technique for appraising public expenditure decisions, cost-benefit analysis, encounters serious problems when applied to the disbursement of industrial aid.

CBA is based upon static, partial equilibrium welfare analysis, while selective industrial intervention is in response to dynamic problems and is aimed at macroeconomic objectives. Important progress has been made in the evaluatory aspects of CBA, notably in the calculation of shadow prices and discount rates, however, by far the greatest problems are in identifying and measuring the impact of selective assistance upon economic variables. The major priorities therefore in improving appraisal methods are:

- (1) to consider the effect of industrial support on a wider range of economic variables than the direct impact on investment, employment and output - the effects on productivity wages and managerial performance are likely to be especially significant in the longer term;

- (ii) to examine more carefully the effects of selective assistance outside the supported enterprises or industry - displacement, linkage and macro-level effects are likely to be crucial in determining the net effects of industrial assistance; progress in this direction is likely to necessitate more detailed econometric modelling of individual industries and the construction of disaggregated macroeconomic models;
- (iii) to place policy appraisal on a dynamic rather than a static footing, in particular to examine the effects of selective assistance on the rate of change of impact variables;
- (iv) to consider a wider range of policy options than a simple support versus not support alternative.

In view of the difficulties encountered in the comprehensive appraisal of selective industrial intervention and the enormous information requirements which would be imposed, it is unlikely that a full and thorough ex ante appraisal of support decisions will ever be either practical or desirable. What is of concern, however, is the new programmes for selective subsidies are being drawn up and new criteria for the offer of financial assistance introduced in the absence of detailed knowledge of the effects or the degree of success of past policies of industrial support. If past mistakes are not to be repeated and new ones not to be made, then it is essential that governments devote substantially more attention and resources to the careful appraisal of past policies.

FOOTNOTES

1. The simple distinction between market and planned approaches is the most illuminating and useful classification of approaches to industrial intervention. Similar but more refined categorisations are found in Grant (1982 pp12-23) and Levacic (1980 pp9-17).
2. For example, a study by the Boston Consulting Group of industrial development policies (Finlay 1980), pp55-59) and cost benefit studies of individual cases of selective support by Professor Peter Bohm.

- Allen, G. C. (1981) Industrial policy and innovation in Japan, in C. Carter (ed) Industrial Policy and Innovation London: Heinemann.
- Broadway, F. (1976). Upper Clyde Shipbuilders. A Study of Government Intervention in Industry. Centre For Policy Studies, London.
- Byatt, I. C. R. (1976) Comment on a paper by A. R. Prest, in A. Whiting (ed), The Economics of Industrial Subsidies. London: HMSO.
- Carlsson, Bo. (1981) Industrial Subsidies in Sweden, Macroeconomic effects and an international comparison. EARIE Conference Paper, September.
- Central Policy Review Staff (1975) The Future of the British Car Industry. London: HMSO.
- Corden, W. M. (1971) The Theory of Protection. London. Oxford University Press.
- Corden, W. M. and G. Fels (eds) (1976) Public Assistance to Industry. Protection and Subsidies in Britain and Germany. London Macmillan.
- Department of Employment (1978) Small Firms employment subsidy, an evaluation of its effectiveness. Department of Employment Gazette, May 549-555.
- Department of Industry (1975) The British Motor Cycle Industry. A Report prepared for the Secretary of State for Industry by the Boston Consulting Group. HC 532. London. HMSO.
- Department of Industry (1978) Wool Textile Industry Scheme. An Assessment of the Effects of Selective Assistance under the Industry Act 1972. London.
- Department of Industry (1982) Guide to Schemes of Government Support. Selective Financial Assistance to Industry. London.
- Department of Trade and Industry (1973) British Shipbuilding 1973. A Report to the Department of Trade and Industry by Booz-Allen and Hamilton BV. London: HMSO.
- Deutscher Rundestag (1969a) Grundsätze der Sektoralen und Regionalen Strukturpolitik Drucksache V/2469, Bonn.
- Deutscher Bundestag (1969b) Structure Report 1969 Drucksache V/4564, Bonn.
- Deutscher Bundestag (1970a) Grundsätze der Strukturpolitik für kleine und mittlere Unternehmen. Drucksache VI/1666.
- Deutscher Bundestag (1970b) Structure Report 1970. Drucksache VI/761 Bonn.

- Deutscher Bundestag (1977) Sechster Subventionsbericht. Drucksache 8/1195. Bonn, 17 November.
- Deutscher Bundestag (1979) Seibter Subventionsbericht Drucksache 8/3097, Bonn, 8 August.
- Engelbrecht, P. O., L. Johnson, T. Osterberg (1979) Information for Regional Planning Systems in Sweden. Report to the Council of Europe Seminar on Information Systems for Regional Planning. Madrid, June.
- Expenditure Committee (1972) Sixth Report from the Expenditure Committee 1971-72. Public Money in the Private Sector. HC 3470 London: HMSO.
- Expenditure Committee (1976) Eighth Report from the Expenditure Committee Session 1975-76. Public Expenditure on Chrysler UK Ltd. HC 596(1). London: HMSO
- Expert Group for Labour Market Research (1974) Att utvärdera arbetsmarknadspolitik ("The evaluation of labour market policy") EPA, SOU 1974: 29, Stockholm.
- Expert Group for Labour Market Research (1978) Arbetsmarknadspolitik: torandring EFA, 1978: by, Stockholm. English summary: Labour Market Policy in Transition. Summary of a report From the Expert Group for Labour Market Research at the Swedish Ministry of Labour.
- Expert Group on Regional Studies (1974) Follow up of Regional incentives in Sweden. A report by the Expert Group on Regional Studies. Ministry of Labour. Stockholm. (A summary of the study was published in A Report on Methods of Measuring the Effects of Regional Policies. OECD, Paris 1977.)
- Expert Group on Regional Studies (1978) Promotion of Regional Development. A Report by the Expert Group on Regional Studies (ERU) Industridepartementet. Stockholm, November.
- Finlay, A. W. (1980) Swedish industrial policy planning - a workshop report. Long Range Planning, December, pp55-59.
- Grant, W. (1982) The Political Economy of Industrial Policy. London: Butterworth,.
- Greig, M. A. (1972) "The economic impact of the Highlands and Islands Development Board's investment in Fisheries". Highlands and Islands Development Board.
- Guteland, G. (1979) Swedish Experience of Cooperation between research and planning in the context of regional policy. Expert Group for Regional studies, Stockholm. October.
- Hager, W (1982) "Industrial Policy, Trade Policy and European Social Democracy" in J. Pinder (ed) Natioanl Industrial Strategies and the World Economy New Jersey: Atlantic Institute for International Affairs.

- Hosomi, T. and A Okumura (1982) Japanese industrial policy in J. Pinder (ed) op cit.
- Industridepartementet (1978) Summary of the Government Bill on Regional Policy. Stockholm.
- Juttemeier, K. H. and Lammers (1979) Subvention in der Bundesrepublik Deutschland. Institut für Weltwirtschaft Kiel, November 1979.
- Koester, U and S Tangerman (1977) Supplementing farm price policy by direct income payments: cost-benefit analysis of alternative farm policies with special application to German agriculture European Review of Agricultural Economics(4)
- Marquand, J. (1980) measuring the affects and costs of regional incentives. Government Economic Service Working Paper No 32. Department of Industry, London.
- Mellis, C. L. and P. W. Richardson (1976) "The value of investment incentives for manufacturing industry. 1946 to 1966" in A. Whiting (ed) The Economics of Industrial Subsidies. London: HMSO
- Moore, B. and J. Rhodes (1973) Evaluating the effects of British regional policy. Economic Journal.
- Moore, B. and J. Rhodes (1976) The economic and exchequer implications of regional policy, in Expenditure Committee, Minutes of Evidence HC 237, HMSO pp448-462.
- OECD (1979) The Case for Positive Adjustment Policies. A Compendium of OECD Documents 1978/79, OECD, Paris, June.
- OECD (1982) Appraisal and Reporting Methodologies on Certain Types of Direct Government Intervention used in Selected OECD Member Countries. Paris: OECD.
- Peacock, A. T., R. M. Grant, M. Ricketts, G. K. Shaw, E. Wagner (1980) Structural Economic Policies in West Germany and the United Kingdom. Anglo-German Foundation, London.
- Rowley, C. K., (1980) "Industrial Policy in the Mixed Economy" Department of Economics, University of Newcastle, Discussion Paper No.41.
- Ryder, D. (1975) British Leyland: the Next Decade HC 342 London:HMSO. (The Ryder Report).