ORGANIZATIONAL FORM AND FIRM PERFORMANCE:

An Analysis of the Structure of large U.K. Companies.

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CONTENTS

TABLES

FIGURES

Abbreviations

Referring to Appendices A and B

A.R.	-	Annual Report
M.T.	-	Management Today
L.S.E.	-	London School of Economics paper

Note: A reference with any of the following names refers to a stockbroker's report by the company in question:

Capel

De Zoete Bevan

Hoare

George Henderson

Greenwell

Laing and Cruickshank

Laurie Milbank

Lawreen Keen and Gardner

Rowe Rudd

Rowe Swann

Sebag

Simon Coates

Acknowledgment

I wish to thank my supervisor John Cable for his help and criticism over the last four years and for the considerable support he has given me.

Declaration

The implications and conclusions of Chapter 4 partly represent the work of Mr. John Cable, my supervisor, with whom I have written a joint paper. He has also provided much of the analysis on the comparisons between the various measures of profitability presented in Section II Chapter 4.
Some of the classifications in Appendix A were completed for my M.A. dissertation from Warwick; however all such data was reviewed before use in the thesis.

Summary

The thesis attempts to analyse both theoretically and empirically the relationship between firm performance and organizational structure. The chosen measure of performance is profit. To this end Chapter Two reviews the work of Williamson (103, 104, 109) and others on the classification of the structure of large firms. Hypotheses concerning superiority are considered. However, it may be that the structures considered in Chapter Two, are only appropriate to stable environments. Hence Chapter Three develops a simple model of optimal decentralization under differing environmental conditions and considers existing organizational structures that may be most appropriate to the highly unstable environment of research and development.

Chapter Four reports empirical analysis involving the use of organizational structure as an independent (dummy) variable. The sample consists of 82 companies in five industries where the environment is considered stable. Hence the classification scheme of Williamson and Bhargava (109) seems to be appropriate. Equations are presented using both price-cost margins and a rate of return on capital as the measure of profitability. The organizational dummy is highly significant in all cases, seemingly indicating that organizational structure matters in determining performance. However little evidence is found of specification bias in previous studies which excluded the organizational dummy. Possible important omissions from the equations are reviewed.

A comparison is made of the variations in the results between those equations using price-cost margins as the dependent variable and those using a rate of return. No conclusions are drawn about superiority.

In order to exclude non-divisionalized enterprise which cause problems in Chapter Four, Chapter Five considers a sample of 36 conglomerates. However, although positive, the organizational dummy failed in general to reach statistical significance. Possible explanations are considered which, if correct, may require public policy to be essentially ad hoc in nature.

CHAPTER I - INTRODUCTION

If observed interfirm variations in profitability reflect differences in economic efficiency they need explanation. Studies in this field have focused on a large number of explanatory variables; for instance, firm size; Hall and Weiss (32) Samuels and Smyth (82) Steckler (93); firm growth; Singh and Whittington (90) Parker (73); diversification Gort (29); owner versus manager control Kamerschen (38) Radice (79); managerial taste Williamson (106). Hence both variables determining the profit-maximizing level of profit and managerial variables have attracted attention. However to our knowledge there has been no empirical work which explicitly includes the organizational form of the firm as an explanatory variable. Hence the efficacy of internal control devices has been ignored as a possible explanation of differences in profit performance. This can be entirely justified by the neoclassical assumption that all firms are optimally organized in this respect. However the observation by Williamson and Bhargava (109) of the simultaneous existence of several different types of organizational form in the U.S. and their arguments concerning expected efficiency differences, may bring this assumption into question. This will be particularly so if large numbers of firms are undergoing change in their organizational form. Williamson (103, Chapter 3) in considering American experience, has reported a rather long period for the diffusion of a new organizational form, but it would seem that most of the activity was concentrated in a period of approximately a decade [Williamson

and Bhargava (109 P.142)]. Moreover, if differences in organizational form do matter in determining profitability, this may be helpful in deciding the exact nature of the managerial inadequacies which have been used to explain inter-firm differences in profit performance. [Liebenstein (47) Dunning (23)].

In attempting to estimate the effects of organization form on firm performance, this thesis depends heavily on the classification scheme of Williamson and Bhargava (109). Therefore chapter two considers the literature that led to its development and to the, a priori, expectations about the relative efficiency of the various forms.

The pioneering work of Williamson (103) on organizational structure appears to take a view of organizations that emphasizes the importance of central management and superior-subordinate relationships. Ultimate authority is vested fairly firmly with top management who may or may not wish to delegate some decisions to lower levels of the organization. Hence, as chapter two shows, divisional performance depends crucially upon the efficacy of the control mechanisms imposed by central management. Moreover central management will have to make important and far reaching decisions as to whether to (voluntarily) delegate decision-making authority, the definition of divisional tasks and responsibilities and the nature of the long-term corporate plan.

Williamson (103, P.19-21) considers the possible efficiency advantages in the fields of communication and response to sudden change available when organizations place emphasis on superior-subordinate relationships. For these to be

forthcoming requires that only minimal amounts of interaction between peers is necessary for successful completion of the organizational task. This, in turn, implies rather specialized, easily defined job tasks which are technically and informationally separable. In these circumstances the only communication channels necessary for successful completion of the organizational task are the hierarchical ones between superior and subordinate. In terms of the organizational form, these conditions allow separate divisions to be formed, which impinge on each other only to the extent of the need for rules to stop intra-firm competition (see P. 10).

Given these views as to the nature of organizations, the Williamson model of hierarchical decision-making, which is reflected in the analysis of organizational form, argues the importance of the span of control (109, Chapter 3) in determining subordinate compliance with organizational goals. As the supervisor's available time with each subordinate decreases, so does compliance, leading to a preference for small spans on control loss grounds.

Thus it would seem that the Williamson view of organization is essentially "bureaucratic" in the Weber sense (100). Glueck and Dennis (28) have stylized the characteristics of the bureaucractic model as:- clear authority relationships embodying the concept of unity of control; small spans of control; narrow job specification; tight control mechanisms; an emphasis on hierarchical superior-subordinate relationships and standard operating procedures:(1) decision-making concentrated at the top. Evidence in the literature (Burns and Stalker (1 Morse and Lorsch (64) Leavitt (45)) may point to the superiority of this type of organization only under "stable"

environments. Since no firm will face the completely certain environment of economic theory, stable environments will be taken to be those where the

". . . circumstances [to which the firm must adjust] are predictable in the sense that although they occur with stochastic regularity, precise advance knowledge of this is unavailable ... (that is) customers come and go ... labour and materials procurement is subject to the usual vagaries ... not to mention minor shifts in demand and similar disturbances of a transitory nature" (my underlining). (Williamson 103,P.24)

Not all environments may be stable so chapter three considers the performance of bureaucratic organizations under "uncertain" conditions, where the firm faces an environment involving a high degree of risk or uncertainty [for definition of these terms see Knight (40 P.19)]. In organizational terms this will mean that many occurrences cannot be handled by previously defined standard operating procedures and that well-defined search procedures are not available in advance (P.25). Research and development may operate under such conditions so Chapter 3 also considers organizational forms that may provide superior efficiency when new products (or other innovations) are of overriding importance in determining performance.(2) However the analysis may have application for large firms facing an uncertain environment from whatever reason.

Chapter 4, attempts to explain variations in profitability observed in a sample of 82 large industrial companies. All firms seemed to be facing a stable environment. Therefore a model is developed where organizational form, as classified by

Williamson and Bhargava, is included among the explanatory variables. Results are presented for several specifications of the model, the dependent variable and the organizational form variable. These may provide evidence as to the importance of organizational form in determining profitability. In addition, interest will be focused on whether the exclusion of this variable from earlier work has resulted in serious specification bias. Such bias may be expected when included variables are correlated with other excluded variables which are significant in determining profitability [for explanation see Johnston (37)].

Chapter 5, considers a sample of conglomerate firms. These where chosen in order to obtain additional evidence as to the importance of organizational form in determining profitability, in a situation where two particular problems encountered in Chapter 4 are mitigated. Thus the use of conglomerates allows an unequivocal expectation, on the basis of the Williamson and Bhargava arguments, concerning the optimality or not of the organizational form used by <u>all</u> firms in the sample and may reduce problems associated with variations in firm profit due to differences in product-market structure.

Chapter 6 draws some conclusions, relates them to the existing literature, and points to possible scope for work in the future.

FOOTNOTES

(1) Standard operating procedures are a set of rules that determine legitimate individual action as a result of stimulus. Their use allows a reduction in communication between superior and subordinate. It will be easiest to tabulate efficient procedures if the stimuli to which individuals are subject are few and not subject to change.

(2) The M-form (see Chapter 2) may not be appropriate for technical advance. The latter may be promoted primarily by small firms which, later, when steady-state efficiency is essential will be taken over by M-form companies. (See Williamson 103, P.157)

CHAPTER II - THE MULTIDIVISIONAL FORM

The study and explanation of variation in economic performance is fundamental to economics, yet typically matters of internal efficiency have received little attention, especially in empirical work. Indeed it is usual to assume that the management of each company has achieved maximum possible internal efficiency, so that differences in profit performance can be explained by reference to the size and growth of the organization or by the market conditions in which the firm finds itself.

Such an approach is open to four criticisms: Firstly, management may have discretion over the use of some of the firm's resources, and use it to employ superfluous factors of production see Williamson, (106).[1] Secondly, the quality of factors of production available to the firm may differ. These skill differences may not be reflected in payment, due to the activities of the trade unions, or due to the inability to assess the individuals' capability. Thirdly, individuals do not have the unbounded calculative ability, time or knowledge of neoclassical theory's economic men, but perhaps are better characterized [see Simon (88, Chp. V)] as (I) not knowing the complete consequences of their actions (2) not having nor in a position to afford a complete knowledge of all alternatives (3) not being able to rank all alternatives in terms of performance and therefore likely to be a satisficers not maximizers. Fourthly, empirical investigation has found significant differences in technical efficiency [For theory see Farrell (25). For examples see Liebenstein (47)].

One might conclude that these differences in efficiency found by Liebenstein (47) were the result of managerial discretion or the quality of the factors of production used, but equally

they could be due to the use by firms of different types of organizational structure where the latter refers to the nature and form of the various sub-units within the firm, their responsibilities and their relationship with any co-ordinating body and the form of the lines of communication within the organization.[2] Innovation is rarely instantaneous[3] so it is unlikely that if a snapshot of the economy is taken, all firms will be using an equally appropriate organizational structure.

The classification of organizational structure used in this thesis is provided by the work of Williamson (103) and Williamson and Bhargava (109), building on the pioneering work of Chandler (16). It is crucially dependent on the nature of the sub-units and the relationships between them. Chandler documented a type of organizational structure pioneered by General Motors (et alia) in the U.S.A. in the 1920's, but not generally in use until after World War II. This was called the multidivisional form (M-form). In this structure the company is divided into a central office, consisting only of top level management aided by specialists in particular areas, and the various divisions, each producing one product or a group of closely related products. The divisions are self-sufficient with respect to the production and selling of their product, and have full responsibility for day-to-day decision-making. The central office is then free to concentrate on long term planning and the monitoring and control of the actions of the divisions.

This is in contrast to the traditional organizational structure, where departmentalization is on the basis of function

(i.e. sales, production, finance, marketing etc.,). Typically in such a firm the top executives of the functional departments meet to decide the company's top level managerial decisions. This organizational type is called U-form.

The development of the M-form was seen by Chandler (16) and later Williamson (103), as a response to the increasing size and diversity of products in the largest firms. Hence the M-form was not seen as superior for all sized firms, all levels of diversification or, indeed, all technologies.[4]

In order to perform at maximum efficiency the M-form should have two important characteristics according to Williamson (103, P.120); Firstly, there must be a separation of day-to-day from strategic (long-term) decision-making. Thus the routine day-to-day decision-making in the M-form must be delegated fully to the divisional level, so reducing the load on central management and making response to local change (referring to (single) product demand and costs) both quick and efficient. Secondly, central management must retain responsibility for both long-term planning, which should be done free from product bias,[5] and the control of the divisions. In these tasks management will be able to call on experts to give specialist advice.

The nature of the controls employed by central management will be crucial. Thus in the M-form, divisional management are made fully profit-responsible and are subject to four types of scrutiny and modification from head office. Williamson and Bhargava (109) have argued that these "strategic controls" will provide the organization with efficiency advantages.

(a) Internal audits. The auditing of divisional performance will be a continuous process, enabling central management

to have up-to-date information about what is happening and to make any modifications thought necessary. Typically, several performance indicators as well as profit will be used, so preventing divisional management from inflating short-term profit, and hence its own rewards, at the expense of long-term viability. This rigorous auditing of performance aims to keep anti-organizational behaviour on the part of the divisional management to a minimum.

(b) externality control. The actions of one subsidiary will affect the performance of another if there is interdependence between products. It will be the job of the central office to minimize or maximize these externalities depending on whether their effect on organizational performance is negative or positive. This it will do by a series of rules defining acceptable divisional actions and, in the last resort, by arbitration of divisional disputes.

The amount of co-ordination necessary due to the existence of externalities will depend upon the product mix of the company; it will be greater, ceteris paribus, the greater the number of transactions between divisions and the greater the absolute cross-elasticities(6) between the products of the separate divisions.

(c) Manipulation of the incentive machinery. Economizing on pecuniary rewards by partial substitution of non-pecuniary rewards is a characteristic of all firms [Williamson and Bhargava (109)]. The firm gains advantages over the market which cannot confer non-pecuniary rewards very efficiently. The M-form will attempt to use all the rewards and penalties at its disposal, so that central management can affect the reward-system in the divisions without getting involved in their

running. It can do this by its attitude in allocating rewards and penalties to top divisional management.

(d) Cash flow allocation. It is basic to the M-form where strategic planning is undertaken by central management, that cash flows are not necessarily returned to areas within the firms from which they came. Instead they are allocated to areas of highest yield. In this way the M-form works as an internal capital market. Compared with the (external) capital market, it has alleged advantages in the form of cheaper monitoring of performance and the ability to make discrete or marginal changes in the project in a continuous manner.(7) However, compared with the external market, project choice is restricted since it is limited to areas within which the firm already works, or to which diversification is considered practical.

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Analysis of the comparative efficiency of the U-form and M-form requires consideration of two cases [Williamson and Bhargava (109)].

(a) the M-form compared with a similarly sized U-form.

(b) the M-form compared with a series of U-form independents corresponding in size to the M-form's divisions.

Both cases are considered in static terms, that is with given technology, and under the assumption that production is technically separable.

Case (a)

For a number of reasons, as the U-form grows and diversifies, control problems may become increasingly serious (Williamson 103, P.110). Firstly, top management may have increasing difficulty in understanding the different aspects

of the company's activities and in finding time to make the day-to-day and strategic decisions required of it; if this is true, top managements' ability to control will be increasingly impaired. Additionally, as the number of hierarchies increases the response to day-to-day changes in the environment may be slowed because information about these changes will be increasingly removed from decision-making capacity. The M-form reduces the top-managements' decision-making load and obtains a quick response to change in the routine (day-to-day) environment by creating divisions, each producing one product or a small group of closely related products,[8] to which day-to-day decision-making can be delegated. Central management can then concentrate on the long-term planning; thus freed from the restrictions of day-to-day decision-making central management may be able to make more rational long-term plans. Secondly, there may be increasing problems with sub-goal pursuit.[9] In a small unit, sub-goal pursuit is mitigated by short-lines of communication and control, and the feeling of association with the organization that may be felt by its members. But, as the firm with the U-form structure grows bigger, significant increases in sub-goal pursuit may be expected. This occurs due to the difficulty involved in specifying adequate criteria for success,[10] - important since these are used as a yardstick for distribution of rewards and penalties within the organization - and because top-level decision-making is in the hands of personnel with full-time functional responsibilities.[11] Individuals, so intimately involved with a particular part of the organization, might be expected to favour this area in their decision-making activities.[12]

Sub-goal pursuit may be both "deliberate", typically payments for excess factors and excess leisure, and "unconcious",

the maximization by individuals of the output or size of their particular functional department.[13] This occurs because the departmental goals, in terms of sales, production etc., cannot so easily be equated, in the U-form, with the presumed overall organizational goal of profit.

Sub-goal pursuit in the M-form will be the consequence of goal pursuit on the part of three groups:- divisional management, central management and the specialist (elite) staff.

Due to the effect of strategic controls, divisional management will be encouraged, under threat of loss of rewards, to follow corporate goals as determined by central management. Under these conditions the discretionary resources available to divisional management may be small. The elite staff may have bias towards goals like professional or academic excellence, but due to their small numbers and proximity to central management the effect on organizational goals is likely to be small (Williamson 103, P.126).

Williamson (103) has suggested that, due to their close association with the firm's success, central management in the M-form will emphasize profit-maximising objectives.[14] However, while it seems unlikely that the central management has any incentive to inflate the payments to other members of the organization, it may be that the top management of an M-form is just as prone to objectives other than profit-maximization as managements in other structures, if the situation allows. That is, if shareholders are unable fully to enforce their property rights, management may use the discretion over resources that this implies to increase its own welfare at the expense of profit performance. This action, contrary to the presumed preferences of shareholders, may take the form of excessive sales

[Baumol (9)], excessive growth [Marris (57)], or employment of excess factors of production [Williamson (106)].

Nevertheless, even if this is so, if it can be assumed that shareholders maximize the rewards from property rights enforcement, a switch from the U-form to M-form structure may be of benefit to both the owners and managers of the company. Hence under this assumption shareholders will enforce their property rights only up to the point where the marginal cost of enforcement equals the marginal benefit. Under conditions of non-perfect competition in product markets and a capital market working with imperfect information, this will imply some discretion for management since marginal enforcement costs will be non-zero. Moreover these costs might be expected to increase with the amount of enforcement undertaken, as the more obvious sources of information and courses of action are exhausted. If therefore the potential profit available to shareholders, if property rights were fully enforced, rises due to the lower sub-goal pursuit, better decision-making response (above), and the capital market advantages (see below) of the M-form, then (with a positive marginal cost of enforcement) the benefits of this marginal profit will be split between shareholders, in the form of increased reported profits, and management, in the form of increased discretion.(15) Additionally, by strengthening the market's view of the company, the extra profit may allow management to fulfil its long-run borrowing requirement more easily.

Thirdly, to the extent that profit and loss figures are more costly to produce in a functionally departmentalized company, due to the responsibility for products residing with several different sub-units all with a good deal of autonomy and with different control procedures, the U-form will be at a

disadvantage in deciding on the performance of individual products. Hence the selection of successful products for expansion or loss-making products for elimination is made more onerous. Problems of this kind may be expected to grow in importance as firm size and diversification increases. However, in the M-form internal audits on the basis of profit allow decisions about future production levels to be taken on the basis of greater information.

While the advantages of the M-form structure seems overwhelming, there are various reasons why, on the one hand, the U-form remains the natural type of structure for the small single-product firm [see Chandler (16), Williamson (103 Chp.10)] and why on the other, U-forms of quite large size can be expected.

Firstly, the M-form may mean an increase in expense in certain specialist functional tasks, since some duplication is required as between the elite staff at headquarters and the functional departments within the divisions.

Secondly, in order to keep the idea of profit responsibility on the basis of products, maximum economies of scale in the various functional departments may not be obtained, as these departments will be split up among the divisions in the M-form. However there is an alternative, if such losses are very large, of forming a separate division performing the function in question and operated as a cost centre.(16)

Thirdly, the M-form structure involves a decoupling exercise, separating the various products into divisions. This will involve increases in informational and co-ordinational costs if the products are highly interconnected either technologically or in terms of cross-elasticities. In the limit

provided by technically inseparable products, very large units operated functionally may be necessary since the costs involved in any decoupling exercise will override the advantages provided by the M-form.[17]

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Case (b)(above) throws light on factors leading to increased firm size, and the limits to any such increases. In particular, it shows how the M-form firstly may allow more vertical integration than the U-form under similar conditions and secondly, encourages the growth of the conglomerate-type of company which operates in various widely differing product-areas.[18]

Consider an M-form structure compared with a series of U-form independents, each the size of a division, with respect to vertical integration. It is assumed that the cost of running each division is the same as the corresponding U-form independent.[19]

Williamson (107, 108) has analysed the advantages of internal organization in the field of vertical integration. Assuming technology is fixed and uniformly available, he argued that all exchanges of technically separable products should be analysed in terms of a comparison of the costs incurred by the market and intra-organizational methods.

Using this approach, if it can be assumed that managers maximize potential profit which subsequently will be divided between discretionary resources and reported profit, then marginal costs and benefits will determine the amount of vertical integration undertaken. On the one hand, vertical integration may reduce the costs of exchange when one or more of Williamson's [108, P.114 - 227][20] causes of market failure are

important. On the other hand, to the extent that greater size means an increase in anti-organizational behaviour, vertical integration will involve additional costs. Therefore the M-form, if it mitigates these cost increases and assuming that benefits are unaffected, will allow, ceteris paribus, more vertical integration in the economy.

In the case of the conglomerate, which operates in widely-diversified industries with little connection between them, the advantages (if any) of the M-form over the U-form independents will be in the allocation of cash flow to areas of greatest yield. These advantages of the "internal capital market" were specified above. They will be compounded if the U-form independents have a definite bias towards internal deployment of funds.

However, the M-form remains only a way of mitigating the control problems of the large firm. As the firm grows, decision making problems associated with management overload, and sub-goal pursuit, resultant from inadequate supervision, may re-emerge so that beyond a certain size, dependent on the complexity of the control process,[21] the net advantages from more internal organization will again be lower than those from the use of markets (external organization). It may be that there are some firms in the economy which have more divisions than is optimal for present managerial and informational technology.

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The basic classification including only M-forms and U-forms[22] has been extended by Williamson and Bhargava (109). This was necessary, because apparently there are divisionalized companies which cannot be expected to perform as efficiently as

the M-form. Among these are those companies, which, while having the general characteristics of the M-form - that is a central office and several individually viable subsidiaries - fail to show either the necessary separation of long-term and day-to-day decision-making or sufficiently vigorous controls of divisional managements' activities.(23)

Hence the $\bar{M}$-form is that structure where central management is involved both in the day-to-day decision-making as well as long-term planning. Such involvement will mean that the firm will not be able to get the advantages afforded by the M-form in relieving the managerial capacity problem. It is expected that because of this, long-term decision-making will suffer unduly, since short-term factors will tend to gain prominence because of their immediacy. Since the responsibility for day-to-day decision-making is shared between central and divisional management, full responsibility for actions cannot easily be attributed to the separate groups; therefore organizational rewards and penalties may be misallocated, and sub-goal pursuit will be greater than in the M-form. However, rigorous internal auditing may be present in the $\bar{M}$-form.

Conversely, the H-form gives too much discretion to divisional management, because at least one of the strategic controls associated with the M-form is not present. This implies that discretionary payments may be excessive and that there may be wasteful competition between subsidiaries whose activities have not been adequately co-ordinated by central management. (From now on this characteristic of the organizations will be called "product overlap".) Additionally, few internal capital market advantages will be gained; indeed in extreme cases the company may well allocate funds to serious

loss-making activities. This is often due to pressure from divisional management who (usually) in the H-form have a considerable say in decisions optimally reserved for central management. Hence, just as in the U-form, the form of decision-making may be biased by the individuals particular loyalty to one part of the firm.

The X-form is somewhat specialized. It relates to that structure where there is a mixture of control characteristics. That is, one part of the company may be under functional control, others under M-form or H-form type control (etc.).

Williamson and Bhargava (109) have suggested one rather specialized instance where the X-form can be seen as a rational response to the firm's situation:- a large monopolistic U-form wants to restrict investment into its original product line, but has found profitable opportunities elsewhere. These new activities may be given divisional standing while the original unit continues as a U-form. Only if the U-form can be split to advantage will a full-bodied M-form be justified. Nevertheless, on the basis of observation of companies, in practice most X-forms seem to be only transitional in nature and therefore the optimality of this form on the basis of organizational costs and benefits must be doubted in many cases (as Williamson and Bhargava themselves note).

The M′-classification is the one allocated to a company which is in the process of changing its organizational structure to M-form. Such a change will involve reorganizational costs in terms of redefining individuals' job task, bringing in new operating procedures, and overcoming resistance to change. Hence an M-form in period of transition cannot be

expected to perform with as low costs as the long-established M-form.

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It would seem that the classification of Williamson and Bhargava provides a method of identifying different organizational structures that may both affect performance significantly and are suitable for inclusion in regression analysis. However, there are weaknesses in this approach.

Firstly, no account is taken of the effect of special managerial skills available to some firms; these may be especially important if they are located at the top of the organization. Hence the quality of leadership may affect the success of the organization significantly. This may be especially so where displacement mechanisms for poor executives are weak.

Secondly, it is assumed that organizational structure either does not affect the level of internal efficiency within the sub-units or that sub-units in an $\overline{M}$-form or H-form are less internally efficient that those in an M-form. This is not a strong assumption since, if divisional management has excess discretion, some of it is likely to be passed on to lower level staff. Nevertheless, there is the possibility that variations in the internal efficiency of sub-units could, in a few cases, compensate for, rather than exaggerate, differences in the efficiency of co-ordination between sub-units (as displayed by organizational structure). However, on balance, such a situation is not expected with any regularity.

Thirdly, the Williamson and Bhargava (109) classification is not exhaustive, as they themselves recognize. For example,

Channon (17, P.15) has reported another type of organizational structure. This he called the "GRID". Here two types of responsibility are superimposed upon each other. So, for example, the firm could be divided by function and by product at the same time. It seems that this structure is found most widely in very large firms and may, therefore, be a response to the limits to firm size, even with the M-form, discussed earlier.[24]

Fourthly, the costs and hence profits of an organization will depend on the amount of trade union and government interference in its activities. This may not be uniform in its effect either between industries or with respect to firm size.

Lastly, firm performance will depend not only on the amount of discretion available to management, but also how it is used. If sufficiently potent rewards are offered, management may report the maximum possible profit. Yet the nature and extent of these rewards, like bonus and stock option schemes, is not necessarily linked to organizational structure in any direct or predictable manner. Superior performance may therefore be due to better methods of rewarding staff.[25]

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FOOTNOTES

(1) "Discretionary resources" are those that Williamson (106) recognized could be used by management in their interests rather than those of shareholders, without job loss threat. They exist because shareholders will be unable, due to cost, to enforce fully their property rights (see later).

Since perfect competition in product or capital markets will force profit-maximization on management the existence of discretionary resources implies an assumption of non-competitive markets.

(2) All these factors may be important and affect the efficiency of the organization. The task in defining structure will be to break the organization into sub-units, to define the responsibilities of each of these sub-units and to decide the nature and extent of the communication channels within the firm.

(3) The fact that several organizational structures may coexist is verified by Chandler (16) and Williamson and Bhargava (109). It would seem unlikely that all of these were of equal efficiency.

(4) Williamson (103, P.163) recognized that the U-form might be optimal for quite large firms using technically inseparable production techniques or making products where technological links are strong.

(5) Decisions about expansion or contraction may be hampered if decision-makers are biased towards certain products or specialisms. One way such bias may occur is if management rewards are linked to success of particular sub-unit (either a division or a "function").

(6) Both supply and demand cross-elasticities.

(7) The capital market may find it difficult to enforce discreet or marginal changes in the project once finance has been provided. Hence all decisions must be made before the project starts, when all necessary information may not be available. However within a firm, various changes to a project can be made on the basis of information from the auditing process. [Williamson (103, P.156) Williamson (108,P.113)]

(8) Hence the knowledge required of divisional managers is limited to that concerning a few products.

(9) Sub-goal pursuit is defined here as actions not in line with organizational goals as defined by top management.

(10) The total organizational goal of profit may not be operational within the U-form. Individuals, because they are unable to perceive the overall profit goal in the context of their job task, may substitute departmental goals in terms of sales, production etc. Since it may be difficult to specify these departmental goals in a way that allows integration with the overall organizational goal, much individual effort may not contribute to profit. Dearborn and Simon (23) have analysed this phenomena at greater length.

(11) Williamson (103, P.111) believes that the large U-form may mitigate its capacity problem by the involvement of departmental management in central decision-making. Yet there seems to be no fundamental reason why this should happen; recruitment of additional management personnel may be possible from outside.

(12) see footnote (5)

(13) "unconscious" sub-goal pursuit is considered in footnote (10).

(14) Assuming that recruitment to the main board involves rejection of (any) old divisional loyalties.

(15) Without any increased threat of loss of position.

(16) For a fuller discussion of the question of cost centres see Williamson and Bhargava (109).

(17) The provision on a continuing basis of a system of rules to stop one division profiting at the expense of another, and arbitration in cases of disputes may be a formidable task when products are highly connected.

(18) M-forms operating in one product area, and divisionalized by geography, will not be considered due to complications from the effects of monopoly power. Hence such an M-form will have monopoly power advantages over the U-form independents.

(19) This, if anything, may be disadvantageous to the M-form because it ignores the possible reduction in discretionary payments due to central management pressure.

(20) The causes of market failure relate both to the characteristics of human beings (e.g. their bounded rationality) and to the nature of the environment (e.g. the degree of uncertainty). For full discussion see especially Williamson (107).

(21) The complexity of control may be seen as depending upon the interconnectedness of the products which affects the amount of co-ordination required (see text) and the degree of diversification which determines the breadth of knowledge required.

(22) A U-form includes any company diversified by less than 33%. That is, in the Williamson and Bhargava (109) classification, a separate division is allowed with the U-form structure as long as its importance is small in terms of the company as a whole.

(23) Here we are anticipating the analysis in Chapter 4 where M- and H-forms are both designated sub-optimal and expected to perform less well than the M-form.

(24) This would partly explain the difficulty experienced in 1973 in classifying some of the very largest firms in the Times 1000. Several seem to have the superimposition of responsibilities found in the grid system.

(25) For the possible motivational effects of stock option schemes and bonus schemes, see Llewellen (51).

CHAPTER III - ORGANIZATION STRUCTURE IN AN UNCERTAIN ENVIRONMENT

The classification of structure introduced in the last chapter showed that the optimal organizational form may depend upon the size and diversification of the firm, the techniques available for receiving and transmitting information, the the separability or otherwise of technology. However, as will be shown later, this analysis assumed a stable environment with minimal uncertainty.

The degree of uncertainty in the environment in the Knight sense (40, P.19) might be seen as comprising two concepts discussed by Perrow (76, P.75-6):-

(1) whether search is analysable or not: that is, whether there are known ways of solving any problems received. If all that is required to standardize a new situation is incremental adaptions to existing programs then search is analysable and the environment is considered, other things being equal, to be less uncertain.

(2) The variability of stimuli presented to the individual. If the number of stimuli leading to search is small because most can be handled efficiently by existing procedures, then the environment is stable. However the variability of stimuli may be so great that almost all tasks will lead to search behaviour.

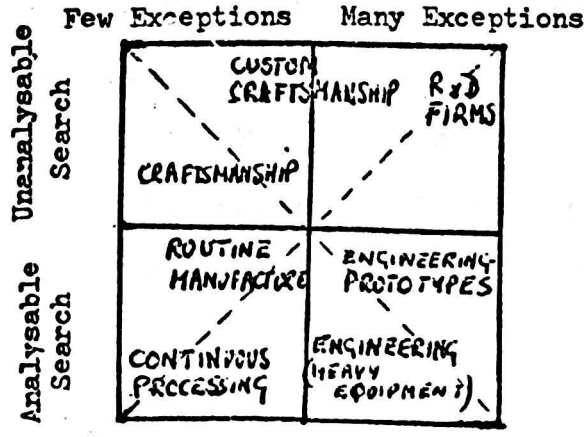


FIGURE 1: THE NATURE OF THE ENVIRONMENT ASSOCIATED WITH DIFFERENT TASKS

: From Perrow [76,P.83] Organizational Analyses

While no organization faces a completely stable environment,[1] there would seem to be a significant difference in the uncertainty faced by those firms or sub-units engaged in activities involving unanalysable search and many exceptions from those dealing with analysable search and few exceptions. Therefore, the effect of these different environments on the organization will be considered.

Of particular interest, will be possible differences in organizational response found in the "stable" functions - marketing, sales, production - whose routine task is only slowly changing and research and development, which faces a highly uncertain environment [see Perrow (76, P.83), Nelson (69)]. It will be argued that differences in organizational response will lead to particularly severe problems of communication between those functions concerned with the routine, where the particular interest will be in steady-state efficiency, and the research function, where rapid response to change is crucial.[2] It will be further argued that if the relationship between sub-units applicable to stable environments is used throughout the organization, development of new products and processes will be impaired. Hence the relationship between sub-units, the organizational structure, may depend on whether steady-state efficiency or new product development is of greater importance. Therefore, two more types of organizational structure, <u>for large firms</u>, are considered.

X X X X X

In Chapter 1, it was noted that the bureaucratic model of organizational decision-making had several identifying

characteristics (Glueck and Dennis 28); clear authority relationships embodying the concept of the unity of command: small spans of control: narrow job specification: tight control mechanisms: an emphasis on hierarchical superior-subordinate relationships and standard operating procedures; decision-making concentrated at the top.

Under conditions of stability in the environment and independence between subordinates, the use of narrow job definition(3) with little contact between peers, and decision-making concentrated at the superior level, may allow certain economies in the operation of the organization. Firstly, an economy in communication: by placing co-ordination in the hands of the supervisor, the number of two-way communication channels is reduced from $\frac{1}{2}(X^2-X)$ in the situation where the subordinates act as a peer group, all interacting with each other, to X, where X is the number of subordinates. [see Williamson (103, P.20)]. Such an economy in communication will only be a pure gain if the quality of decision-making is unimpaired. This is most likely to be so in a stable environment where information can be assessed with regard to a constant frame of reference. On the other hand if variety in the environment is high, more information may be required by the supervisor, who is not directly associated with the work, if a rational assessment is to be made.

Secondly, the use of the superior-subordinate relationship may allow the supervisor, if necessary, to alter all subordinate tasks simultaneously in an optimal manner which can prevent the instability that can be the result of individuals in a peer group sequentially responding to other members'

adaption to change in the environment. [Williamson (103.P.20)]

Thirdly, the minimization of contact between subordinates divides the task performed by the organization into quasi-independent domains. Hence disturbances from the environment will be limited in their ability to pass as a chain reaction throughout the organization, and will be restricted largely to the area of direct impact [Williamson (103, P.20)]. A bureaucracy therefore may have high resistence to shock: however, this will be dysfunctional if the organization, for its success, must be highly responsive to the environmental change.

The responsiveness to change within the bureaucracy will be further reduced by the use of standard operating procedures. These may provide a low cost method of decision-making but being an amalgamation of past experience their adaption to new situations may be slow so tending to constrain new situations to old decision-rules. In addition, situations not covered by organizational rules may be ignored.(4)

If environmental change increases, standard operating procedures will be able to deal with a lower percentage of decisions which, with an unchanged distribution of decision-making authority within the organization, implies a larger upward flow of information.

Fourthly, narrow job definition allows the combination of the advantages of specialization of labour with high accountability for the individual [see Thompson (98, P.3)]. Hence subordinates, by concentration on a small set of tasks, may increase their productivity through learning by doing, while at the same time be subject to low cost performance audits. Auditing cost will depend, inter alia, on the

number of legitimate actions allowed under an individual's contract. The more there are, the greater will be the possibilities for anti-organizational behaviour[5] due to the increasing costs involved in sorting out those actions contrary to organizational interests from the rest. Liebenstein (48).

X X X X X

The fraction of work done by a subordinate that contributes to the objectives of his supervisor ("compliance") will be dependent on the number of subordinates ("the span of control") if more subordinates means less time with each. However, for a given span of control, compliance will also be dependent upon the efficiency of information transfer, insofar as this affects the quality of supervisors' decision-making and the degree to which subordinates carry out the supervisors' orders.

Decentralization - the process of delegating more decision-making to subordinates - will mitigate the problems associated with the upward flow of information and downward movement of orders, but only at the expense of greater opportunities for anti-organizational behaviour (see above).

The amount of decentralization may depend, at least in part, on five factors:-

(1) the level of change in the environment (m). The greater the level of change, ceteris paribus, the lower the proportion of decisions that can be handled by established operating procedures, so that greater upward flows of information are required within the organization.

(2) The state of informational technology (t). Improvements here (e.g. computers) will allow larger amounts of information to be processed with the same level of distortion.

(3) the difficulty of information transmission (e): some types of information may be more readily reduced to key points, which are intelligible to the receiver, than others. Hence it may be that unchanging environment will help the process of condensing information into a meaningful precis.

(4) the congruence between individual and organizational goals. (i)

(5) the cost, for given (i) of identifying, monitoring and rewarding individual performance (z). In some organizations it may be less costly to motivate individuals towards organizational goals, because of the greater ease in isolating and modifying anti-organizational behaviour.

Benefits to increasing subordinates' discretion (x) will be a function of (t), (e) and (m), while costs will be dependent on (i) and (z).[6]

The expected partials are:

$dx/dt < 0 \quad dx/de > 0 \quad dx/dm > 0 \quad dx/di > 0 \quad dx/dz < 0$

Since early application of the most advantageous uses of discretion can be expected, the level of discretion, and the marginal benefits from it, are assumed to be negatively related. If the marginal costs are a non-negative function of the level of such discretion, a diagram like figure 2 can be drawn.[7] Assuming that the amount of delegation of decision-making is decided on the basis of maximum net benefits, the optimal level of x will be that where the marginal cost and benefits of discretion are equated. In figure 2 this is at level x.[8]

Now the effects of changes in (m) (t) (e) (i) and (z) can be considered under ceteris paribus assumptions, taking

FIGURES2-4 THE COSTS AND BENEFITS OF DECENTRALIZATION

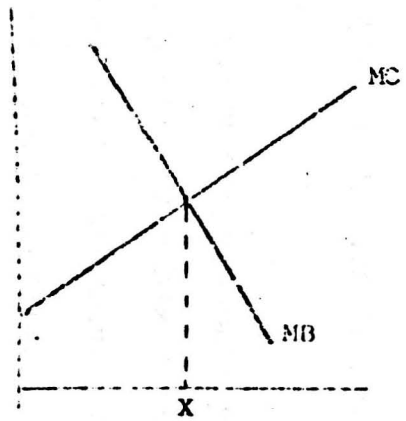


FIGURE 2

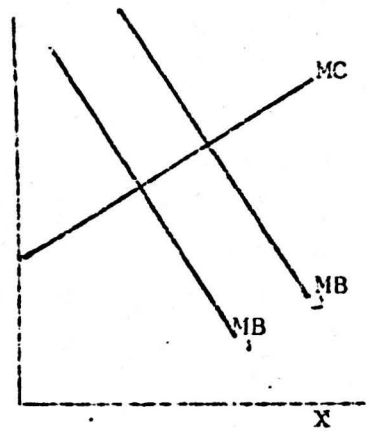


FIGURE 3

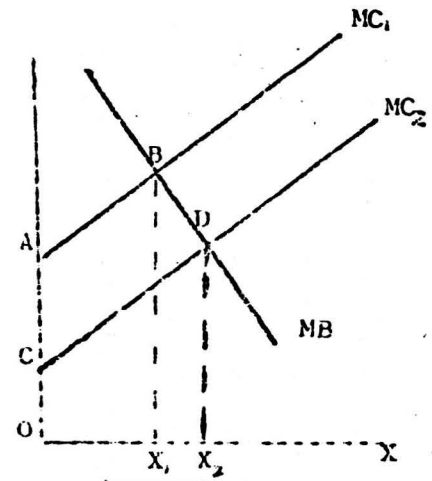


FIGURE 4

NOTES

MC: The Marginal Costs of Decentralization

MB: The Marginal Benefits of Decentralization

X: The Degree of Decentralization

organizations of similar size and fixed span of control. If the level of environment change (m) or difficulty in information transmission (e) increases or there is a deterioration in the state of informational technology (t) then the marginal benefits curve will shift outwards from MB1 to MB2 (figure 3) and that will indicate a higher optimal level of discretion for subordinates. Similarly, a reduction in the costs of monitoring and rewarding individual performance (z) or an increase in the congruence (i) between individual and organizational goals will lower the marginal cost curve (figure 4), again indicating more discretion to subordinates.(9)

In this context, consider the M-form which is departmentalized by profit centre , and therefore may be more efficient than the U-form at specifying realistic targets in line with organizational goals to its sub-units. (see Chapter 2). If this is so, a more rational distribution of organizational rewards and penalties is possible and the costs of obtaining subordinate actions in line with organizational goals lowered.(10) This would allow more of the benefits of subordinate discretion(x) to be reaped (figure 4). If, however, informational technology were to improve, then a return to greater centralization could be expected.(11) Such a tendency has been noted for General Motors in the U.S.A. by Williamson and Bhargava (100).

Given our assumption of fixed spans of control and comparing similarly sized firms, relative levels of "internal efficiency" - the cost of running the organization - can be ascertained by reference to the value at which the marginal costs and benefits of discretion are equated on the

Y-axis. Low values indicate superior internal efficiency Hence in figure 3 (page 31) a shift in the MB curve to MB_2 results in more discretion for subordinates but lower internal efficiency. Consideration of the nature of these benefits will show that this must be so. An increase in the benefits to discretion may have resulted from an increase in difficulty of information transmission for given levels of informational technology, an increase in the level of change in the environment or (unlikely) a reduction in the state of informational technology. All these imply higher overall costs and hence lower internal efficiency. At the same time, we have moved along the MC curve indicating greater costs involved in personnel control.

The relationship between internal efficiency and the span of control is not explored here in detail. Sufficient to note that losses of subordinate compliance may be countered by smaller spans of control but only at the cost of more administrative personnel.

A similar analysis to that above can be applied to figure 4, page 31. A reduction in the costs of controlling subordinates [through either a reduction in (i) or (2)] will lead to more discretion and also greater internal efficiency.(12)

In the circumstances, the cost-minimizing decision may be to use some of the benefits of improved internal efficiency to increase the span of control within the organization and hence reduce the number of personnel required.

X X X X X

The presence of interdependence between individuals in the organization will complicate the analysis. Thompson [97,

p.54-5] recognizes three types:- pooled, which corresponds to our independence assumption earlier, since individuals are only interdependent to the extent that unless each performs adequately the total organization is jeopardized, sequential where the output of A becomes the input of B but not vice versa, and reciprocal where the output of A becomes an input of B and vice versa. Sequential interdependence will increase the decision load of the supervisor over and above that necessary for pooled interdependence for the same span of control, since the interactions between subordinates must be controlled and monitored. Reciprocal interdependence means that communication between subordinates will be necessary. If all information is constrained to go through the supervisor, then informational diseconomies may be expected from hierarchical working, since the supervisor will just constitute an extra step in communication channels. Information instead of going from A to B goes from A to the supervisor to B. Hence the bureaucratic model may be most appropriate to situations where interdependence is not reciprocal. With respect to the optimality of the bureaucratic organizational response, the work of Morse and Lorsch (64) may be important. As part of a study of four sub-units, they looked at two container producing units in the same big company. One had been designated by management as a high performer; the other as a low performer. Interviews were carried out with about forty managers in each unit to ascertain the characteristics of the formal practices of the organization and to see the subjective perceptions of the individuals involved.

The making of containers by automated means, the task of

both units, is a highly repetitive task which would certainly be described as routine manufacturing. At the high performing container plant, there was a high degree of structuring of formal practices; in terms of perceptions, people at the plant saw themselves in a highly formal structure, with low influence over decisions because of the concentration of authority, with low job choice vis-a-vis supervisors and with top management dominant. In the low performer, there was a more egalitarian distribution of influence, a perception of a high degree of influence and a participative type of supervision.

However the other two units studied by Morse and Lorsch were R & D establishments, again in the same firm, and again one a high performer, one a low performer. In this case the bureaucratic structure corresponded to the low performer.[13]

The characteristics of the high performing R & D department were similar to those of the "democratic" organizational model as described by Glueck and Dennis (28):- lateral communication emphasized over vertical, decisions the result of consultation rather than command; job tasks set as a realistic division of the total task facing the concern but with no rigid delimitation of responsibility; jobs changeable and often changed as the result group interaction in the light of changing circumstances; individual control procedures based on peer commitment and status (i.e. self-generated rewards); and the centre of control and authority shifting according to the particular requirements of the project.

If the optimal organizational response in the case of research and development is democratic, as the Morse and Lorsch evidence suggests, then this may be the result of a combination

of uncertainty in the environment and interdependence between peers.

That uncertainty occurs in R & D, has already been noted. If the supervisor-subordinate relationship is retained to an extent found in bureaucracy, the effect will be to increase the necessary flow of information.[14] Moreover, information transmission may be hindered if greater difficulty is encountered in condensing information into key points. This is likely since with a greater variety of stimuli affecting the organization much more background information may be required for a rational judgement. Additionally uncertainty may require the individual job task to be redefined frequently as circumstances change.

Interdependence between individuals can be expected within the research function for several reasons. Firstly, a major source of informational inputs for the scientist are his colleagues working in the same or related disciplines. See Knight (4), NSF (67), Nelson (70). Specifically Allen (2) reports M.I.T. findings that the increased use of organizational colleagues for information is strongly related to scientific and technical performance; high performers were those who used other colleagues for information most frequently. Pelz and Andrews (74) after a similar study, concluded that the causation was from communication to performance because "large amounts of colleague contact tended to go with high performance, even when (we) looked at scientists who themselves were the primary instigators of contacts." (P.47)

Secondly, Klein (39) and Marshall and Meckling (58), (15) in emphasizing the uncertainty in the development of weapon

systems, see the optimal response as one of multiple lines of development (i.e. different solutions to the same problem explored in parallel) since it would seem from empirical evidence that information about the outcome of a project can be obtained at small cost. Hence unencouraging approaches to the research problem can be identified and dropped without excessive increases in overall cost. However, this requires that there be a continual exchange of information between groups in order that inferior solutions be eliminated as soon as possible.

Thirdly, the need for lateral communication does not remain within the boundaries of the research and development department; co-ordination between the commercial (i.e. involving the stable functions) and the technical aspects of a project is needed in order to eliminate non-profitable projects as soon as possible, (see NSF (67). This may be particularly so since the cost of a project will typically escalate as it reaches each successive stage in its development (see Booz 12). In addition many profitable research and development projects originate as ideas in the "stable" functions [see Hamberg (33)] so that failure to recognize these may lead to sub-optimal performance.

Fourthly, peer-group decision-making may be necessary to specify the job task of each individual. This becomes more likely as the uncertainty and size of the technical advance associated with the project increase, since it is supervisors' inability to assess some information passed to them in cases where technical information and specialist knowledge are concentrated at the work-bench level, that causes the interdependence of subordinates.(17)

The democratic form may mitigate the problems associated with high uncertainty in the environment and interdependence between subordinates. The emphasis on lateral communication and flexible areas of responsibility allows a reduction in information flows, authority to be located with those having specialist knowledge, and the individual job task to be redefined quickly on the basis of mutual discussion between peers.[18]

In addition, the democratic form will have cost advantages in the motivation of research personnel due to its superiority in the award of status to individuals. This is important because status was found by McDougall[54] to be more important to research personnel (including researchers) than to administrators (in the stable functions), and is a low cost method of reward.

The democratic form has advantages over the bureaucracy in the endowment of status; the status of an individual can be increased through peer approval of the job done, yet because status is not embodied in position as in the bureaucracy, an increase in one individual's status will not necessarily mean a loss for another. Hence there may be, ceteris paribus, lower resistance from non-involved personnel to status-generating new projects. Conversely, in the bureaucracy, those with the greatest amount of status -top management - will have an interest in maintaining the status quo; change may be discouraged, since successful change may require a redistribution of status and prestige.

In addition, the emphasis of the democratic model on lateral communication, both internally and externally, will enable peer approval to be more easily accumulated. Hence the

open nature of the democratic form enables easy communication with outsiders and therefore, the accumulation of status.

Typically researchers are associated with their work in a way uncommon in the bureaucracy. In an organization based fundamentally on the superior-subordinate relationship and a closed response to the environment, success accrues only to the organization as a whole. If any individuals benefit from outside approval it will be the top level decision-makers. This need not be so in the "democratic" firm with its more diverse communication channels. Coupled with the likelihood that both the researcher and the research organization will have a goal of successful invention or development,[19] this means that the congruence between individual and organizational goals in the research function can be expected to be higher than normal.

In the terms of the previous model, the level of decentralization of decision-making in the research function will be great. Firstly, because the benefits are large due to the high level of uncertainty in the environment and peer interdependence. Secondly, because of the lower costs to the organization of subordinate discretion, due to the easy motivation of subordinates through the use of status, and the above-average congruence between individual and organizational goals. Figure (5).

The change in internal efficiency, whether positive or negative, will depend on the size of the shift of the marginal cost and benefit curve. Lower marginal costs, ceteris paribus, will lead to higher efficiency; higher marginal benefits to lower efficiency.

THE COSTS AND BENEFITS OF DECENTRALIZATION IN RESEARCH

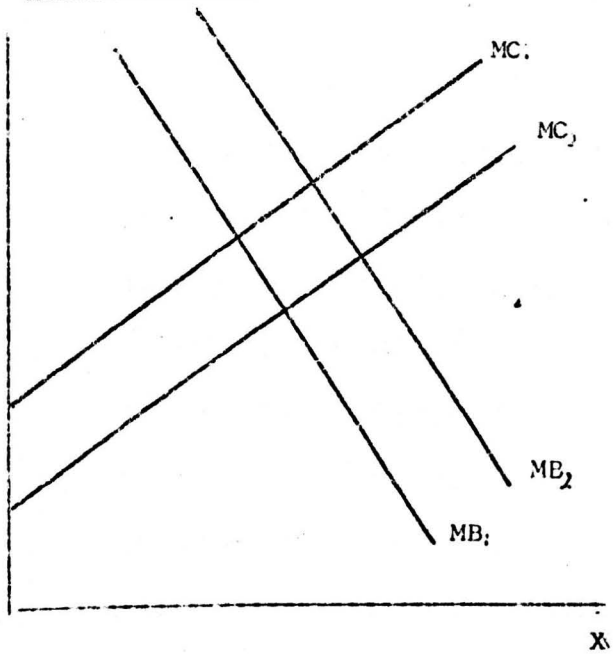


FIGURE 5

NOTES

MC_1: Marginal Costs of Decentralization (X) in the Stable Functions

MB_1: Marginal Benefits of Decentralization (X) in the Stable Functions

MC_2: Marginal Cost of Decentralization (X) in Research

MB_2: Marginal Benefits of Decentralization (X) in Research

It is interesting to note that if there is a high level of uncertainty and peer interdependence (MB_2) but no reduction in marginal costs, then although there will be decentralization; it would not be carried as far as the research function, and internal efficiency would unambiguously fall.

X X X X X

The organizational problem in the large firm is to obtain optimal mix of steady-state and research efficiency.[20] This mix will be dependent on the nature of the environment. However, the difference in organizational response as between the research function, on the one hand, and the "stable" functions on the other, will have certain implications. Firstly, greater risk-avoidance than indicated by organizational goals may arise. Secondly, there may be problems in communication; it is critical that the common phenomenon of inter-departmental conflict be overcome if performance is to be maximized [see Lawrence and Lorsch (44 Chp. 2 and 3)].

That risk avoidance is incorporated in the goals of large firms has been argued before [Monson and Downs (62) Williamson (103 P.157)]. This can be seen as a response to shareholders' dislike of unstable rewards, or top managements' interest in the status quo. However, structure may lead to risk being avoided to an extent greater than indicated by organizational goals. Hamberg (33) has considered the origins of the problem; reporting other results (P.103) he notes that a large number of research suggestions come from the stable functions; such suggestions, because they come as the result of the surveillance of a stable and known environment, must involve little

risk, especially if the stable functions continue to work to their usual pay-off period of five years or less (see McGraw-Hill survey quoted in Hamberg 33). Hence even research suggestions may be reduced to a low-risk form.

The integration of research and the stable functions is imperative for good performance. However the influence of the stable functions must not be such that the profitable projects of a long-term nature or with a high degree of risk are ignored. This can happen when research is decentralized to the divisions. Top managements co-ordinating the functions will typically be trained in the stable functions, since the take-over by the techno-structure suggested by Galbraith (27 p.70) has not, so far, been shown to be widespread. Such managers may bring with them their short-term biases and hierarchical decision-making techniques found appropriate in the stable functions, which will however tend to stifle research performance. The manager may extrapolate the stable environment onto research.

"When one must choose between the hazy and uncertain high risk future associated with major innovative effort and the hard, tangible quantifiable future of exploiting present technological and commercial possibilities, the temptation is almost irresistible to press hard on the latter and postpone the former .... if one is an administrative manager the necessity for choice may not even suggest itself." [Haggerty (31)].

The long term nature of the research into major new areas [see Hamberg (33, P.99)] may be endangered by divisional management using research as a way of combatting immediate

divisional problems, especially in times of crisis. Particularly for the manager from the stable functions, short-term considerations may drive out those of a longer term nature.

Divisional managers may have limited horizons, leading to a tendency to reject ideas not useful in their own departments.

"Without some counteracting force, even when good innovative managers develop in a decentralized organization, their innovations are ordinarily restricted to the entity for which they have responsibility, or, at most, narrowly and obviously beyond it ... the exposure of one manager is restricted and he simply fails to see those larger opportunities to solve problems ... for the whole organization ..." [Haggerty (34)].

This divisional bias means that one advantage ascribed to the large diversified corporation [e.g. see Scherer (83, P.362)] - many possible outlets for research discoveries - will not be fully utilized, since each division will act as a separate firm unwilling to investigate areas outside its usual scope of operation.

X X X X X

Hence the problem is to minimize bias towards existing products and risk-avoidance over and above that dictated by organizational goals, subject to the constraint that minimum <u>overall</u> cost is required.

Large firms typically require both "stable" and research functions, the mix differing from firm to firm according to the nature of their outputs.[21] Yet as argued above, the organizational response to steady-state efficiency and the creative task may be completely different. The bureaucratic

system is productive on a regular and predictable short-run basis, which permits the separation of planning and control from execution. The creation of new ideas requires operation on a unpredictable longer-run basis. Partly consequent on this there may be differences in language, personnel characteristics [for discussion of such differences see La Porte (42)] and different motivational techniques [McDougall (54)]. Hence there may be benefits for efficiency in separating the two types of task, allowing each to be pursued in its preferred environment. Yet at the same time Lawrence and Lorsch (44) in reporting the relative success of several organizations point to the need for strong integrative mechanisms so that all functions can work together towards organizational goals. Moreover Lawrence and Lorsch (44, P.47) find that the integrative task becomes more difficult as differences in structure and the methods of personnel motivation increase. This might be expected in that individuals may have greater difficulty in relating to other work practices the further these are away from the standards they know.

It would seem from what has been said above that organizational structures should be judged by their ability to provide appropriate separation and integration of the subunits. With these two characteristics pulling in opposite directions, the balance between them should be made on the basis of minimum overall cost.

Consider a functionally-divided unit with research and "stable" departments. Risk-avoidance and existing product bias will be high, but functional separation will allow all functions to work within the organizational structure and atmosphere that suits them best. Because of this, steady-state

efficiency - that is producing known products at least cost per unit - will be high. The need for efficiency in research has not been allowed to tamper with the organizational structure that is most applicable to stable conditions.

However, technical efficiency will be poor. Co-ordination will be in the hands of top management whose communication load will be considerable since the need to integrate all the functions will require information to pass upwards (to top management) and then downwards to its destination. This diseconomy in information processing results from the separation of reciprocally interdependent personnel. Failure to understand information passed to it, or lack of time due to its heavy decision load, may result in top management failing to make decisions after proper evaluation, and instead rubber stamping proposals from one or other of the functions. (Schon (84) quotes cases of this).

In this unit individual projects will be difficult to cost because they involve transference from one function to another as they pass through their stages of development.[22] Additionally, as projects are transferred in a form where market profitability is uncertain, resistance to new projects on the part of the stable functions may occur if rewards are adversely affected by project failure. If a sizeable proportion of projects are failures this may become a major constraint to the introduction of new products and processes.[23]

Thus the optimality of this functional arrangement depends on the relative importance of steady-state and research efficiency.

Suppose the functional approach provides sub-optimal overall efficiency because of its failure to achieve research

efficiency. (This becomes more likely as the importance of new processes and products increases relative to the importance of least-cost production with given technology).

Consider then what Ansoff and Brandenburg (4) have called the Innovative form. Here the organization is split into two groups: currently profitable and established products are placed in the Current Business Group, while the establishment of new products is given to the Innovational group who will remain responsible for such products until commercial feasibility is established. The Innovational group will involve personnel from all functions allowing an integrated response to technical advance.

Both groups can be operated in a manner most suited to the environment that faces them,[24] using the democratic model for the uncertain environment of the Innovational group and the bureaucratic model for the Current Business group.

The Innovational group allows a mitigation of the problems encountered with the divisionalized company:

Firstly, since the Innovational group can be made fully profit and loss responsible, the development of new products will have greater accountability involving a lowering of the cost of motivation. No longer are new projects transferred from function to function making the responsibility for poor performance difficult to ascertain.

Secondly, because the Innovational group develops projects to the point where profitability is established - that is to the point of test marketing - resistance to the new projects from the parts of the company that will have to put the idea into full production may be lowered. There is little threat to rewards through project failure.

The transference of the project from the Innovational to Current business group can involve either just the technology or the personnel as well. The latter would enable a valuable extension of experience and knowledge of the stable environment to the Innovational group personnel [Ansoff and Brandenburg (4)] and would further ease the transference of the project, since personal experience may be a valuable source of information in gaining adoption and continued use of an innovation [e.g. in the agricultural context see Ryan (81)].

Thirdly, the bias towards existing products can be reduced since the control of the Innovational group is not in the hands of people with particular divisonal biases. Instead the whole field of the possible projects can be surveyed and profitable opportunities selected.

Fourthly, risk-avoidance can be lowered. The task of the Innovational group involves change; rewards may be obtained from successful change and there are not the possible losses of pecuniary and non-pecuniary rewards that limit administrative managements acceptance of radical innovation.

Some research capability will be left with the Current Business group. This will deal with the incremental project where risk is low and where closeness to the stable functions is advantageous, because information about Current market opportunities is more readily available.(25)

Williamson (103 P.157) has suggested that the typical product will be introduced to the market by the small firm, which will carry the product through its early stages of risk when its profitability is undetermined. When the environment

has stabilised and demand expanded, the attainment of steady-state efficiency becomes more important. This will require divisionalization along M-form lines or merger to become part of an existing M-form. The acquiring M-form in this situation has circumvented the risk involved in new products. The Innovative form, by providing a more efficient method of developing new products and to the extent that it lowers risk-avoidance, will increase the efficiency of the large firm in this area.

However the Innovative form will involve some loss of economies of scale if equipment that must be provided for both Innovational and Current Business groups is subject to indivisibilities. There will also be some duplication of staff - since certain tasks from all functions will have to be duplicated in both Innovational and Current Business groups - and loss of personnel specialization due to the reduction in the size of the functions.

Nevertheless, even the Innovative form may not provide an efficient response to a very rapidly changing environment where product life is so short that steady-state efficiency is of negligible importance. Consider then the Adaptive form which may have lower resistance to change and greater capacity for new project planning than the Innovative form.

"The firm's activities are arranged into two groups (1) a development group which is reponsible for strategic planning as well as the development and maintenance of the resources and skills of the firm and (2) a project group which is responsible for implementing strategic plans as well as for operating the resulting product market positions." Ansoff and Brandenburg (4).

Hence the development group has integrated teams comprising personnel from all functions devoted solely to the planning of new market positions, maintaining the pool of labour in each function at a satisfactory level, and providing training. On the other hand, the project group puts the plans of development group into operation:- each new project will involve drawing on the required mix of personnel from the pool of labour maintained by the development group, under a project manager.

Project groups will be able to maintain high interaction among members of the different functions, so allowing maximum integration of the research task; resistance to change is likely to be minimized since personnel will return to the labour pool at the end of each project, so owing little allegiance to any one project. Individuals will gain wide experience, allowing them to gain considerable informational inputs (but few of the advantages of specialization of labour and learning by doing).

Since the project group sees the task through to the end, there will be no problems due to the transference of projects between organizational units and also accountability on a profit and loss basis will be high. This, together with the large capacity for planning of a general nature provided by central management and of a specific nature provided by the development group, allows the Adaptive Form to be the organizational structure that is most responsive to change and therefore appropriate to the uncertain environment. This form approximately simulates the theoretical life and death of one product firm as described by Mueller (65). As the result of

planning, a project team is drawn together to investigate the possibilities and produce any resulting new product. If the product is successful, demand will grow and more people will be drawn in from the pool of labour in the development group. This is analogous to the new firm's drawing labour from the market. The group will similarly be charged for its use of labour inputs. Later, as product demand declines, personnel will gradually return to the labour pool, ready for another project. Eventually the whole project group will be wound up.

The Adaptive form for successful operation requires a short duration of project which severely restricts its applicability. As the time span of the project increases, emphasis will shift away from response to change (for which the Adaptive form is best suited) to a requirement for efficient use of existing technology; that is, least cost operation in a stable environment. This may require a more bureaucratic approach to organizational structure. In addition, the longer the life of a project, the greater the loyalty of individuals to it, resulting in a reduction in the flexibility that is so fundamental to this structure.

FOOTNOTES

(1) As described on page 4 stable conditions are taken to those where

"the circumstances (to which the firm must adjust) are predictable in the sense that although they occur with stochastic regularity precise advance knowledge of this is unavailable ... (that is) customers come and go ... labour and materials procurement are subject to the usual vagaries ... not to mention minor shifts in demand and similar disturbances of a transistory nature"(my underlining). Williamson (103 P.24)

(2) The stable functions are all those except research and development. Although there will be differences in the amount of uncertainty facing each stable function it is argued here on the basis the work of Perrow (76), Nelson (69) that the uncertainty encountered will be of a similar order and significantly less than that facing research and development. Minor variations in uncertainty may cause slight structural differences. Hence there may be minor structional differences between (say) "marketing" and "production" or between research organizations (depending on the size of technical advance attempted).

(3) A "narrow job definition" means the individual can only legitimately undertake a few tasks: his opportunities for discretion are restricted. The exact number of tasks allotted will depend upon the size of the unit, which determines, ceteris paribus, the degree of specialization of labour possible [Stigler (5)] and the ability of the supervisor to specify the method of attaining organizational goals in a meaningful way. Thus under stable conditions where the relationship between action and result is known with a high degree of certainty, the supervisor can relatively easily specify the necessary actions on the part of the subordinate to get the required result. This will not be so under uncertain conditions: if there is no known way of solving the problem or if alternative approaches have to be tried and tested, greater discretion may be required to allow the subordinate to complete the task.

(4) For a discussion of these and other points with respect to standard operating procedures see Cyert and March (21 P.101 - 112).

(5) Anti-organizational behaviour:- Actions by members of the organization against organizational goals.

(6) (m), (e) and (t) determine the costs of information processing. To the extent that extra discretion allows a reduction in information processing, these will represent the benefits of decentralization. On the other hand, (z) and (i) determine the costs to the organization of individual discretion.

(7) There would seem to be no obvious reason why marginal costs should decrease with an increase in the level of discretion (x). A positive function has been drawn but the analysis would

be unchanged with constant marginal costs.

(8) Firms that do not decentralize to the level indicated by the intersection of the marginal cost and benefit curves will perform sub-optimally. This is the expected situation for H- and M-forms.

(9) The effects on both benefits and costs could be reversed to indicate a reduction in (x).

(10) If individual motivation is dependent on the expected rewards, then an individual's actions will depend on this perception of the alternatives available, the perceived results of the possible alternatives and the probability of action being followed by reward (or penalty). [See for instance Liebenstein (48)]. Hence the M-form may allow a more rational distribution of rewards and penalties on the basis of true organizational goals (profit).

(11) Middle management has lost influence according to Chester (18), and this may be partly the result of improved informational techniques - computers, etc., - which have encroached on the data-collection role of these personnel. Top management has been less affected since they are at the end of the informational chain, while (top) divisional management has been benefited from extra discretion. (For reasons for this extra discretion see analysis of M-form, chapter 2).

(12) To show that internal efficiency is higher with cost function MC_2 see figure 3, P.31.

With MC_1 optimum decentralization is X_1. Therefore the cost of motivating personnel (costs due to factors (i) and (z) see P.30 is equal to the area under the curve OABX.

Similarly with MC_2 costs of motivating personnel equal $OCDX_2$. The MB curve measures the reduction in cost possible by allowing subordinates more discretion. For a movement from X_1 to X_2 the total reduction in cost from this service is X_1BDX_2.

$\therefore$ minimum overall cost with MC_1

$= OABX_1 + Z$ where Z is the unknown cost of information transfer dependent on factors (m) (t) and (e) see P.30.

minimum overall cost with MC_2

$= OCDX_2 + (Z - X_1BDX_2)$

Since $OABX_1 > OCDX_2 - X_1BDX_2$ m the equilibrium at D on MC_2 implies higher internal efficiency than the equilibrium B on MC_1.

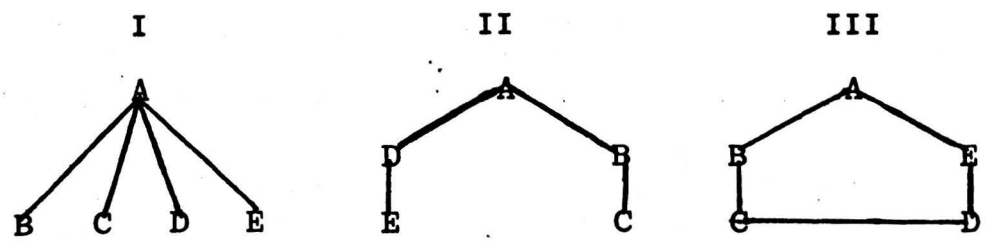
(13) Additional indirect evidence has been provided by the literature:-

Burns and Stalker (14) recognized two different types of managerial practice in their study of twenty small firms

which corresponded to two ends of a spectrum; "organic", which seems to have been more appropriate to unstable conditions; and "mechanistic", which was superior in stable conditions. Organic and mechanistic loosely correspond to "democratic" (see text) and "bureaucratic". Hence the impact of uncertainty in the environment was recognized. Firms were classified according to the "organicness" of their structure, but no attempt was made to investigate the optimal amount of separation of uncertain and stable tasks or the integrative mechanisms required.

Lorsch (56 Chp. 3) found that research organizations had broader spans of control, fewer hierarchical levels, longer time horizons for performance review, less specificity in the review of performance, and fewer and less comprehensive rules than organizational units working under more stable conditions. Additionally, Morse (63) reported that personnel motivation was greater when organizational structure fits the task in hand. Hence people working in an organization with democratic (bureaucratic) characteristics in a stable (uncertain) environment were poorly motivated. This he explains by the idea that people need to feel a sense of competence and such feelings are likely to be highest when organizational structure is appropriate. When people do feel competent, motivation, through job satisfaction, will increase.

Leavitt (45) reports several experiments with communication chains set up in the laboratory. Five people were each given a cup with five different marbles in it: one marble was duplicated in all five cups. The people involved had to exchange written information until all had learnt the name of the marble which they all possessed. Three communication chains were constructed



For simple tasks, I corresponding to the hierarchy was most efficient; with II and III in that order. However rapid acceptance of change was most likely in III. If a member in I comes up with an idea and passes it on, it is likely to be disregarded on the basis that A was too busy, the idea was difficult to implement or because of resistance to change (that is unwillingness to change what is performing adequately).

For marbles of unusual colour, for which there were no common names, III performed best in agreeing on a set of names in the quickest time; while I seemed to have the greatest difficulty in adapting to a novel job.

(14) Because of uncertainty, with search unanalysable and the variety of stimuli greater, standard operating procedures will be able to process less of the information.

(15) They believe their analysis is applicable to other uncertain situations, both military and civil.

(16) Grater, Poens gen and Prankle (30) report that many failures in research and development performance are the result of the isolation of research from other corporate functions.

(17) Schon (84) analyses how information and specialist knowledge in research projects may be concentrated at the work bench level. Even if the supervisor is a scientist, his specialist knowledge may be insufficient to make rational judgements for some research tasks with any ease.

This is in contrast to the bureaucracy where the concentration of authority at the top is partly the result of an attempt to spread the special ability of top officials throughout the organization. (See Jewkes, Sawers and Stillerman (36 P.. 110).) In this way, maximum use is made of scarce resources. This reflects the assumption in the bureaucracy that superiors have more technical knowledge about the problems in hand (this cannot necessarily be assumed in research and development).

(18) That the researcher is given enough discretion to follow research problems to where they lead him, may be of importance in defining job task. If this is so, considerable discretion may be necessary.

(19) For the research worker, success will not only mean improved pecuniary prospects but also increases in status and prestige. This status and prestige can be specific to him, rather than the organization as a whole.

(20) Although Jewkes Sawers and Stillerman (91) and Hamberg (36) have noted the importance of small firms in major research advances, in expenditure terms the large firm would seem to be at the centre of the research effort [for survey see Scherer (83 P.352-363)]. Hence the optimality or not of organizations structures for research and development in large firms may have important implications for the growth of the economy.

(21) Presumably the demand to undertake research activities will depend on the (expected) profitability of such activities. Profitability will depend on both cost and demand considerations. The omnipotence of science is not such that only demand factors are important (see Rosenberg (80).

(22) Research, development, test marketing and full production will all be handled by different departments.

(23) A mitigation of the problems of the functionally departmentalized unit may be obtained by the use of "project management". A multi-functional group under a project manager is assembled to work on the innovative project. Such a group will be superimposed upon the existing functional structure and will be a type of liaison group, bringing together individuals

in different areas. While this will reduce the co-ordinational load of top management, conflict may occur because personnel have both project group and functional responsibilities causing problems of divided loyalties. (For an introduction to project management see, for instance, Dennis Lock Industrial Scheduling Techniques (52).)

(25) The current Business Group may be operated either as a U-form or an M-form, according to the principles outlined in Chapter I.

(26) In the limit where the Innovational group does not exist, due to lack of demand for technical advance, the firm would only have a Current Business Group, which presumably could be classified using the Williamson and Bhargava (109) scheme.

CHAPTER IV

INTERNAL ORGANIZATION AND PROFIT : AN EMPIRICAL ANALYSIS OF LARGE U.K. COMPANIES

In Chapter II it was argued, following the work of Chandler (16) Williamson (103) and Williamson and Bhargava (109), that for the large diversified firm in a stable environment the M-form provides a superior response to the problems of control loss than other organizational structures. If these arguments are correct, then for a broad class of large firms, the adoption of the M-form may significantly affect their efficiency. Assuming that interfirm differences in efficiency will be reflected in profitability, it follows that organizational structure may be expected to account for some part of the observed interfirm differences in profitability. Previous empirical studies on the causal effects on firm profitability would then be subject to specification bias. This may be serious because organizational form is likely to be correlated with other included variables such as firm size and the degree of owner and manager-control.

Since the validity of these theoretical inferences can only be ascertained by empirical evidence, results are reported in this chapter which attempt to isolate the effects of internal organization on profitability in a cross-sectional analysis of eighty-two large U.K. companies in the period 1968-71. To this end, Section II develops a model including organizational form; the sample data sources and measurement are all dealt with in Section III; empirical results follow in Section IV, while Section V draws some conclusions, relates the findings to existing results and sounds several notes of caution.

II THE MODEL

In order to capture the factors that determine both the profit-maximizing level of profit and deviations suggested by other managerial and behavioural theories, the model assumes:

$$\pi_i = f(Y_i) + g(Z_i) + u \qquad (1)$$

where $f(Y_i)$ denotes the profit-maximizing level of profit for firm (i) and Z_i is a vector of managerial and behavioural variables. In principle, the influence of organizational form operates through $f(Y_i)$ since it is an aspect of firm level efficiency and ought to be captured in the production function. However in practice organizational form must be incorporated through zero/one dummy variables whose allegience to $f(Y_i)$ in the final specification is not strong.

DEPENDENT VARIABLES

Phillips (77) has noted that there are basically two options when specifying profitability as the dependent variable. The price-cost margin (π/R where R is the value of sales) and the rate of return. The latter may take several forms viz, the rate of return on stockholders equity (π/E); on stockholders equity plus long-term debt (RLC); and on assets.

Choice between these alternatives would seem to depend on the type of behaviour to be studied. Hence if the focus is on long-term industrial equilibrium with exit and entry and with existing firms expanding and contracting as the result of investment decisions, a rate of return seems to be the logical choice, since it is the rate of return above or below competitive levels which according to theory prompts such long-term equilibrating movements.

Theoretical arguments can be put forward for the various rate of return measures. For a given amount of capital, the return on capital irrespective of source will be the determinant of the efficiency of investment decisions. Yet presumably it is the rate of return on stockholders equity which management working in stockholders interest would seek to maximize, because this will give the maximum return on their funds. [see Benishay (10) Comanor and Wilson (19) Hall and Weiss (32)] This measure of profitability involves the extra decision as to the best method of company finance.

On the other hand, if short-term pricing behaviour is of prime interest and there are constant returns, orthodox theory seems to favour π/R. For then

$$\pi/R = \frac{PQ - cQ}{PQ} = \frac{P - c}{P} = L \quad (2)$$

where Q is physical output and L is the Lerner index of monopoly. (Cowling 20). In addition, we have what Cowling refers to as the Stigler (98) equilibrium.

$$L = \frac{f(H)}{\eta p} \quad (3)$$

where H is the Herfindhal measure of seller concentration ($0 < H < 1$). In this case the price-cost margin emerges as the appropriate index of profit performance.

In practice empirical models will frequently pick up both short and long-run effects. Moreover as Ornstein (72) has noted the returns to capital and on sales are related by the identity

$$\pi/E = \pi/R \; R/E \quad (4)$$

Two implications follow from this. The first is that where, as is often the case, a capital intensity variable (such as

R/E) is included in a profit margin equation to compensate for the fact that π/R is measures gross of capital charges (Benishay 10), the only difference in practice between a rate of return and profit margin equation is that one element of the variation explained in the former moves to the right hand-side in the latter. Secondly, in view of (4) it is entirely possible that previous studies have in fact explained the variance in π/R even when π/E has actually be used.[1]

Having noted the combination of short and long-term effects which are likely to occur, no definitive resolution of these issues is attempted. Instead results are presented for three different dependent variables π/R, π/E, and RLC.[2] This it is hoped will give a broader base to the conclusions that have been reached and allow a comparison with the maximum amount of other work. In addition the comparison of the rate of return and profit-margin equations leads to some insights which otherwise might have been missed.

INDEPENDENT VARIABLES

Of primary interest among the explanatory variables will be the organizational form dummy. On the arguments explored in chapter two, the M-form should out-perform the other structures in a wide range of cases. Exception to this may occur however if, due to technological conditions,[3] divisionalization can only be obtained at great cost (see P.15) or if the environment is unstable (see Chapter 3). In essence, this means, on the one hand, that even among large firms the U-form structure may be optimal in certain circumstances and, on the other, that empirical work using the Williamson and Bhargava classificational scheme may be limited to those firms working in a stable environment.

Two types of dummy structure are presented for organizational form. In the first, an optimal/non-optimal dichotomy is applied. Hence following arguments in Chapter 2, M-forms are rated optimal, while H and $\overline{M}$-forms, due to their lack of strategic controls and separation of strategic from day-to-day decision-making respectively, are placed in the sub-optimal category. U-forms are placed in one of these categories according to their operating environment. In the second structure, individual types of organizational form are picked out, allowing separate coefficients to be estimated for each. This allows a comparison of the performance of different types of sub-optimal form, albeit at the cost of disregarding some subtlety as to what constitutes optimality.

Since change to optimal organizational structure may involve non-trivial transactions costs, a further dummy variable is included to allow for the expected divergence between the performance of long-established M-forms and those known to be in transition from other forms.

However even with organizational optimality, less than maximum profit may be earned by the firm, if the M-form, per se, is insufficient to force profit-maximization on management.(4) Under these conditions, management may find scope for discretionary behaviour. This can be used to increase their own utility at the expense of the presumed desire of shareholders for maximum profit, in a way preducted by the various managerial and behavioural theories [see Baumol (9), Cyert and March (21), Marris (57), Monsen and Downs (62) Williamson (106).]

Discretionary resources may exist as long as there is non-perfect competition in product or takeover markets. If this

product and capital market discipline is weak,[5] the availability of discretionary resources to management will depend in part on shareholders ability to enforce their property rights. For the utility-maximizing shareholder, such enforcement will only be worth while up until the point that the marginal cost equals the marginal benefit (which is assumed to be equal to the incremental addition to reported profit). The costs involved will be of two types: those involved in gathering sufficient information about the present position of the firm; and those incurred in voting out or modifying the performance of, incumbent management. In an uncertain world, the costs of gathering information are likely to be non-trivial.[6] Moreover, (marginal) costs may rise as the more obvious sources of information are exhausted. However, short of voluntary disclosure of information by management, an involvement in the running of the company, or a change in the law, there would seem to be only modest scope for shareholders to reduce these informational costs. However, for a given legal environment, the costs of the displacement of management may vary in a non-trivial manner according to the number of shareholders, [Berle and Means (11), Florence (26)] since this will determine not only the costs of communication and co-ordination in any action against management, but also individuals' willingness to participate at all (small shareholders may view the enforcement of property rights as a public good). Therefore if a small group of shareholders own a sufficiently large proportion of the voting stock[7] they may be able to lower significantly the amount of discretion available to management, and therefore increase reported profit as a proportion of the profit-maximizing level.

However, even if discretionary resources do exist, management may choose to convert them into profit. Assuming it aims to maximize its own utility, management will follow a course of profit-maximization if its rewards are sufficiently dependent on profit. Hence Llewellen (51), while recognizing the existence of discretionary resources, has argued (for the U.S.) that it will be in managements' own best interests to maximize profits, rather than dissipate them in non-profit activities, due to the increasing proportion of the executive's compensation package coming from stock related benefits and to the increasing ownership of company stock by corporate management. These shareholdings are not, in general, important in a "control" or "ownership" sense, since, as a proportion of total equity they may be small but their performance may be crucial for managements' own wealth positions (Llewellen 51). Moreover, Masson (59) reports that firms where managements financial interests are more closely paralleled to those of shareholders through stock options, did out perform the others (in terms of stock returns).(8)

Therefore, in order to allow for the various influences above, two additional "managerial" variables are included. The owner-control dummy, valued one for owner-controlled firms and zero otherwise, is similar to that previously used by Kamerschen (38) and Radice (79). It attempts to isolate those cases where, either shareholdings are highly concentrated so that enforcement costs are reduced, or managerial shareholdings are sufficiently large so that managerial preferences may be expected to align with those of shareholders.(9) If this variable had a significant effect on profit, this would throw some doubt on the sufficiency of the M-form for forcing profit-maximization.

The continuous "managerial taste" variable measures the degree of representation of management at the board level. Following its previous use by Williamson (106), this variable is an attempt to reflect managerial preferences. Hence board composition may be used "as a proxy measure of the extent to which management desires to operate the firm free from outside interference" (Williamson 106). While it is not the wish to interpret a low proportion of (executive) management on the board as a preference for outside interference, a high proportion may be seen as a desire to run the company free from such interference. Since non-executive board members are largely representatives of financial institutions, large shareholders or other individuals who it is assumed, have little interest in non-profit activities for management, a high management representation on the board may be interpreted as a preference for non-profit goals.

Both firm size and firm growth are included in the model. Size is present to allow for the possible effects of scale economies and diseconomies,(10) and for the fact that the lower variability of profit amongst large firms found in previous studies [e.g. Samuels and Smyth (82)], may be associated with lower mean profit. Clearly these two effects are not easily separated in the results and their joint presence may in part explain the divergent findings on the size-profit relationships in previous studies. Hence Eatwell (24 P.393 - 4) reports that:-

"The size distribution of rates of return has been indentified variously as embodying a negative correlation of profitability with size ... a positive correlation and to exhibit no significant relationship whatsoever ...". Moreover, since it

was argued that size was one of the main determinants of the optimality or not of the M-form compared with the U-form, a strong connection is expected, a priori, between organizational form and size. If this is confirmed and organizational form does matter in explaining profit performance, size is one of the variables most likely to suffer from specification bias.

Growth, likewise, is present on two grounds. First it serves to allow for windfall gains from unanticipated growth. Secondly, when the rate of return is measured at the beginning of the year, there will be a bias in the profitability measure towards high rates for merging firms since some shareholders funds, not included in the denominator, will be contributing to profit for at least part of the year. This will result in higher profit rates for growing firms but its effect may be mitigated by the inclusion of the growth variable. When the rate of return is measured at the year end the effect of growth will be a downward bias in the profitability measure. This may also be reflected in the coefficient of the growth variable in appropriate regressions.

In some regressions, interaction terms are included between organizational form and size because of the a priori expectations of a relationship, and between owner-control and growth because of the possibility (widely discussed in the literature [e.g. Marris (57) Radice (79)] of a managerial preference for growth rather than profit. The effect, since organizational form and owner-control are dichotomous variables, is to introduce slope dummies which allow the size and growth coefficients to diverge for differently structured firms and owner versus manager-controlled firms respectively.

The variables so far exhaust the specification of Z_i and encroach on $f(Y_i)$. However, further insight into $f(Y_i)$ is afforded by equation (2). Nevertheless, as Cowling (20) observes, it is not possible to be too specific about f(H) except that we know that it is conditional on buyer concentration and the probability of repeat purchasing. Since in the present analysis the unit of observation is the firm and (H) and (η_p) are market structural characteristics, our knowledge of the market distribution of firms' activities is limited, and market structural characteristics are not of primary concern, industry dummies attempt to control for any remaining influences on $f(Y_i)$.

The complete model explaining profit-margins in linear form, but omitting interactions terms is thus:

$$\pi/R = A + B_1 OF + B_2 T + B_3 OC + B_4 MT + B_5 S + B_6 G + \sum_{j=7}^{j=10} B_j \sum_{k=2}^{k=5} D_k + B_8 R/E + u$$

where OF = organizational form dummy (1 for optimal companies 0 otherwise, see P.60)

T = organizational change dummies (1 for companies in transition to M-form, 0 otherwise)

OC = owner-control dummy (1 for owner-control, 0 otherwise)

MT = Managerial taste (proportion of executive to total directors)

S = firm size

G = firm growth

D_2-D_5 = industry dummies (electrical engineering, food, distribution, mechanical engineering)

R/E = ratio of turnover to stockholders equity

When the dependent variable is $\pi/_E$, $^R/_E$ is dropped, and when RLC, the gearing variable[12] (the ratio of long-term debt to equity) is introduced. The industry dummy (for the alcoholic drinks industry) is dropped in order to avoid singularity problems in estimation. Thus the various dummy coefficients measure deviations from our basic observations, a non-optimally organized, non-transitional, manager-controlled firm, in the alcoholic drinks industry.

The model is subject to the usual limitations of the single equation approach. On theoretical grounds, and in the light of Radice's findings (79), a potentially serious simultaneity problem may exist with respect to firm growth, arising from a causal flow from profitability (in part via internal financing) to growth. Otherwise, however, it may be noted that much of the concern over causality and simultaneous equation bias has surrounded market structure variables in industry level estimates [Phillips (77)] and therefore may be attenuated in the present case. Moreover, as Cowling (20) argues, it may be reasonable to view the system of equations in which performance, behaviour and structure are embedded as recursive, with lags sufficiently long to allow us to pull out individual equations for separate treatment. In any case, there has been recent confirmations that in this area as in others, OLS and TSLS estimates can turn out to describe essentially the same picture [Strickland and Weiss (96)].

III - THE SAMPLE, DATA SOURCES AND MEASUREMENT OF VARIABLES

The sample comprised 82 independent companies in five industries - food, alcoholic drinks, electrical engineering, mechanical engineering and the distributive trades - for which organizational form data existed. All the companies selected appeared in the top 300 firms in the Times 1000 (or 500). The period of study was 1968 - 71.

The choice of industry was limited to those where, in the light of the arguments in chapters 2 and 3, there was an *a priori* expectation for superior performance by the M-form organizational structure. Hence process-oriented industries, like steel, that may involve technical inseparabilities on a large scale, were excluded. However, due to the wide definition of industry each involving several separate product markets, it was not possible to exclude U-forms completely from the sample. These (six) observations were placed into the optimal or non-optimal category according to their size and diversification.[13] Moreover, industries where new products were of overriding importance were also not considered, since in this case the conditions for the optimality of any of the Williamson and Bhargava (109) organizational types may not be fulfilled (see Chapter 3).

The sample was limited to firms in the top 300 companies in order to concentrate on large firms for which, as the data verifies (see Appendix I), the various types of multidivisional forms are likely to predominate, and where the U-form is less likely to perform optimally because of the possible problems incurred at large size. Subsidiary companies were excluded

because classification by organizational structure, no matter how large or complex the firm, is meaningless in that it fails to take account of the actions of top level decision-makers who have the ultimate responsibility and influence.

The period 1968 - 71 was chosen for a number of reasons:-

(1) Coming after a number of years of extensive internal reorganization among companies, but with the diffusion of the M-form innovation incomplete, it provided a sample including considerable variation in organizational form.

(2) Information on organizational structures tends to be released with a certain lag, so that choice of a period a few years prior to that in which the analysis is carried out, enables more accurate classifications to be made.

(3) The 1967 Companies Act required companies to reveal information such as turnover and directors' shareholdings which were not always available for previous years.

(4) A four year period was thought to be sufficiently long for short-run influences on profit to be neutralized in the average for the period as a whole, but sufficiently short that most firms would have a stable organizational form over most of the period.

DEPENDENT VARIABLES

π/E was defined as the ratio of profit after interest and depreciation to the value of ordinary and preference shares plus the reserves attributable to them. RLC was measured as π/E but with the addition of long-term loans to the denominator.(14) π/R was the ratio of profits to turnover.(15) All three variables were four-year averages, measured alternatively with profits before and after tax. Alternative verions of π/E were constructed with equity valued at the beginning and end of each year.(16) The source used for all financial data was

Extel. Profit data excludes extraordinary items, e.g. the sale of assets.

ORGANIZATIONAL FORM AND ORGANIZATIONAL CHANGE

The classifications are presented in Appendix A. The source of the material was official company files held at Companies House and files held at the London Graduate School of Business and the Manchester Business School.[17] Where companies had more than one organizational form within the 1968 - 71 period, they were allocated the form held for the majority of the period. The organizational change dummy indentified only M-form firms known to be in a transitional phase.

OWNER CONTROL

The procedure adopted followed the lead of earlier studies by Larner (43), Florence (26) and, especially, Radice (79). A firm was designated owner-controlled if either more than 15% of the stock was held by a (small) identifiable, cohesive group or more than 3% was held by managers.[18] Shareholdings of insurance companies and unit trusts were ignored. The sources used were Annual reports of companies and their official shareholders registers.

MANAGERIAL TASTE

Following Williamson (106), the variable was defined as the ratio of executive to all directors, information being taken from the occupational list of directors accompanying the shareholder register and from the Directory of Directors.

FIRM SIZE

In the majority of cases where the "assets" measure is used, firm size was the total value of long-term capital, measured at the beginning of the period to minimize feedbacks from profit

to size. In the two cases where size is measured by turnover, this is taken for the first year of the period.[19]

FIRM GROWTH was the ratio of the difference between opening and closing size to opening size.

GEARING AND CAPITAL INTENSITY were simply L/E and R/E respectively (where L is long-term loans).

INDUSTRY DUMMIES

Construction of the industry dummy structure was subject to the usual problems associated with allocating firms to industries on a principal-product basis. The industry definitions were however broad, and some "industries" may be more heterogeneous, in terms of single product markets, than others. Companies were distributed among the industries as follows:- food 15; alcoholic drink 8; electrical engineering 12; mechanical engineering 28; distributive trades 19.

IV - EMPIRICAL RESULTS

OLS estimates for 21 profit equations are reported in tables 2-7. The explanatory power of the regressions seems to be generally satisfactory, with one-third to one-half of the variation in profitability being explained by the models employed, which also performed acceptably in terms of overall significance. A little surprisingly in view of our a priori suspicion of specification bias in previous studies, serious problems of multicollinearity were not encountered: only one zero order correlation coefficient amongst the regressors was (barely) larger than 0.6. This was between the OF and T variables.

Regressions in tables 2-6 use the optimal/non-optimal dichotomy for organizational form, while table 7 uses a more ambitious three-way classification which will be considered in detail later. All regressions except those in table 3 have profits measured before tax, capital stock at the beginning of the period and firm size and growth in terms of assets. This represents the most preferred specification of the variables as considered in Section III. However, in order to broaden the base of the results in our area where data is imperfect, table 3 presents results with year-end equity (regressions 4 & 6) profits after tax (regressions 5, 6, 7) and firm size and growth measured by sales (regressions 8 & 9). These provide results in all major respects similar to those in the corresponding equations in Table 2. Note however the lower impact of growth with year-end equity and rate of return variables. This might be expected since profit rates will be over or under-estimated according to whether year-beginning or year-

end equity is used. (see footnote 16). Moreover, the size of this distortion will vary directly with the level of growth.

Unreported results used log size and growth with similar results to these reported in table 2. The industry dummies although included in all regressions were generally insignificant and appeared to contribute little to the estimation process. In order to save space they are not reported.

Tables 2-6 show that the OF variable proved to be significant in all the regressions using the optimal/non-optimal dichotomy. Conversely Managerial taste (MT) attracted a non-significant variable of wrong sign in all the equations estimated. This may indicate that any relationship between board composition and profitability is considerably more complex than our model allowed.

In particular, unduly low executive representation may result in some efficiency loss and also the absolute numbers of executive and other directors may matter. In addition there could be interaction effects with organizational form. Whether refinements in this measure warrant the effort or whether alternatives should be explored is not clear.

In table 2 there are several discrepancies in the performance of variables according to whether the rate of return or price-cost margins are used. However differences with respect to owner-control and size are resolved where the interaction terms are introduced (table 4). Nevertheless it is to these discrepancies between the performance of (some of) the independent variables that we turn to first.

ALTERNATIVE DEPENDENT VARIABLES

In table 2, there are differences regarding the significance of the coefficients, between those regressions using a

rate of return as the dependent variable and those using price-cost margins. Hence regressions 1 and 2 using π/E and RLC respectively as the measure of profit tell essentially the same story. The organization dummy (OF) is positive, significant and very large indicating a difference of 6-8 percentage points between the rates of return earned by optimally and non-optimally structured firms.[20] However as shown by the organizational change dummy (T), which is negative and significant at 10%, approximately half this gain available to the long-established M-form is lost by those companies in the process of transition to the optimal structure (M-forms). Therefore on this evidence, the transactions cost of change are non-trivial, which is something orthodox theory is apt to forget.

Equations 1 and 2 (Table 2) also indicate a positive and significant owner-control effect on profitability. Its presence seems to raise profits by between 3 and 4 percentage points. While confidence in the effect of owner control would be increased by its significance with price-cost margins (equation 3, table 2), it is important to note that it has a positive and significant effect, <u>whatever the dependent variable</u> if the interaction terms OF.S and CC.G are used (table 4). We return to the possible reasons for differences in performance of the owner-control dummy in equations 1 and 3 (table 2) later.

Manager representation (MT) and size are both insignificant in equations 1 and 2, while growth is significant at 10% or better. This may, however, reflect simultaneous bias and the biasing effects of mergers when equity is measured at the beginning of the period. The quicker a company grows the

greater will be the inflation of the rate of return variable, as equity will fail to reflect those shareholders' funds acquired during the year.

Equation 3, for price-cost margins, also shows a large and significant effect for the OF variable. Optimal structure raises the price-cost margin by just over 2 percentage points. Manager representation (MT) is again of wrong sign and insignificant. Compared with equations 1 and 2 we see that (T), G and OC all lose significance, although remaining of correct sign. Size becomes significant.

In order to attempt an explanation of these differences we focus on equations 1 and 3 representing our main dependent variables π/E and π/R. We note from an earlier argument that $\pi/E = (\pi/R)(R/E)$. Hence the possibility is that (T), (G) and (OC) are not major determinants of π/R, but happen to be correlated with capital intensity (R/E). R/E reflects among other things, the methods of finance used by the company. Inspecting the simple correlation coefficients

TABLE I - SIMPLE CORRELATION COEFFICIENTS RELATING TO THE USE OF PRICE-COST MARGINS

	π/R	R/E
T	0.209	0.146
OC	−0.054	0.339
G	0.086	0.069

we see that OC shows a weak negative relationship with the price-cost margin but is strongly and positively correlated with R/E.

The organizational change dummy (T) is negative in both equations 1 and 3. It therefore may be surprising at first sight to see a positive correlation between π/R and T. However firms in transition are all adopting the M-form structure and, as indicated by equation 1, earn profits approximately half-way between the pure M-form and sub-optimally organized firms. Thus when the M-form aspect of transitional firms is taken into account, the partial correlation with π/R would be negative and this is reflected in the negative co-efficient in equation (3). However without the reinforcing effect of the negative correlation between R/E and T, the organizational change dummy is unable to reach significance in equation 3.

Growth (G) has a significant coefficient in equation 1 but not equation 3. Hence it is the presence or not of the correlation between (G) and (R/E) which seems to decide whether (G) matters in determining the value of the dependent variable.

It appears that comparison of equations 1 and 3 has allowed further insight into how some of the independent variables come to have their observed effects.

The significance of firm size only in equations 3 is more difficult. Fortunately even with π/E S becomes significant with OF.S and OC.G included (see table 4). Without the supporting evidence from rate of return variables, it seems unwarranted to attribute the significance of S in equation 3 to economies of scale. More likely it reflects the inclusion of the R/E regressor. Hence in equation 3, the positive and significant firm-size coefficient shows that more profit is made by large firms who keep the same capital intensity as their smaller

rivals. Interestingly, where capital intensity is not held constant, in equations (1 and 2) large firms do not earn significantly more profit. So on this evidence managements in large firms would seem to use more capital intensive technologies. This might be due to non-cost minimizing behaviour by management, to trade-union pressure on larger companies who then find it profitable to use higher capital/labour ratios than their smaller competitors, or just the use of higher gearing ratios.

In order to continue our "parallel" approach to the use of dependent variables, we will report results for both π/E and π/R in later sections. Several of the discrepancies in the performance of the independent variables will continue to occur, presumably for reasons similar to those considered above. However a greater measure of agreement is reached when interaction terms are used. (table 4).

ALTERNATIVE ORGANIZATIONAL FORM SPECIFICATIONS

Table 4 presents results for the π/E and π/R dependent variables with the interaction terms OF.S and OC.G. Organization form remains a positive and highly significant determinant of profit. Moreover these regressions seem to vindicate the a priori case for the inclusion of the interaction variables, in terms both of the performance of the particular variables concerned and also the improvement in overall significance and explanatory power. In addition the discrepancies for owner control and size found for the regressions in table 1 according to the dependent variable used are largely resolved.

With the OF.S term included we have separate estimations of the profitability-size relationship for optimally and sub-

optimally organized firms. The results are:-

Optimally organized

$$\pi/R = 0.0979 + 0.00007S$$

$$\pi/E = 0.1816 - 0.00001S$$

Non-optimally organized

$$\pi/R = 0.0663 + 0.00023S$$

$$\pi/E = 0.0769 + 0.00038S$$

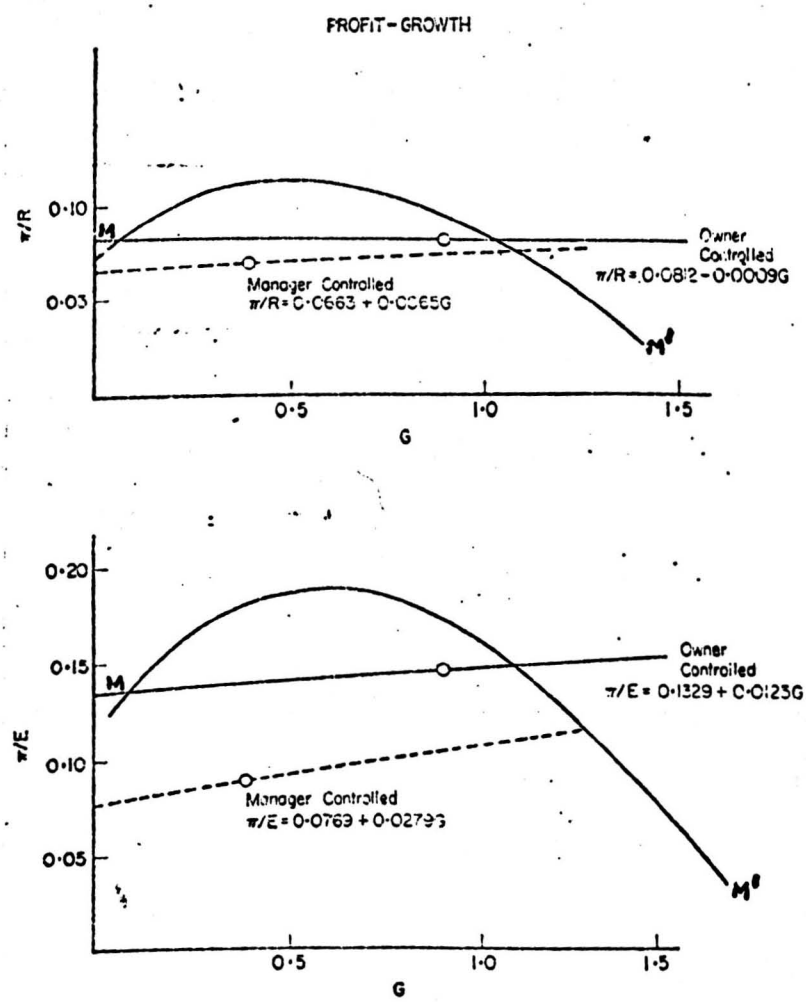
Therefore one observes a highly significant positive relationship between size and profit for non-optimally organized firms and no significant relationship (with even a very small negative coefficient in one case) for optimally organized firms. As will be remembered, the reason for including (S) was to test for the effects of economies of scale. Most empirical studies whether of a statistical or an engineering nature, suggest an L-shaped relationship, with initial economies followed by negligible savings beyond a certain minimal optimum size. In this present sample the average firm size in the optimally organized group was twice that of the non-optimally organized subset. (£102.9m against £49.7m). The results in this area may suggest therefore that firm size economies do exist and that some firms in the sample were operating in the region of falling-costs: but that in general those firms which had optimal internal organization had also achieved minimum optimal size.

The use of the OC.G interaction terms seem to provide a significant role for OC, whether the dependent variable is π/E or π/R. Hence this variable is significant at 5% or better in regressions 10 and 11 (table 4). This positive influence on profit has an indicated magnitude of approximately half that of organizational form.

Although the G and OC x G coefficients are not significant within the usual confidence limits the coefficient values tend to confirm the existence of slack within the non-owner-controlled firm. Thus taking the G and interaction coefficients together, we find that while profit increases with growth for the non-owner-controlled subset, the slope of the relationship is much less for owner-controlled firms and is in fact slightly negative (-0.0009) in the profit-margin case. As we have already stressed the growth coefficient may be prone to (positive) simultaneous equation bias. If so we may suspect that the true G coefficient is less than the estimate reported in table 3. But the markedly different slopes for owner-controlled versus non-owner-controlled groups remain of interest (see figure 1).

In the light of Channon's (17 - Tables P.52-63) work and of information acquired since the original classification in 1973, alternative specifications of the organizational form variable are presented in tables 5 and 6. Hence OF is the original classification used in table 2, while OF II, OF II', OF III and OF IV, represent the modifications, which are explained in greater detail in the Appendix 1 (P.93). However, briefly, OF II, OF II' AND OF III, attempt to incorporate Channon's classification into the present work and alter the treatment of three companies in mechanical engineering whose classification has been changed since Steer (92). Moreover OF II, OF II', OF III, OF IV, all incorporate changes in the treatment of U-forms. Hence in OF II and OF IV all U-forms are sub-optimal; in OF II', they are left out completely; and in OF III, only two U-forms are classified optimal. This is an attempt to overcome the problem associated

FIGURE 1 · THE PROFIT-GROWTH RELATIONSHIP



NOTE: MM' represents a possible efficiency frontier of profit-growth combinations (Marris (57)).

with U-forms that there are no explicit criteria as to whether a particular U-form structure can be expected to perform in an optimal or sub-optimal manner. All versions of the organizational form variable generated coefficients significant at 5% or better and leave the results otherwise unaffected. But in terms of significance levels and of explanatory power, the original OF specification performs best.

INDIVIDUAL ORGANIZATIONAL FORMS

Results are presented here for a three-way classification of organizational form. Thus the observations were separated into three (mutually exclusive) categories: M-form, H-form and ($\overline{M}$ + U) form. While the use of the H-form may represent less than optimal centralization, the ($\overline{M}$ + U) category includes the highly centralized organizational forms and therefore may be said to represent over-centralization. A zero/one dummy variable was used to represent each category, although that for (M + U) was omitted to allow estimation.

The equations (Nos. 20, 21) are reported in table 7. As expected in both equations the optimally centralized firms were more profitable than either the over- or under-centralized counterparts. However in this three-way classification the differences are only statistically significant with the rate of return as the dependent variable.

Although possibly due entirely to random variations, the results do imply that overcentralization must be preferred to under-centralization. Hence low-performing companies may be particularly of the H-form type.

TABLE 2 INTERNAL STRUCTURE AND PROFIT: OLS ESTIMATES n=82

Equation	Dependent Variable	Constant	OF	T	OC	MT	S	G	R/E	L	$\bar{R}^2$	F
1	π/E	0.0836	xxx 0.0847 (4.065)	x -0.0454 (-1.885)	xx 0.0424 (2.310)	0.0275 (0.483)	0.00003 (0.429)	x 0.0177 (1.750)			.331	5.02
2	RLC	0.0934	xxx 0.0626 (4.019)	x -0.0316 (-1.759)	xx 0.0328 (2.393)	0.0464 (1.086)	0.00003 (0.500)	xx 0.0165 (2.112)		xxx -0.1519 (-3.557)	.398	5.87
3	π/R	0.0689	xxx 0.0233 (2.967)	-0.0030 (-0.326)	0.0088 (1.254)	0.0091 (0.424)	xxx 0.00008 (2.667)	0.0015 (0.393)	xxx -0.0063 (-4.674)		.462	7.33

Notes: 1. Industry dummy coefficients are not reported

2. xxx denotes significant at 1 per cent

xx denotes significant at 5 per cent

x denotes significant at 10 per cent

n = 82

TABLE 3 - INTERNAL STRUCTURE AND PROFIT: ADDITIONAL OLS ESTIMATES

Equation	Dependent Variable		Constant	OF	T	OC	MT	S	G	R/E	R^{-2}	F
4	π/E	RBE	0.0733	0.0721^{xxx} (4.02)	-0.0413^{xx} (-2.00)	0.0353^{xx} (2.24)	0.0405 (0.83)	0.00004 (0.58)	0.0072 (0.83)		.299	4.46
5	π/E	RAB	0.0347	0.0532^{xxx} (4.29)	-0.0240^{x} (-1.68)	0.235^{xx} (2.16)	0.0325 (0.96)	0.000002 (0.04)	0.0101^{x} (1.68)		.346	5.29
6	π/E	RAE	0.0418	0.0389^{xxx} (3.45)	-0.0150 (-1.15)	0.0230^{xx} (2.32)	0.0223 (0.73)	0.00002 (0.41)	0.0039 (0.71)		.237	4.26
7	π/R	M.A.	0.0411	0.0135^{xxx} (2.84)	-0.0005 (-0.11)	0.0057 (1.34)	0.0027 (0.21)	0.00004^{xx} (2.29)	0.0008 (0.35)	-0.0036^{xxx} -(4.46)	.418	6.24
8	π/E		0.0714	0.0809^{xxx} (3.90)	-0.0406^{x} (-1.72)	0.0447^{xx} (2.52)	0.395 (0.70)	SALES 0.00004 (0.70)	SALES 0.0156^{x} (1.70)		.325	4.89
9	π/R		0.0752	0.0247^{xxx} (3.03)	-0.0036 (-0.39)	0.0075 (1.06)	0.0074 (0.33)	SALES 0.00005^{xx} (1.94)	SALES 0.009 (0.24)	-0.0066^{xxx} (-4.82)	.428	6.51

Notes: xxx indicates significant at 1%
xx indicates significant at 5%
x indicates significant at 10%

RBE = Rate of return before tax on year-end equity
RAB = Rate of return after tax on year-beginning equity
RAE = Rate of return after tax on year-end equity
MA = Price-cost Margins after Tax

TABLE 4 INTERNAL STRUCTURE AND PROFIT: OLS ESTIMATES INCLUDING INTERACTION TERMS n=82

Equation	Dependent Variables	Constant	OF	T	OC	MT	S	G	R/E	(OF x S)	(OCxG)	$\bar{R}^2$	F
10	Π/R	0.0663	xxx 0.0313 (3.506)	-0.0031 (-0.348)	xx 0.0149 (2.029)	-0.0098 (-0.446)	xxx 0.00023 (3.286)	0.0065 (1.230)	xx -0.0062 (-4.740)	xx -0.00016 (-2.286)	x -0.0074 (-1.665)	0.500	7.24
11	Π/E	0.0769	xxx 0.1047 (4.337)	x -0.0462 (-1.949)	xxx 0.0560 (2.859)	-0.0149 (-0. 253)	xx 0.00038 (2.000)	x 0.0279 (1.965)		x -0.00039 (-1.950)	-0.0154 (-1.292)	0.361	4,812

Notes: 1. Industry dummy coefficients are not reported.

2. xxx denotes significant at 1 per cent
xx denotes significant at 5 per cent
x denotes significant at 10 per cent

TABLE 5 INTERNAL STUCTURE AND PROFIT: OLS ESTIMATES WITH MODIFIED ORGANIZATIONAL STRUCTURE CLASSIFICATIONS n=82

DEPENDENT VARIABLE π/R

EQ^N	Constant	Organisational Form	T	OC	MT	S	G	R/E	$\bar{R}^2$	F
12	0.0765	OFII 0.0179 xx (2.05)	-0.0034 (0.34)	0.0114 (1.55)	0.0042 (0.19)	0.00009 xxx (2.89)	0.0024 (0.63)	0.0066 xxx (-4.71)	0.423	6.38
13	0.0664	OFII' 0.180 xx (1.98)	-0.0009 (0.09)	0.0101 (1.24)	0.0164 (0.67)	0.00009 xxx (2.90)	0.0026 (0.65)	-0.0063 xxx (-4.19)	0.425	6.67
14	0.0851	OFIII 0.0211 xx (2.61)	-0.0044 (0.47)	0.0117 (1.64)	0.0072 (0.33)	0.00009 xxx (2.98)	0.0021 (0.56)	-0.0066 xxx (-4.83)	0.441	6.82
15	0.0729	OFIV 0.0204 xx (2.40)	-0.0023 (0.24)	0.0087 (1.22)	0.0056 (0.25)	0.00008 xxx (2.79)	0.0018 (0.47)	0.0063 xxx (4.60)	0.440	6.78

Note: x denotes significant at 10%

xx denotes significant at 5%

xxx denotes significant at 1%

Industry Dummies not reported

TABLE 6 INTERNAL STRUCTURE AND PROFIT: OLS ESTIMATES FOR SEPARATE ORGANIZATIONAL TYPES n=82

DEPENDENT VARIABLE π/E

EQ^N	Constant	Organisational Form	T	OC	MF	S	G	$\bar{R}^2$	F
16	0.0996	OFII 0.0797 xxx (3.55)	-0.0486 x -(1.84)	0.0473 xx (2.54)	0.0231 (0.40)	0.00002 (0.29)	0.0181 x (1.80)	0.296	4.43
17	0.0740	OFII' 0.0772 xxx (3.32)	-0.0390 -(1.43)	0.0513 xx (2.53)	0.0506 (0.82)	0.00004 (0.52)	0.0171 x (1.67)	0.333	5.04
18	0.0851	OFIII 0.0830 xxx (4.03)	-0.0452 x (1.87)	0.0488 xxx (2.68)	0.0373 (0.67)	0.00003 (0.41)	0.0173 x (1.75)	0.328	4.95
19	0.0905	OFIV 0.0797 xxx (3.57)	-0.0047 x (1.85)	0.0408 xx (2.21)	0.0257 (0.45)	0.00002 (0.23)	0.0185 x (1.82)	0.297	4.23

Note: xxx denotes significant at 10%

xx denotes significant at 5%

x denotes significant at 1%

Industry dummies not reported

TABLE 7 INTERNAL AND PROFIT: OLS ESTIMATES FOR SEPARATE ORGANIZATIONAL TYPES n=82

EQ^N	Dependent Variable	Constant	Organisational Form		T	OC	MT	S	G	R/E	R^2	F^3
			M-form	H-form								
20	π/R	0.0838	0.0116	-0.0125	-0.0017	0.0085	0.0048	0.00003^{xxx}	0.0010	-0.0060^{xxx}	0.443	6.36
			(1.14)	(1.45)	(0.17)	(1.18)	(0.22)	(2.67)	(0.26)	(4.33)		
			M-form	H-form								
21	π/E	0.111	0.0719^{xxx}	-0.0159	-0.050	0.0429^{xx}	0.0240	0.00008	0.0169^{x}		0.292	4.50
			(2.71)	(0.69)	(0.191)	(2.31)	(0.41)	(0.11)	(1.65)			

Note: x denotes significant at 10%

xx denotes significant at 5%

xxx denotes significant at 1%

Industry dummies not reported

CONCLUSIONS

A robust result has been reported, showing that the internal organizational structure of the firms in our sample exerted a significant influence on profitability. However, conclusions must be drawn with caution for several reasons.

Firstly, the model may be subject to bias through not introducing a measure for diversification.[21] Firms were allocated to industries according to their dominant product, so leaving opportunity for significant variations in the degree to which firms had diversified into other industries. Moreover, even if a firm operated entirely within one of the industries as defined, there would still be scope for differences in diversification among individual product markets because of the broad definition of industry used. Yet to the extent that increased diversification allows a reduction in the risks of bankruptcy (see Scherer (83, P.101), Needham (68, P.128), firms may be able to increase their gearing ratios and pay lower interest rates on external finance. Moreover, both because the benefits of a switch from U-form to M-form may increase, due to increases in control loss in the functional structure, as the level of diversification grows and because the M-form structure and diversification may be linked through the medium of firm size, a positive correlation between the use of the M-form organizational structure and the level of diversification must be expected.

Secondly, market structural factors may be distorting the results. Within each of our industrial categories there will be several product markets. Hence many of the firms will not be in direct competition, and there may exist differences

in the market power or demand conditions facing firms within our industry categories which have a significant effect on profit.

This may be particularly important if Barron (7) is right in arguing that a major source of the variability in profit is due to the variance between industries.[22] Therefore, the other variables may be, in part, picking up the effects of product-market characteristics. With respect to the organizational variable, this possible distortion of the results by industry-level structural phenomena will apply to all types of organizational structure, but may be of greatest importance in the case of those companies using the U-form structure. These firms, as would be expected, were predominantly involved in producing one product, or a small group of closely related products, and this, given that firms in the sample are large by the standards of all firms, may imply some element of monopoly or market power in their operations.[23] The possibility of this is increased by the likelihood that the markets, in which at least the non-retailing U-forms operated, were not very large.[24]

Thirdly, in both equations using price-cost margins and a rate of return, the coefficient on the organizational variable is large, representing somewhere between one-third and one-half of the average value of the dependent variable. It would seem unlikely that organizational structure, on its own, could so significantly affect a firm performance. Since the M-form innovation was undergoing diffusion in the U.K. in the period of the study, one possible explanation suggests itself. To the extent that early use of the M-form structure implies more skilful and resourceful management than is general

in the economy and, if this is not fully compensated by higher rewards, our M-form classification will pick up the effects, not only of organizational structure per se, but also of superior management skills. These presumably will be exhibited by better profit performance, gained by the minimization of costs through the use of the most efficient control mechanisms, and by better judgements concerning future events.

Moreover, if Llewellen (51) is correct in arguing that executive motivation through profit orientated rewards, like bonuses and stock options, can be significant in determining (profit) performance, then the effects of these may also be distorting the OF variable. A positive correlation between the use of M-form structure and profit-orientated rewards may be expected for two reasons. On the one hand, continuous auditing on a profit basis by the central office allows profit-orientated rewards to be allocated more discerningly to personnel who further organization goals. Hence the motivational machinery will be improved. In other organizational structures below the top level of the hierarchy, profit rewards may either not be available or be dispersed with lower efficiency. On the other hand, if the relationship between early use of the M-form and superior managerial skills, discussed above, is correct, M-forms can be expected to use more and better profit-orientated rewards due to their management's greater ability on average to select the most efficient motivational methods. Thus while greater efficiency in personnel motivation is expected with the M-form structure, and remains one of the possible justifications for its introduction, an improvement in the performance of firms using other types of organizational form might be possible

if stock option and bonus schemes were introduced or improved.

Fourthly, our strongly positive result was obtained in a period when the M-form innovation was undergoing diffusion in the U.K. Only while the diffusion process is taking place - when some firms have introduced the new technology while others have not - would the results be expected. Hence, whether or not the omission of the organization form variable matters will depend on the country studied, the time period chosen, and the historical development of internal organization structures in the country and time in question. While the 1960's and early 1970's were a period of substantial re-organization in the U.K. (see Steer 92), according to Williamson and Bhargava (109, P.142) the change of organizational structures occurred earlier in the U.S. They found that the M-form first became of quantitative importance in the period 1945-50, was introduced as a defensive measure by many large firms in the period 1950-60, and flourished in its conglomerate variation in the 1960's. Interpretation of existing and future results should take into account such international differences in the timing of the development.

Fifthly, while unreported results indicate that omission of the organizational form variable, when circumstances demand it, will reduce the explanatory power of the model, no evidence was found that would indicate serious specification bias in the coefficients estimated in studies where organizational form is wrongly excluded. Thus the largest zero-order correlation coefficient among our regressors was 0.60 and this was between the organizational form and transitional dummy variables. All other coefficients were less than 0.6. On this evidence, any initial suspicions concerning the mis-specification of previous

profitability studies are not wholly confirmed.

On other issues, the results do show that the performance of variables is liable to differ according to whether a rate of return or price-cost margin is used. In particular some variables will be significant with π/E and not π/R because of a strong correlation only with the capital intensity element of the former. A similar phenomenon has been investigated with the well-known results of Comanor and Wilson (19).[25] This may reflect differences in the time period to which the variables are best addressed (see Section 11).

The evidence from the thesis on the exercise of discretionary behaviour is mixed. Our managerial representation variable performed badly. But the owner-control dummy was always of correct sign. Moreover it was statistically significant in all of the rate of return equations and in price-cost equations where the inter-action terms OF.S and OC.G were included. Owner-control would seem to increase firm performance although the general applicability of this result is limited by the bias in the sample towards successful owner-controlled firms. If owner-control does lead to higher profit this tends to belie Williamson's argument (103, P.125) that the M-form structure forces firms to profit-maximization. Even with the new organizational structures, investigation of the amount and use of the discretionary resources available to management would seem well placed.

The combined performance of the size variable (S) and the interaction term OF.S does provide some tentative evidence as to the existence of economies of scale. However with the possible distorting effects of monopoly power (see footnote 26), more results would be needed to confirm this. Interestingly,

our analysis of size did confirm the larger average size of M-form structured firms. This may be taken as evidence for the arguments in Chapter two which considered that the M-form structure was a reaction by firms to increasing size and diversity.

APPENDIX

THE CLASSIFICATION

As noted in the text, the 82 firms in the sample were classified by the six-way scheme put forward by Williamson and Bhargava (115). While the U-, M-, M'-, H and $\overline{M}$-forms are represented in the sample, there are no X-forms. Most of the classifications appeared in Steer (92) but there have been several additions. These were possible due to additional information not available in 1973. Moreover, the 1973 classifications were checked against any additional data, that had become available since that date.

U-forms

There are six U-forms in our original classification:- Automotive Products; British Sugar Corporation; Scottish and Newcastle; British Home Stores; Sainsbury; and International. Whether these companies can be expected to perform in an optimal manner cannot be determined unambiguously from our analysis. It will depend upon their size and diversification. British Sugar Corporation, Automotive Products and Scottish and Newcastle, were considered to fulfil the requirements for the optimality of the U-form structure; that is, a small predominantly one product firm with low geographical spread. All three of these companies seemed to have a lower geographical or product spread than any other firm in their respective industries. In the case of British Home Stores, Sainsbury's and International Stores, while recognizing the advantages of centralized buying on the retail trade [Turner (99, Chp. 9)], the U-form structure seemed to provide too little discretion for individual store managers in a trade where quick response to market trends is essential, made store-manager profit

responsibility more difficult to obtain and over-concentrated decision-making at the highest level of the hierarchy. Therefore these companies are classified sub-optimal in our original classification. (i.e. the OF classification used in equations 1-12). Alternatively, all the U-forms above are classified suboptimal (OF IV).

CHANNON'S CLASSIFICATION

Channon's work (17) covers the top 100 manufacturing enterprises in the U.K. for 1969. It does not separately recognize the $\overline{M}$-form, which it subsumed under the multidivisional structure. Of the 39 cases occurring in our classification and that of Channon, there are 27 agreements, and six cases of the $\overline{M}$-form which he does not recognize. Of the remaining cases, Unilever is classified as a grid-form by Channon, (a classification not available to us) while for Delta Metal and Hawker Siddeley, information not available to Channon may put his classification in doubt, so that we take our classification to be correct. However this leaves three cases where the correct classification is open to serious dispute:-

(1)	Burtons;	Channon,	Functional
		OF	M'
(2)	Thorn;	Channon;	H
		OF	M'
(3)	Scottish and Newcastle;	Channon;	H
		OF	U

Partly in order to assess the effects of these discrepancies in organizational classification OF II, OF II' and OF III are introduced. In all three Burton is classified as a U-form; Thorn and Scottish and Newcastle as H-forms.

However, in addition to these classifications, Davy-Ashmore, Stone-Platt and Dowty are all classified optimal, with change, as compared with sub-optimal beforehand. This was done because the organizational form presented in OF (Appendix A) differs from that in Steer (92). In these three cases, information not available in 1973 made the likelihood of transition to M-form unlikely. It was noted in 1973, that some companies who were allocated the M'-form classification may fail in the end to reach the true M-form structure possibly due to unforeseen resistance to change. All other classifications are unchanged.

The difference between OF II, OF II' and OF III lies in the treatment of U-forms. So OF II has all U-forms sub-optimal, OF II' leaves them out altogether so reducing the sample to 76, and OF III has British Sugar Corporation and Automotive Products optimal as in OF and the rest of the U-forms sub-optimal.

FOOTNOTES

(1) An example of this may be provided by re-estimating Comanor and Wilson's (19) model, replacing the dependent variables with price-cost margins as provided by Sherman and Tollison (86). When this is done [Cable (15)] the capital requirements variable loses significance.

(2) While all measures will be affected by discrepancies in the profit data [see Parker (73) Samuels and Smythe (82) Singh and Whittington 90,(Appendix A)] they will be liable to other data problems to differing degrees. For instance, asset revaluations will cause a downward revision of rate of return variables. These may be undertaken by some firms more often than others. So Whittington (102) notes that large firms may revalue more often than small ones, and firms of above average profitability more often than those of below-average profitability. Moreover problems with the valuation of equity may be intensified by problems stemming from the differences in the treatment of intangibles between firms [Singh and Whittington (90, P.220)]. Therefore while, as Hall and Weiss (32) argue, π/E may be the most theoretically acceptable rate of return variable in that it measures profit compared with what shareholders are really interested in, i.e. their stake in the company, π/K or R L C may provide a better guard against distortions in equity, since the latter becomes proportionately less important in the denominator. Conversely, due to the nature of the data, π/R is measured by profit over turnover, which includes some rental income and therefore only approximates to the theoretically specified price-cost margin.

(3) Demand conditions, in the form of very large cross-elasticities between products, may also prevent divisonalization being the optimal response.

(4) There must be some doubt as to the validity of claims that the M-form, per se, stops discretionary behaviour by management (see Chp. 2).

(5) We assume that the efficiency of the takeover mechanism is such that it is not, especially for large firms, the main consideration in deciding the availability of discretionary resources. In the literature the imperfect nature of the takeover market, because of imperfect information and also transaction costs, is argued by Williamson (103, P.15). Empirically Hindley (34) and Singh (89) have found that many inefficient firms survive. Product market discipline may therefore be weak, perhaps especially for large firms [see Singh (89, P.153).]

(6) Indeed Alchian (1) has argued that information costs are management's most important weapon for obtaining discretion.

(7) Most writers [Berle and Means (11), Florence (26), Radice (79)] agree that some seemingly modest figure of 15% - 20% of the voting stock in the hands of small or indentifiable group is sufficient to influence significantly management towards shareholders objectives.

(8) On the other hand, stock options may represent another way of removing resources from the company to shareholders' detriment. From the point of view of management, they may be a low risk method of increasing their own utility if shareholders find difficulty in discerning their loss. This view of stock options may become more likely if management is protected from falls in share price, or if very large discounts are offered on the ruling price. Bonus schemes may be subject to similar imperfections.

(9) Conversely, owner-control may be a double-edged sword. If management and ownership are synonomous there will be almost unlimited powers for discretion if so wished. Owner-managers, protected from the takeover market and from threat of dismissal, may choose to take this discretion in non-profit forms. This might be particularly so if the marginal rate of tax is high.

However, as we are to use only firms in the top 300 by size /see Section III/ the bias in the sample must be towards successful owner-controlled firms. Radice (79) noted a similar bias in his sample.

(10) While they cannot be distinguished by our analysis, it would seem that economies and diseconomies of scale may come from three sources; average cost differences due to plant size; differences in (unit) financial costs; and the costs and benefits of internal organization. The literature on these is extensive; e.g. Pratten and Dean (78), Bain (5), Williamson (108). Some of these scale effects may be better estimated by size relative to the market, so that with our absolute size measure (see Section III), they may be only imperfectly accounted for and therefore liable to have part of their effect through other (included) explanatory variables.

(11) In equilibrium, scale economies will not determine profit variation among firms of different size, but the size distribution of firms itself. Thus, only if not all firms have adjusted to optimal scale will profit variation be explained by scale effects.

(12) While the introduction of the gearing variable is suggested by the well-known work of, inter alia, Modigliani and Miller (61), its inclusion is essential here because our data only allows profit data after interest on loans.

(13) The Appendix to this chapter deals in greater detail on what basis the six U-forms were allocated to the optimal non-optimal categories. The literature (see chapter 2) give no a priori expectation as to the optimality of the U-form in particular cases. Moreover, in the Williamson and Bhargava (109) classication, U-forms may be diversified up to one third of their output.

(14) Due to the nature of our data, with profit after interest, use of R L C required that L/E be introduced as an explanatory variable - see footnote 12.

(15) Extel only allowed turnover to be measured. Turnover equals sales plus rental income.

(16) Profits were measured pre- and post-tax to give the results more breadth. Equations using year-beginning and year-end equity were run due to problems with each. Hence, while year-beginning equity reduces any feedback from profits to equity, since no adjustment could be made to the raw data, it will underestimate the true value of equity for those companies which merged or issued new capital during the year. On the other hand, year-end equity may tend to underestimate, since not all the capital will have been available to the company for the whole year. In addition, year-end equity could not be separated from retained profit.

No adjustment was made for differences in the end dates of companies financial years.

(17) The problemswith this type of data are described more fully in Steer (92) but briefly it was found that, due to less interest in the media, classification by organizational form becomes more difficult as size decreased.

(18) Marris (57 P.18) reports that average shareholdings among directors in the U.K. was approximately 1½% of the voting stock. If a doubling of this is required to remove the grosser effects of non-profit maximization by directors (P.76), then especially bearing in mind the large size of the firms in the sample, 3% would seem to be an appropriate critical figure.

(19) Hypotheses on size effects (see footnote 10) relate to size irrespective of the source of financing, hence the inclusion of loans in our size measure. Nevertheless since firms may revalue their equity with differing frequency (Singh and Whittington - 90, P.214) and may use bank overdrafts in differing proportions (Eatwell 24), measuring size by turnover may provide a useful cross-check.

(20) The average values for π/E and π/R (regressions 1 and 3) were approximately 17% and 6% respectively.

(21) Calculation of an adequate diversification measure was beyond the scope of this thesis. Firm size has been found [Amey (3)] to be positively correlated to diversification and the a priori expectation, on the basis of the arguments in chapter 2, would be for a similar correlation with the use of the M-form structure.

(22) If Barron (7) is correct there may be distortion of the results by unallowed-for industrial structure effects. These then, in part, will be picked up by the other variables.

(23) Thus the problem with U-forms is not only that classification into the optimal/non-optimal categories is difficult but also the possible correlation with unexplained industry-structure effects. A sample without U-forms would be advantageous.

(24) So Automotive Products produces specialized electrical equipment, British Sugar Corporation produces only sugar, and Scottish and Newcastle is more highly regionalized than the other large brewers.

(25) See footnote 1.

(26) The size variable may be picking up inter-firm differences in market power eitherdue to a connection between absolute size and size relative to individual markets or because "agglomerated monopoly" (the number of dominant market positions held by one company) is more pronounced among the largest firms.

CHAPTER V

INTERNAL ORGANIZATION AND PROFIT: AN EMPIRICAL ANALYSIS OF SOME CONGLOMERATE COMPANIES

Mergers involving companies in different product markets have become a common part of the modern economy. This has led, not only to diminished importance for (large) one product firms, but also to the development of companies which operate in several widely differing industries. These industrial holding companies or "conglomerates", may find that the possibilities for synergy and for the exploitation of market power are reduced as compared with large less-diversified firms. However to the extent that these reasons for merger are missing, work based on a sample of conglomerate companies would mitigate two problems encountered in Chapter 4, when attempting to explain profit variation between one industry firms. Firstly, while the a priori expectation of profit performance was unambiguous for the M, $\overline{M}$ and H-forms, this was not so for the U-form. Thus, the latter could be expected to perform optimally or not, depending on the technology, the diversification and the cross-elasticities between products of the firm. Although attempts were made to counter this problem, a more satisfactory solution may be provided by conglomerate firms. If synergistic effects are low and firms are highly diversified, the justification for the large-sized U-forms is much reduced.(1) In these circumstances, use of one of the multidivisional forms (M, $\overline{M}$, H) may be expected. This is borne out by the data (see Appendix B). Secondly, potential problems arising from market power may be mitigated; if substantial differences in industry concentration, the height of

entry barriers and changes in demand do exist between industries, these may be more significant in determining profit rates for one product companies, than for conglomerates whose activities are spread over several industries and who are therefore likely to be operating under differing conditions with respect to market power. If this is so for conglomerates, profit figures may be free from the more extreme variations due to industrial-structure characteristics.

In addition to these potential advantages for the estimation of the effects of organizational form, the development of the conglomerate in the U.K. and U.S.A. means that explanation of differences in their economic performance is of interest in its own right. The identification of causes of success and failure may help in deciding public policy towards this type of company.

To these ends, Section 2 examines some of the literature relevant to the model; Section 3 introduces the model; Section 4 considers the sample, outlines the data sources and discusses the measurement of the variables; Section 5 presents the results; while Section 6 considers the conclusions and possible omissions from the model.

II - THE LITERATURE

Several (rational) reasons for the existence of conglomerate mergers appear in the literature;- [see for instance, Lintner (49), Melnik and Pollatschak (60) and Weston and Mansingkta (101)].

(1) Tax advantages: a merger between firms may allow fuller use of tax losses and investment credits if these can be carried forward and the independent unit has no comparably large taxable income in sight.

(2) Greater leverage possibilities/lower borrowing costs. Greater leverage may be possible in a conglomerate due to a reduction in risk (see (3) below). Hence diversification, by lowering the possibility of losses large enough to sustain bankruptcy, may allow greater debt ratios. (Lintner 49).

Lower borrowing costs may result from economies of scale in security issue costs; lot size advantages in credit investigation under conditions of uncertainty; or the greater marketability of stock. These lower borrowing costs may be used to re-finance the debt of the (smaller) company taken over. However this will only be possible in the case of subsidiary companies; firms in which only a minority shareholding is held will not benefit since they will remain fully autonomous for borrowing purposes [Melnik and Pollatschek (60)].

(3) Reductions in Risk. Diversification by firms will allow reductions in risk for investors, since the conditions for risk minimization by shareholders are unlikely to be fulfilled.(2) However the ability of the conglomerate to diversify will be limited by its requirement for wholly owned subsidiaries

for the debt-cost reasons specified in (2) above. Therefore, a very modest portfolio of stocks may allow the investor to obtain similar levels of risk. [Mueller (65)]. Moreover, according to Smith and Scheiner (91), the mutual fund is a more effective type of organization for obtaining a reduction in risk through diversification. Thus the advantages of the conglomerate, in this area may be modest.

(4) Exploitation of Accounting Principles. Managers may be able to create an illusion of well-being above the true state of affairs by "exploiting the area of discretion within generally accepted accounting principles" (Lintner 49). Hence the diversifying merger may allow the management to create an illusion of success. The possibilities for such action are likely to be greatest when the turnover of subsidiaries is large and the accounts are liable to frequent change.

(5) "P/E Magic". Perhaps because of (4) above or other reasons, the market may assign the P/E ratio of the high growth partner to the new enlarged company, rather than the weighted average of the two firms. This P/E "magic" will lead to higher security prices than justified. This phenomenon may particularly be a feature of boom-markets when confidence is high (Lintner 49).

(6) Capital Market Advantages. Assuming a bias towards internal deployment of funds, diversification may allow greater benefits from the internal capital market (see P.11).

In addition to work on the reasons for the existence of conglomerate companies, the literature has considered their market rating. In particular, Scherer (83 P.102) reports that conglomerates have been awarded low P/E ratios by the market. This he explains in three ways:-

Firstly, as a reflection of the problems in managing conglomerates, referring presumably to difficulties in maintaining control over a large number of unrelated product areas. Secondly, due to a lack of information about divisional activities leading to a reluctance to invest on the part of shareholders. Thirdly, because shareholders already have sufficient diversification for their purposes.

While these factors undoubtedly have a part to play in explaining the low P/E ratios - indicating high risk - accorded by the market to conglomerates, other explanations are possible. The high (L/E) ratios found in the sample[3] may indicate the use of excessively high gearing ratios. Alternatively, some conglomerates may, as a matter of corporate policy, concentrate on high risk profit opportunities. Thus, with only imperfect information available, companies who took over a large number of firms whose asset value had been severely discounted by the market or who habitually entered product fields where profitability had not yet been demonstrated, might be considered high risk investments by shareholders. The implication of this for the performance of the organizational form variable is considered in section 5.

III - THE MODEL

The model is additive in form assuming

$$\pi_i = F(Y_i) + g(Zi) + u$$

where $F(Y_i)$ denotes the profit-maximizing level of profit for firm (i) and Zi is our vector of managerial variables.

THE DEPENDENT VARIABLE

The rate of return on stockholder's equity was chosen as the dependent variable, since of the rate of return variables this seems to be the most theoretically accepted. (See P.57). Price-cost margins were not generally available prior to 1967.

INDEPENDENT VARIABLES

These remain substantially the same as for the equations with eighty-two industrial companies. However organizational change and managerial taste are excluded for data reasons[4]; in addition, industry dummies are inappropriate. The literature reported in Section 2 suggests the possible importance in explaining profit rates of differences in debt-ratios and degree to which the firms assets are represented by shareholdings in other non-subsidiary companies (since these holdings may reduce the companies debt capacity). While gearing may be measured in a similar way to Chapter 4, the best method of measuring any reduction in debt capacity through investments must be open to doubt. The value of investments in other companies shares is one possibility, but a better explanation may be provided by consideration only of substantial shareholdings in other non-subsidiary companies. Investment in these "associated" companies (where the shareholding is between 20-50%) represents a substantial investment over which managerial control is limited but where risk may be

higher than for a series of small, widespread shareholdings of the same total value. Consequently, companies investing heavily in associated companies may reduce their debt capacity with only limited advantages from risk reduction.

Hence the independent variables are:-

Organizational Form. Using the Williamson and Bhargava classification, the optimal/non-optimal dummy is used to test whether differences in organizational form matter in determining profit performance. Following the arguments of chapter two that the M-form may be expected to outperform both the H- and $\overline{M}$-form, the dummy takes a value of "1" for M-forms and "O" otherwise. To the extent that synergistic effects are low in conglomerates, (any) differences in performance between organizational forms will be due, ceteris paribus, to variations in the efficiency of financial control and of the allocation of corporate funds to different products. In Chapter two (P.11), it was argued that the M-form would have advantages over all other (multidivisional) structures in these respects.

Owner-control. This (dummy) variable is included to estimate the possible effects on profitability of the concentration of share ownership (or substantial managerial shareholdings) (see P.62). The dummy takes a value of "1" for "owner-controlled" firms, and "O" otherwise.

Firm Size is included to allow for possible effects on profitability from scale economies or diseconomies, or the lower mean profit in large companies, associated with lower variability in profit. (see P.63). These two possible effects cannot be distinguished.

Firm Growth is included to allow, firstly, for unanticipated

growth and, secondly, to mitigate the biasing effect of growth on profitability when the dependent variable is measured using year-beginning equity (see P.64). This may be of importance here since the growth rate of some companies has been considerable.(5)

Gearing. The ratio of long-term loans to stockholders' equity as an explanatory variable is suggested by several factors. The literature on conglomerate merger considered in Section II; the well-known work of Modigliani and Miller (67) on the effects of gearing on risks; and the possibility that, at any one time, substantial differences in the cost of equity and loan capital exist to which firms have not fully adjusted. Hence the gearing variable may pickup several, perhaps countervailing, effects on profitability which cannot be distinguished.

Trade Investments. For reasons discussed above extensive shareholdings in associated companies may affect profit performance. Yet because a simple or linear relationship between such shareholdings and profits is not expected, this variable, admittedly at the cost of some loss of precision, is represented by a dummy taking a value of "1" for companies having "substantial" shareholdings (see Section 4) as a proportion of total assets and "0" otherwise.

Hence the model is:-

$$\pi/E = a + B_1OF + B_2OC + B_3S + B_4G + B_5L/E + B_6TI + u$$

where π/E the ratio of profit to shareholders equity

OF = organizational form dummy

OC = owner control dummy

S = firm size

G = firm growth

L/E = (gearing), the ratio of loans to shareholders equity

TI = trade investments dummy.

IV - THE SAMPLE DATA SOURCES AND MEASUREMENT OF VARIABLES

The top 400 companies in the Times 1000 for 1971 were examined and a sample was drawn of 36 industrial conglomerates,[6] for which data was available. The use of companies in the size range 250 - 400 extended our data sources to the limit.[7] Since many of the firms had grown quickly and no compensation was possible through the inclusion of firms of similar size in 1964, which had not grown as rapidly,[8] there is a bias in the sample towards successful high-growth companies. Data was collected for two four-year periods, 1964 - 67 and 1968 - 71. Four years was considered long enough to average out the most extreme forms of profit variability and short enough so that most companies only employed one type of organizational structure.

However, as will be seen, only the results for the second period are reported.

DEPENDENT VARIABLE

The rate of return on stockholders equity (π/E) was defined as the ratio of profit after interest, tax and depreciation to the value of ordinary and preference shares, plus the reserves attributable to them. Equity was calculated at the beginning of each year. The variable was a four-year average of the period 1968 - 71. Profit excludes all extraordinary items.

The source of all financial data was Extel.

ORGANIZATIONAL FORM

The Williamson and Bhargava (109) classification was used to classify firms by structure on the basis of source material found in annual reports, stockbroker reports, articles and official company files held at Companies House, the London

Graduate Business School and Manchester Business School. The classification used for the study was based on the structure operated for the majority of the period.

Two classifications are presented. The first, O F I, has Sears and Tillings classified as M-form, and Jessel as $\overline{M}$-form (see Appendix B). O F II reclassifies Sears and Tillings to H-form and Jessel to M-form. This reclassification represents the difficulties the present author has had in deciding the appropriate classification in these cases; the M-form classification hinges on the efficiency of the financial control exercised by head office.

OWNER-CONTROL. Two definitions of owner-control are used:-

(1) At least 15% of the company's voting stock held by a small and cohesive group of shareholders or 3% held by executive management. This was the definition used in Chapter 4.

(2) While the necessary holding by shareholders remains as in (1), the management qualification for owner-control is increased to 10% of the company's stock. Since the conglomerate considered are of a smaller size on average than our industrial firms,[9] this stricter qualification for owner-control may be necessary for the utility-maximizing actions of management to be identical with shareholders preferences.

On econometric grounds O C 10% gave a better distribution between owner-control and management-control. Under definition (1) only 12 firms were manager-controlled whereas under definition (2) this increased to 21.

FIRM SIZE, was defined as value of stockholders equity plus long-term loans, measured at the beginning of the period, to minimize feed-backs from profit to size.

FIRM GROWTH, was the ratio of the difference between opening and closing size to opening size.

GEARING was long-term loans over shareholders equity.

TRADE INVESTMENTS. A dummy variable was chosen to pick up the possible dichotomy between those firms having substantial investments in "associated" companies and those without. Hence those companies whose investments in associated companies represented more than 20% of the companies'assets were allocated a value of "1". All other companies were given a value "0" for this variable.

The value 20% is essentially arbitrarybut it does represent a substantial proportion of the company's assets, especially in a sample of industrial companies where holdings of other firms shares cannot predominate as a proportion of the firm's assets. The use of a dummy variable of this kind may also provide advantages insofar that the relationship between trade investments and profit may be complex, the exact nature of which is not readily apparent from theoretical argument.

V - EMPIRICAL RESULTS

OLS estimates of the three profit equations are reported in table I. It will be noted that only results for period 2 (1968 - 71) have been presented. Equations for period 1 (1964 - 67) separately, and the two periods together, were found to be unsatisfactory. With respect to equations including data from both periods, problems arose due to the considerable differences in the average values for some of the explanatory variables:-

TABLE 1 - AVERAGES FOR SEVERAL IMPORTANT VARIABLES IN DIFFERENT PERIODS OF TIME

	1964-67	1968-71
Average FS	12.8	22.3
" G	2.68	0.90
" L/E	0.26	0.37
" π/E	20.1	19.9
Number of M-forms	10	20

Moreover growth was negatively correlated with time,[10] while the size, growth and gearing were positively correlated. Since the residuals grew bigger for observations in the second period, excessively small standard errors were to be expected [Johnston (37 P.216)]. Therefore the data points to the need for separate estimation. However results from period 1 on its own, (while favourable to the hypothesis of the superiority of the M-form) were unreliable on several counts:-

(1) There are only ten "optimal firms in period 1 under the OFI classification, and nine under OF II.

(2) The results were not robust and varied considerably depending on whether OF I or OF 2 was used.

(3) Several of the firms were very small in 1964 and grew very quickly so that the bias towards rapidly growing successful firms was exacerbated.[11]

(4) The coefficient on the constant was unacceptably high. Consequently only period 2 regressions are reported. Equations with log firm size were run and the results were similar. The choice for the linear form was on the basis of the lower value for the constant.

Immediately apparent is that these regressions, as judged by the R^2 and F statistics, provide a poorer explanation of variations in profit between firms than those reported for "industrials" (P.81-86) and that no variable, except the constant, is significant in all three regressions. The OF variable (just) fails to be significant in any of them. However where a definite presumption about expected signs was made these are confirmed. Moreover consistency of sign is obtained for all coefficients except gearing.

Equations 1 and 2 seem to tell essentially the same story. The only variables significant in determining stockholders rate of return (other than the constant) are owner-control and growth. A note of caution is warranted as to the effect of owner-control.

The coefficient must be interpreted as the effect of a switch from management to owner-control under ceteris paribus conditions. Yet the correlation (+0.379) between OC and L/E suggests owner-controlled firms fund more of their capital projects through loan capital.[12] This may be a method by which voting control can most easily be retained.

TABLE 2

OLS ESTIMATES: CONGLOMERATES

N = 36 Period 1968-71

Equation	Constant	OFI	OFII	OC10%	OC3%	FS	FG	T1	L/E	$\bar{R}^2$	F
	Dependent Variable π/E										
1	0.162^{xxx} (5.90)	0.042 (1.52)		0.062^{xx} (2.16)		-3×10^{-7} (0.76)	0.016^{xx} (2.23)	-0.051^{x} (1.71)	-0.020 (0.51)	0.254	2.98
2	0.164^{xxx} (5.86)		0.037 (1.31)	0.061^{xx} (2.09)		-1×10^{-7} (0.22)	0.016^{xx} (2.18)	-0.056^{x} (1.91)	-0.023 (0.57)	0.241	2.84
3	0.140^{xxx} (4.29)	0.052^{x} (1.89)			0.046 (1.59)	-2×10^{-7} (0.52)	0.012 (1.66)	-0.040 (1.32)	0.002 (0.06)	0.206	2.58

Notes: ^{xxx} denotes significant at 1%

^{xx} denotes significant at 5%

^{x} denotes significant at 10%

The significance of the firm growth coefficient may reflect both the influence of growth on profitability per se, and also any distortion of the dependent variable due to the existence of differential growth rates between firms (see footnote 16, P.98).

The structure dummy coefficient (OF) has positive sign as expected, but just fails to reach significance at the 5 per cent level. Its magnitude indicates that a switch to an M-form structure will increase profitability by approximately one fifth of the average profitability for the sample as a whole;[13] and therefore falls into a more plausible range for the effect of organizational form on profitability than the coefficients reported in Chapter 4. In short the results while showing a positive effect for structure on profitability do not fully confirm the statistical significance found in Chapter 4. In the context of a model where the R^2 and F- test values are considerably lower than for the equations reported in Chapter 4 the results do not seem, on face value, to be unfavourable to our hypothesis concerning the efficiency of the M-form structure. However a note of caution is necessary. Rapid growth among firms in the sample may exacerbate problems associated with differences in managerial skill. Thus, in Chapter 4, it was argued that the OF variable may be picking up not only structural differences within the organization, but also differences in the ability of management. These differences will presumably be exhibited partly through more efficient selection of growth opportunities. Many of the companies in the sample expanded rapidly by both internal and external methods. Therefore a large variation in performance might be expected between those

that made the "right" choices on the basis of the out-turn of events, because of the superior foresight of their management, and those that did not. This would be totally independent of organizational form but will inflate the performance of the M-form, if its early use in a period of change is associated with superior management. It may be therefore that the equations reported overstate the importance of organizational structure.

The firm size coefficient is negative whichever way Sears, Tillings and Jessel are classified. This is important since both Sears and Tillings had opening sizes well in excess of the average.[14] However, in neither regression did the effect of firm size reach significance. The (small) negative coefficient indicates that the profitability even of the large firm which maintains its growth rate and gearing ratio will be below that of its smaller rivals.[15] However the lower growth rate and higher gearing ratios of the large firms in the sample will result in further reductions in profitability.[16] Nevertheless, there is little evidence on the basis of these regressions for the existence of economies and diseconomies of scale. This perhaps is unsurprising since with the exception of Sears, the sample does not include any giant firms where the most pronounced effects might be expected. In particular, control loss problems associated with large size may not become significant until a size well in excess of any of the companies in this sample is reached. If the development of the "Grid"[17] structure is taken to evidence of the disadvantages of the M-form at very large sizes, then at present it seems to be limited to companies whose size is greater than any in the present sample.

The trade investment dummy has a negative sign, as expected, and just fails to reach significance at the 5 per cent level. The equation indicates that companies having "substantial" investments in associated companies suffered approximately a 5 per centage point reduction in their profit. These holdings, therefore, may be a major source of poor performance. This may be the result not only of a reduction in debt capacity (with little corresponding reduction in risk), but also difficulties in maintaining effective control over the use of company assets. Thus these minority holdings may not provide scope for the strategic controls possible when full voting control is held, yet disposal through the market may not be a viable alternative as the share price may be unduly depressed. Thus neither internal nor external market control is available in full.

The reported results give little importance to gearing as a determinant of profit performance. In view of the several, possibly conflicting, factors that this variable is picking up, this may be unsurprising.

The important differences in regression 3 compared with regressions 1 and 2 (table 1) in otherwise broadly similar results, refer to the significance of the OC variable and the sign of L/E. Owner-control is defined in the "3%" version in regression 3, so there are 24 owner-controlled firms, compared with 15 in the "10%" version of this variable. The effect of this is to make the OC coefficient insignificant, although still positive, and to throw additional doubt on the true importance of owner-control in determining profitability. Moreover, it seems that the importance of owner-control in determining profitability is less for conglomerates than for industrial

companies. This is the implication of a comparison of regression 3 with those equations in Chapter 4 using the 3% definition of owner-control and the rate of return on stockholders equity. Three percent of the stock in the hands of corporate management may be insufficient, considering the smaller size (on average) of the conglomerates, to cause them to profit-maximize.

While the coefficient on the gearing variable (L/E) has a different sign in regression 3, it remains insignificant. Thus the interpretation of the results remain very much the same.

VI - CONCLUSIONS

The regressions give only a moderate explanation of the variation of profitability among conglomerate firms. The R^2 statistics are well below the levels found with the sample of one-industry companies and the F-test is only significant at the 5 percent level. The constant has a coefficient that represents (at least) two-thirds of average profitability. Nevertheless, the B_2 and B_4 coefficients were found to be significant in two out of the three regressions; however this may reflect factors of statistical rather than economic importance. The negative sign and near-significance of B_6 indicated the possible importance in explaining performance of "substantial" shareholdings in associated companies. Thus conglomerates may improve their profit performance if they concentrate on buying subsidiaries where voting control allows full managerial control to be exercised. Or alternatively, become a mutual fund where the widespread, but small, shareholdings allow advantages in the area of risk and the disposal of shares through the market (without an unduly depressing effect on the price).

However our primary interest is the effect of organizational form on profit, as shown by B_1. This proved to be positive, but insignificant. There was some reason to believe that even this was an overstatement of its importance. Hence organizational form appears to matter less in determining the profit rates of conglomerates than one-industry firms. Three possible explanations are suggested. Firstly, it may be that the superior performance of M-forms found in Chapter 4 was the result of strategic control in the area of externalities, which,

because of low interconnectedness between products, is of limited advantage to conglomerates. This explanation implies that there are few efficiency advantages in the areas of financial control or the allocation of corporate funds available from the use of the M-form. However considering the strong performance of the M-form compared with other multi-divisional forms in Chapter 4 and the importance of financial control in defining the nature of the M-form structure, this is unlikely to be the sole explanation.[18]

Secondly, the use of the Williamson and Bhargava classification may be inappropriate for our sample of conglomerates. On the one hand, the growth of many companies in the sample was very high even for 1968 - 71. Hence table I shows an average growth of 90% over the period for conglomerates compared with 62% for the industrial sample in Chapter 4. Under these circumstances the organization may never be sufficiently stable for a highly structured organizational form to develop. Thus with rapid change, although an organizational form of the Williamson and Bhargava type may seem to occur, activity may be focused more on the acquisition and disposal of subsidiaries and the re-definition of individual and divisional responsibilities than the attainment of steady-state efficiency. The latter may be ruled out by the rapid expansion of the organization which may put a significant strain on the firm's managerial resources. [For further discussion see Penrose (75, Chp. 4).]

On the other hand, some "conglomerates" may work in an uncertain environment, where, as argued in Chapter 3,[19] the bureaucratic model of organization, on which the Williamson and Bhargava work is based, may be inappropriate. Hence, as considered in Section II, some conglomerates may choose to

operate in such a way, with respect to the nature and number of growth possibilities selected, that while expected profit may be high, so are the risks involved.[20] Conversely, for the one-industry companies of Chapter 4, the combination of lower growth and concentration on a few product areas, where specialist knowledge is possessed, makes a stable environment more likely.

Thirdly, for (some) conglomerates the supply of suitable takeover victims may be of crucial importance in determining profitability. The specialist corporate skills[21] of these companies may lie in the identification and purchase of firms whose share price allows a high discount on the true asset value. In these circumstances the correct identification, and the available supply, of such opportunities will be of overriding importance in determining profitability.[22] Thus organizational form, even if the Williamson and Bhargava classification is appropriate, may be of minor importance in determining profitability. Moreover, to the extent that the profitability of existing corporate skills is picked up in the model by the explanatory variables, the reported coefficients are liable to distortion. In particular, the organizational form dummy may be picking up the influence of these (special) corporate skills. However the sign of this distorting effect is not immediately discernible.

The results therefore do not confirm, except to the extent of the predicted positive sign, the hypothesis of Chapter 2 or the results in Chapter 4 regarding the performance of M-forms. While this may be interpreted as a justification for neo-classical assumptions, in view of the results of Chapter 4, it perhaps points more strongly to the need for more

appropriate organizational classifications. These may be considerably more complex than those of Williamson and Bhargava requiring more extensive information sources than used here; this is certainly true of the Innovational and Adaptive forms (see P.46). Therefore there may be limited opportunities for explaining variations in conglomerate profit rates with simple organizational variables. One of the advantages of the Williamson and Bhargava classifications discussed in Chapter 2 was its simplicity, allowing the use of readily available data sources. In addition, more complex models may be required because of the proportionately greater importance of differences between conglomerates in managerial and corporate skills.

From the point of view of public policy the equations provide no clear guide as to the nature of successful conglomerate companies. Neither firm size nor organizational form (as defined) were shown to matter in determining profit rates. Nevertheless some evidence pointed to the detrimental effect on corporate profit of substantial trade investments. It may therefore be that some kind of managerial control is necessary to ensure adequate profitability in (industrial) conglomerates.

The considerable differences in corporate strategy found in the sample (see, for instance footnotes 20 and 22) may have important implications for public policy. While some companies may aim for long-term steady-state efficiency others may be essentially speculative phenomena associated with boom markets. In the circumstances general presumptions as to the social costs and benefits of conglomerates may be impossible to obtain. Therefore public policy may have to be essentially ad hoc taking each case on its merits.

FOOTNOTES

(1) Synergy refers to cost reductions made possible through the exploitation of the commercial and technical links between products.

The importance of market power considerations may be reduced because it is unlikely that all the conglomerate's subsidiaries will be operating under similarly onerous market conditions. If this is so then industry-structure characteristics will have a smaller role to play in explaining variations in the profit rate for conglomerates than for one-product firms where one may be a monopolist while another is producing under competitive conditions.

(2) If there are perfect capital markets - defining these as being where every investor holds every share - or if indentical sub-sets of investors hold the stock of the merging firms, there will be no risk advantages from conglomerate merger. However either of these situations are unlikely. (Levy and Sarnat (46), Lintner (49)).

(3) The average ratio for L/E for the eighty-two industrials was 23.2%. For the conglomerates it was 31.5% in the period 1964-71, and 36.7% for the period 1968-71.

(4) Most of the conglomerates changed their amount of financial control very slowly and as this is the most important determinant of whether a structure is M-form or not, identification of a period of organizational change would be liable to error. In addition modifications to the financial control mechanisms do not imply the same upheaval as the changes that occurred with the eighty-two industrial companies, where considerable changes in personnel responsibilities and tasks were involved. Managerial Taste, which performed badly in Chapter 4, was difficult to calculate for the smaller companies of this sample.

(5) See table I - Page 111.

(6) The definition of conglomerate used for the selection of the sample was essentially arbitrary. Hence in order to include only those companies that operated in several, diverse industries, none of which dominated the firm's activities, a "conglomerate" was taken to be a firm which operated in at least three industries (defined in a similarly broad manner as in Chapter 4) of which no one provided greater than 50% of the turnover. (Allocation of assets to different industries was not possible.)

Financial conglomerates were excluded since our organizational classification was developed for industrial companies.

(7) Using our data sources classification increased in difficulty as the size of firm decreased (see footnote 17 P.98) and Steer (92).

(8) The classification of organizational structure of these firms that remained well down the size list of firms was not possible from our data sources.

(9) The average (asset) size for the conglomerates sample was, approximately, £18 millions in 1964 and £22 million in 1968. This compares with average opening size for the eighty-two industrial companies of approximately £76 million.

(10) A time dummy taking the value "1" for the period 1968 - 71 and "0" for 1964 - 7 was included in the analysis of the combined period. It was not significant.

(11) For effects of growth on the dependent variable measured at the beginning of the period see footnote 16, Page 98.

(12) The average gearing (L/E) for owner-controlled firms was 0.52 compared with 0.26 for manager-controlled firms.

(13) The average value of the pre-tax rate of return on equity measured at the beginning of the year was 20.1%.

(14) The opening size of Sears and Tillings was £178 million and £64 million respectively. This compares with a sample average of £22 million. Moreover the effect of using the OF II classification - instead of OF I - is to change the (zero order) correlation coefficient between OF and F S from 0.167 to -0.205.

(15) This might be expected from the nature of the sample with many rapidly growing firms.

(16) The (zero order) correlations between firm size and gearing (L/E) and between firm size and growth was 0.154 and -0.108 respectively.

(17) Channon (17) uses the "grid" classification in his work. Its occurrence seems to be limited in the U.K. to the very largest firms. Channon (17 P.56) finds only one and in the data examined by Steer (92) there seemed to be only two possibilities for this structure, both among the top 10 firms in the U.K. by size.

(18) It seems unlikely that the superior performance of the M-form in Chapter 4, can be explained exclusively by non-financial factors. If this were correct, the inferior performance of the H-form would be the result solely of better externality control on the part of the M-form. That this one effect could result in the magnitude and significance of the observed OF coefficient must be liable to considerable doubt.

(19) See Page 35.

(20) It would seem that at least three companies in the sample - Slater Walker, Jessel and Cope Allman - had a very rapid and large turnover of subsidiaries. In addition these companies tended to concentrate on taking over companies of low profitability, where the risks may be greatest. Under these conditions the organizational structure may be unstable.

(21) Indentical projects may not provide firms with similar profit opportunities; the profit available will depend on the

specialist skills that have been developed within the organization. This will be true of conglomerates even though their skills may not be located in a particular product area.

(22) Grovewood Securities provides an example of the importance of developed corporate skills. For a number of reasons examined by Hindley (35) owner-managers may wish to sell out. Grovewood allowed successful owner-managers to realize their assets and retain a managerial role, in return for a modest discount on the true value of the shares. It thereby provided an alternative to sale through the market which would have meant both a large fall in the share price when shares are closely held and greater difficulty in retaining a managerial role. The profits of Grovewood will depend on the supply of these takeover possibilities.

CHAPTER VI - CONCLUSIONS

The results point to one aspect of the firm which matters in determining profit performance that has received little attention. On the basis of the regressions in Chapter 4, organizational form would seem to have been an important omission from previous empirical work. Moreover comparing chapters four and five the organizational forms used were of greater significance in determining profit performance for firms working in the seemingly more stable environments. Nevertheless even in chapter four, no considerable distorting effects on other independent variables were discerned. In general, the results seem to provide support for the work of Williamson (103) and Williamson and Bhargava (109). Hopefully this will provide a stimulus to further investigation. However any conclusions as to the importance of organizational form must remain tentative due to the nature of the results presented. In particular, the omission from our analysis of any measure of diversification may prove important. Secondly, the analysis might be usefully extended to periods when change in organizational structure was not widespread. In such circumstances the results might be considerably less striking. Thirdly, without some appropriate method of separating the effects of structure, per se, from managerial skill, the role of the latter in determining the results in both chapters four and five cannot be determined.

This thesis has used and developed a relatively easy method of obtaining organizational form information. No doubt in the past difficulty in obtaining sufficient data has limited work in this field. Moreover the method makes only moderate

use of the subjective assessments of incumbent management, which may be subject to bias (Steer 92). On the other hand, some (few) errors can be expected, some firms cannot be classified, and the method is less applicable to small companies. (Steer 92). Work, perhaps with a limited sample but using in depth analysis of organizational form would constitute a valuable addition to the literature.

The scope for further work is considerable. Firstly, if organizational form, as classified by Williamson and Bhargava (109) were to be confirmed as important in determining the performance of a large number of firms in the economy, further work may be enlightening in those areas or sectors where this was not so. One example of this considered above was the sample of conglomerate companies. As concluded in chapter five, this lack of significance for the organizational dummy might be due to several factors. However these seem to fall into one of two categories. Either the wrong classificational schemes have been employed for the environment within which these companies operate, or more fundamentally, the structure of the organization does not matter. The latter might be expected to occur if the importance of structure was overridden by that of the quality of leadership, or if the study came too early in the development of conglomerate companies for steady-state or technical efficiency to matter. In this context Williamson (103, P.118), reporting U.S. experience, notes that widespread use of the M-form structure came later for conglomerate than for industrial companies.

Secondly, in the sample of chapter 4, the average size of the M-form structured firms was considerably in excess of their

non-optimally structured counterparts. This would seem to provide support for the arguments of chapter two as to the greater benefits of the M-form in mitigating control loss as size increased. However one question left unanswered is whether there are limits to size over which the M-form performs sub-optimally even in a stable environment? That this might be so is suggested by Channon's (17, P.56) perceived development of the "grid" form. This may be a response to situations where the number of subsidiaries are too great to be controlled optimally in the normal M-form manner. Instead two overlapping systems of control must be employed (see Appendix to Chapter 4).

At the moment the "grid" seems to be limited in the U.K. to firms of the very largest size.(1) However if the hypothesis about the limits to M-form optimal operation were to be confirmed, and if firms continue to grow, the "grid" might be expected to make an increasingly important impact (assuming that there are no major improvements in control or information-handling techniques).(2)

Thirdly, chapter three argues that several factors that seem to be important in determining R & D success or failure may be linked to organizational structure. If this is correct two things might be expected; firstly that firms using the appropriate structure would have greater success with R & D; and secondly that the relative advantages in the field of R & D would move more in favour of the large firm. Further empirical investigation would provide a useful addition to the literature. However regressional analysis of the type used in Chapters 4 and 5 may prove difficult. Unfortunately, most industries in the U.K. (e.g. pharmaceuticals) where technical performance

might be expected to be of crucial importance have few large companies, so making a worthwhile sample difficult to obtain. In addition there are also a large number of subsidiaries whose parent companies' headquarters lie outside the U.K. These companies would have to be excluded from a purely U.K. sample since organizational classifications which do not consider the role of the central office are meaningless. These factors combined to prevent empirical work on the Innovative and Adaptive forms in this thesis.

The implications of the results for public policy are rather limited. Even if organizational structure does matter in determining performance. the government's role in promoting this type of efficiency may at best be indirect. This is due firstly to the sheer impracticality of the government forcing the use of optimal organizational structures within firms. Any attempt would probably increase firm efficiency less than its cost in terms of the manpower and resources used. Secondly there would inevitably be some rigidity in governmental attempts to encourage firms to use certain types of structure. This might lead to some of the subtleties of the firms' response to environment being ignored. For instance, government agencies might encourage the adoption of "standard" spans of control, or amounts of delegation without regard for the fine-tuning of these to environment. [For examples of how firms may have subtle differences in structure see e.g. Burns and Stalker (15).] Thirdly, since it is unlikely that any one type of structure is optimal for all time, and because there is an inevitable lag while the success or failure of a type of structure is determined, legislators might find themselves promoting obsolete

organizational forms.

In these circumstances all public policy can hope to do is to create conditions that induce the use of the most efficient forms. This presumably points to policies for increasing competition in both product and capital markets. Yet increased competition has proved notoriously difficult to obtain in the past.

Our owner-control variable performed well up to expectations in chapter 4 and 5. With interaction terms introduced, the dummy had a significant and moderately large effect on profit even with price-cost margins as the dependent variable. Hence the results tend to justify the attention paid in the literature to owner-control [see e.g. Berle and Means (11) Radice (79)]. The existence of managerial slack was supported not only by the performance of the OC variable itself, but also by the different slopes of the profit-growth relationships for owner- and manager-controlled firms found in chapter 4. However both our samples were biased towards successful owner-controlled firms. This was particularly so with the conglomerate companies used in chapter five. Many of them had grown very rapidly over the ten years of the study from small firms to among the top five hundred companies by size in the U.K. These must be considered successful companies; and under the circumstances that many were owner-controlled (as defined in chapter 5) is not surprising. It would therefore be unwise to generalize on the effects of owner-control. This may be particularly so when large shareholdings reside with management. In circumstances where there is a particular interest in pecuniary rewards (including capital gains) owner-

managers might be expected to produce superior performance by using their power to improve efficiency. However the owner-manager role also allows considerable protection against the threat of takeover. This means that those who prefer to run their companies at a low level of economic efficiency - presumably in order to get non-pecuniary benefits - will largely be free from fear of displacement. Therefore quite different results might be expected from a sample of low-performing owner-controlled firms. The nature of sample may go someway to explaining the conflicting results in this area. For instance, Kamerschen (38) failed to find any significant for owner-control even using a rate of return dependent variable.

A disadvantage of our owner-control dummy is that it picks up two quite separate effects. There is, firstly, the possible reduction in managerial discretion due to the concentration of shareholdings in a few hands and, secondly, the voluntary pursuance by management of the wishes of shareholders in general because of the importance of corporate performance to their remuneration. Moreover it could be that substantial managerial shareholdings are the result of share option schemes which do not attempt to motivate personnel. Instead they may represent a convenient method for management of appropriating company resources. (See footnote 8, Chapter 4.)

Two further points of interest arose from the thesis. Firstly, different dependent variables may result in considerable differences in the results. In particular it was found that organizational change (T), growth (G) and owner-control (OC) were only significant (when the interaction terms were

omitted) the dependent variable was π/E or RLC. As will be recalled from section 2 chapter 4, price-cost margins and rates of return are best applied to different time periods. It may be therefore that the three variables above have little effect on short-term decision-making. Secondly, in chapter 4, using the interaction terms there seemed to be evidence of economies of scale. If this is correct there are cost reductions available to quite large firms (that is within the top 300 by size) through increased output. This will be difficult to reconcile with a desire for more industrial competition.

In conclusion, if this thesis has shown anything, it is a need of more inter-disciplinary study between economics and organizational theory. The results argue strongly against the view of orthodox economic theory that internal organization need not be considered when explaining firm performance. Moreover they seem to confirm a meaningful role for "general" classifications like those of Williamson and Bhargava (109) and Channon (17) which forget some of the subtleties of the organizational response. However this is not to argue that organization form will be important in all circumstances relating to firm performance or that the organizational forms used represent a very precise description of the firms' managerial structures. In fact they may disguise considerable differences in the level of efficiency.

FOOTNOTES

(1) See Appendix Chapter 4. The only companies that the present author has come across that may be "grid" forms are Unilever, B.P., and I.C.I.

(2) The "grid" essentially is a response to subsidiaries getting out of control. Therefore as would be expected this involves some centralization of decision-making. If however there was some major improvement in control or information handling techniques the costs of decentralization (in terms of non-organizational behaviour) would decrease and re-centralization of decision-making would be less necessary (see Chapter 3).

(3) "Substantial" shareholding here being those that represent a significant part of managerial wealth. However, they may not constitute a large percentage of total corporate stock.

APPENDIX 'A' - A CLASSIFICATION OF 82 LARGE U.K. COMPANIES FOR THE PERIOD 1967 - 71

ELECTRICAL ENGINEERING

B.I.C.C.

Although there is little independent evidence, it would seem that this divisionalized company has had sufficient separation of day to day and strategic planning and adequate central controls since 1963 (see A.R's).

M-form classification

CHLORIDE ELECTRICAL STORAGE

Divisionalization was started in 1971/2 (see A.R.). Before, there was an H-form structure, with insufficient control of the subsidiaries.

DECCA

This company has not undergone organizational change for a considerable period. It is divisionalized by product, but the essential M-form controls do not seem to be present, due to a lack of capacity at the centre. However due to the personal interest of the top management, a complete delegation of power is not to be expected.

H-form

E.M.I.

E.M.I. has long had a divisional structure but only since 1969 (when a new chief executive was appointed) was there any real delegation of responsibility.

The 1960's were characterized by a personalized managerial approach (see Greenwell), which resulted in over-involvement by the centre in the divisions activities. Central staff was

large and heavily involved in direct services to particular subsidiaries (see L.S.E. paper 1964).

Up to early 1970 classified M-form

EVER READY

Reorganization into a divisional structure came to Ever Ready in 1968; the years 1968 - 71 can therefore be seen as years of change resulting in a multidivisional structure.

M-form

FERRANTI

Ferranti's have always been a family firm. Indeed the personal control has been highly personalized and idiosyncratic (see McCathy's 29.6.73). While several aspects might indicate a holding-company, on balance the strong centralized and personalized leadership in the company, means an M-form classification.

G.E.C.

After the very large mergers with A.E.I. and English Electric, this company was quickly divisionalized with a minimum of product overlap, and a lean H.Q. staff. (See M.T. 1970, Greenwell).

Divisional management remains relatively free to make its own decisions, but only within the budgetary requirements imposed from the centre. (Greenwell).

M-form

JOSEPH LUCAS

"The company couples a centralized group with the decentalized operation of subsidiaries under local boards. The products groups in the company are responsible for the units under their control and management is performance responsible." M.T. 1966.

This company has all the M-form attributes

PLESSEY

A crisis in the boardroom in 1962 led to a major upheaval at Plessey's and a new management structure which emphasizes decentralization but at the same time maintained strong central control. Plessey, therefore, moved towards an M-form structure but whether this has ever been attained is not certain because of the problems over the optimal divisionalization of the company and reports of excess intervention in some areas.

The company can best be described as an M-form.

REYROLLE PARSONS

Although efforts have been made since the merger to integrate the two constituent companies, it would be too optimistic to say that there has been more than limited success. Although there has been divisionalization at Reyrolle Parsons and some swapping of divisions, the essential difference between Reyrolle and Parsons personnel is still kept. Indeed in 1969 the group replaced a single managing director by one from Reyrolle and one from Parsons.

H-form

THORN ELECTRICAL INDUSTRIES

Thorn, which has been built up to its present size in no small degree by its present chairman Sir Jules Thorn, is one of the country's makers of electrical appliances.

Unfortunately for such an important company, definition of organizational structure has proved difficult. Channon (17) has classified this company H-form, for most of the 1960's, presumably reflecting a lack of head office control of the subsidiaries.

In some way the evidence for the 1960's supports this

view. Although divisional reporting is used in 1960, it is difficult to see how the divisions could have much organizational importance. Indeed it was not until 1966 that a more rational approach to the domestic appliances side (for example) of the business was instigated with the appointment of a chairman and managing director for the (new) Thorn Domestic Appliances Co/s who was also to co-ordinate Thorn Domestic Appliances subsidiaries.

However against this view of the company there is evidence from Laurie Milbank (1971) on the influence of Jules Thorn. "Sir Jules Thorn has guided the group from nothing to its present (1971) annual turnover of £300m. He has chosen Mr. Jack Strowger to take over as managing director.

"The group has been so successful using its old methods of discipline and strong guidance from the top, that it will require exceptional care to maintain the group's forward momentum <u>using a new blend of leadership by example coupled with greater decentralization of responsibility</u>." (my underlining)

"The spirit of Thorn's success will be carried on with little change although the methods of achieving management success may bend further towards modern thinking."

A single divisional managing director now bears responsibility for the control, administration, and budget achievement of each production group (from 1967).

Overall financial control is retained by the main board. Budgets are agreed with each divisional head and their cash requirements considered. Each division is made to pay for its share of working capital and its share of capital expenditure.

M-form up to 1967

<u>M'-form from 1967-70</u>

SMITH INDUSTRIES

Laing and Cruickshank's description of this company corresponds to the M-form; a combination of decentralized decision-making and strong strategic controls. This development was the logical conclusion to a process of decentralization that was started several years before. (see Rowe Rudd Laurie Milbank.)

1967 - 70 M'-form

1970 - onwards M-form

FOOD

ASSOCIATED BISCUITS

"The three (constituent) companies operated fairly independently until a few years ago when a skeleton headquarters was established at Reading to co-ordinate activities. (However) from 1969 there will be a fully integrated group headquarters, at Reading, which will deal with policy and financial matters affecting the group as a whole" (Lawrence, Keen and Gardner 1968).

However since it is unlikely that this was fully operational until the 1970's, this company is classified H-form for the study.

ASSOCIATED BRITISH FOODS

Although this company is characterized by overlapping directorships, each division has considerable autonomy within the framework of the profit centre ideal. Indeed at this company subsidiaries will buy from outside if the other parts of the company cannot provide the intermediate products at competitive prices.

There is little doubt that this company is an M-form structure, since the whole tenure of the evidence points away from a holding company form, the only other possibility.

Some of the divisions of A.B.F. support a M-form structure of their own, e.g. the Fine Fare chain.

J. BIBBY AND SONS

Because of a profit crisis in the late 1960's a new organization was needed at Bibby. Previously, the response to changed conditions was slow, and decision-making laborious

because of the over-involvement in day to day decision-making by central management. (see A.R. 1971).

The new structure started to take shape in 1970.

M-form

BROOKE BOND

Brooke Bond, perhaps due to its "family-controlled" nature, had a highly centralized and autocratic decision-making process, (see Times November 1971) during the 'sixties and early 'seventies. This continued even after the merger with Liebig, which was controlled in a similar bureaucratic manner, until 1971, when there were signs of change.

M-form. (For the nature of decision-making at Brooke Bond and Brooke Bond-Liebig since M.T. 1970.)

J. LYONS

As early as 1963 Lyons had a divisionalized structure but the divisions did not have much real authority until 1967.

"This (decentralization) has speeded up the decision-making processes, which in the past tended to be held up because the board involved itself in comparatively minor executive decisions."

(Sunday Times 1970)

Because the divisionalized structure was already there the switch from M'-form to M-form did not take very long.

RANK HOVIS McDOUGALL

The present management structure, initiated in the early 1960's is characterized by fairly autonomous divisions and a quick efficient auditing process (see Laurie Milbank).

The company has all the hallmarks of an M-form enterprise including very quick assimilation into the divisional structure

of new subsidiaries.

SPILLERS

It was a McKinsey report on the company that initiated its change to a profit centre divisional basis. Although the reorganization was started in 1967/8 it was not until 1972 that it was possible to push the reorganization right down through the company.

M-form

UNIGATE

Unigate has gone through a pattern familiar for British companies. Formed in 1959, until the reorganization of 1967/8 the separate constituent companies continued to operate independently. All strategic controls were lax, but those in the externality field were particularly so.

Since 1967/8 the firm has divisionalized along product lines and an M-form has been taking shape.

M'-form

UNILEVER

In the 1950's the control procedure emphasized the firm's constituent companies as independent entities. However the presence of U.S.A. competition meant that change was needed, and this began in 1959, when the control and co-ordination machinery were improved. Indicative of this was the expansion of the central service departments.

In the early 1960's the divisionalization was on a geographical basis, however in 1966 there was a switch in certain areas to a product line approach: this is a problem of optimal divisionalization.

Unilever is very strong on its emphasis of profit accountability; central controls have been strong for over a decade

now, within a framework of delegated responsibility.

M-form

UNITED BISCUITS

Prior to 1965 the constituent companies in this group were as interested in competing against themselves as against anybody else according to Lawrence, Keen and Gardner. Additionally, they did not take advantage of economies of scale in marketing and sales.

The reorganization of 1966 bound the company into a whole by the formation of a centrally managed, divisionalized organization. However in 1972, the short-comings of the central organized company were recognized and there was talk of delegating responsibility.

M-form

NORTHERN DAIRIES

Expansion in the 1960's and early 1970's led this company from its original product base of milk-distribution to such products as food and brewing.

Like many companies which grow by diversification, Northern Dairies found itself by 1965 with an inadequate structure; directors were delegating too little responsibility. Hence a divisional structure was instituted.

The process of organizational change may be a long one, and although there was a minor re-organization in 1972, a classification of M-form from 1965-70 and M-form post-1970 is appropriate.

CADBURY SCHWEPPES (CADBURY)

Both the two constituent companies of Cadbury-Schweppes were using the M-form structure, although in a state of change, before the merger. Hence it was not surprising that their

separate identities were submerged into five product divisions, all with profit reponsibility and decision-making powers (see A.R. 1969). However the merger did increase the time necessary for the organizational structure to become stable.

M'-form

ROWNTREE MACKINTOSH

A divisionalization along M-form lines was put into practice as soon as the old Rowntree company expanded by the absorption of Mackintosh. The combination of M-form characteristics found was similar to that in use at Rowntrees before the merger. However the change involved in getting the new structure must be taken into account. Hence classified M'-form. (see L S E 1973).

BRITISH SUGAR CORPORATION

This one product company was found, not surprisingly, to have a U-form structure during the period of this study.

TATE & LYLE

"The Tate & Lyle group today is a collection of operating companies or divisions each of which is accountable for its results."

(A.R. 1969)

Control of the divisions is in the hands of a small headquarters group and the executive committee. The latter is an internal audit department.

Although the structure is quite stable now, there were doubts about the exact nature of the lines of control. Most of the board members hold positions of responsibility at the divisional level and the vertically integrated nature of the company may mean that central co-ordination is still inadequate.

This company is classified M' after the middle 1969, and H-form beforehand. Therefore for the purposes of the study it is sub-optimal.

STORES

ALLIED SUPPLIERS

Prior to 1969 Allied Suppliers traded through a series of subsidiaries which were not under unified management. The disadvantages of this approach were that there was no corporate identity and the central control of the group was inadequate for the requirements of the retail trade. The latter, of course, require considerable centralization of certain functions.

Since late 1969, as well as the establishment of a single corporate identify there has been a divisionalization on a territorial basis and a strengthening of central control. The effects of this are not clear.

Classified H-form

BURTONS

"The change (of name) recognized the new primary function of the Holding Company to determine and co-ordinate the overall strategy and policy of the group's range of activities ... These have now been reorganized into divisions under managing directors and divisional boards." A.R. 1965

Gradually, the group executive at the centre and the group services were strengthened. At the same time the distance relationship and capacity property of the group executive were improved by members being relieved gradually of any divisional responsibilities. However there seemed still to be considerable change during the period of the study.

This company is an M'-form

BRITISH HOME STORES

This company is a functionally organized from the centre

by a management committee. Some changes were started in 1972 but it is too early to evaluate them yet.

U-form

DEBENHAMS

In the 1950's and 1960's Debenham was, like many firms in the departmental store business, organized along holding company lines emphasizing the individuality and autonomy of the individual units. However since late 1969 there has been considerable centralization and an ending of the system whereby the central board was made up almost entirely of representatives of the member stores.

However even with this movement towards the M-form in the 1970's (see A.R. 1971) for this study it is classified H-form.

GREAT UNIVERSAL STORES

There is no evidence of change in management philosophy since this piece was written (L.S.E. 1954/5) "Great Universal Stores comprises a family of many different companies with interests in most fields of trade, commerce and industry. All our companies have their own managements, and co-ordination is the main function of the parent board, which avoids interference with the day to day operations of self-contained individual units.

The parent board maintain the over-riding control through a system of weekly returns which are collected and concentrated by the London Office (the returns involve a large range of performance indicators).

The total composite picture is therefore built up for frequent regular review enabling the board to set course for the entire ship, as it were, by compass direction."

M-form

HOUSE OF FRAZER

This company is only just starting on a process of increasing central functions (see George Henderson). House of Fraser has always specialized in individual stores with considerable independence often with their own buying departments and "corporate" identity. Relative to the needs of the retail trade, the company's central functions have not been powerful enough to realize the economies of scale that are present and co-ordinate the firm in an optimal way.

H-form

KINLOCH

This smallish company is divisionalized by product, and within product areas, geographically. This would seem a rational response to the operation of a warehousing and cash and carry business.

The head control office of this company seems to be small, by the standards of the retailing sector, but nevertheless, strategic controls are sufficient for an M-form classification (since at least 1967).

MARKS AND SPENCER

Information about management practices is missing from the annual reports of this company. However information is available from Graham Turner's book "Business in Britain" (99). He reports that while like Sainsbury's and Tesco, buying is highly centralized at Marks and Spencer, selling is highly decentralized and the responsibility of the individual store managers. Under these conditions store managers will have an optimal mix of discretion and control.

M-form

MENZIES

While until 1969 there appears to have been insufficient control within this company, the response was one of over-centralization.

For management control purposes wholly-owned subsidiaries are being merged into one operating company which has been organized into six divisions: each under the control of a main board director. The subsidiary companies' separate boards have been disbanded.

The main purpose was to produce clear unbroken lines of authority to cover all aspects and levels of the business.

Until late 1969 H-form, then M-form. Hence the majority of our four years are covered by the H-form classification.

MORRIS AND DAVID JONES

This highly decentralized company allows the responsibility for subsidiaries to lie with their respective managements. Even ordering is delegated to the subsidiary, and even depot level (see Laing & Cruickshank 1973). This is unsatisfactory from an organizational point of view; especially in retailing where there are economies of scale in purchasing etc.

H-form

J. SAINSBURY

Sainsbury's use the departmental rather than divisional approach, i.e. it is a U-form.

Functionalism may suit this company well because of its lack of diversification.

S & K HOLDINGS

Prior to 1969 the company was lacking in controls. Indeed in 1965 there were only two executive directors on the main

board.

The A.R. 1969 summarises that situation well.

"Each of the subsidiary companies was managed as a separate unit. By reason of the growth of the group internally and by acquisition this is not the most effective way of controlling our affairs, so we have recently divided the group into five divisions and formed an executive council ..."

H-form up to and including 1969

W. H. SMITH

M. T. 1972 reports that W.H. Smith has been in the process of change for the last ten years and it has not really stopped. Up until 1969 the chairman of this family controlled firm was also in charge of a W. H. Smith subsidiary. Now top management is devoting more time to long-term planning and following the profit centre idea.

The A.R. 1971/2 reports the splitting of the company into divisions, instead of subsidiary companies.

M-form

TESCO

Tesco is split into three divisions all of which have substantially the same structure - retail directors over area controllers over inspectors over store managers. The idea of profit responsibility runs strongly through Tesco's; indeed promotion is the direct result of good profit performance. Internal audits, cash flow allocation and externality control are also in evidence.

This company is an M-form. However there is one problem that is discernible: it may be that central management will be unable to resist being involved in all the company's activities

because of the essentially family nature of the company and the tradition for personal leadership and control.

The company's structure has been the same for a considerable period.

U.D.S.

In 1973 (92) it was noted that although this company had superior strategic controls than (say) the House of Fraser, it was difficult to decide upon whether H or M-form was the correct classification because of the still considerable autonomy afforded to individual units.

Although it remains true that some difficulty was encountered in the submergence of family interests within the subsidiaries into the corporate whole, in view of Graham Turner's article on the retail trade in "Business in Britain" (99) a classification of M-form is afforded to U.D.S.

INTERNATIONAL STORES

This is essentially a centrally organized firm, with a seemingly continuous line relation from the board downwards. The departments are functional in character.

U-form

ASSOCIATED DAIRIES

This company which is associated with the A.S.D.A. superstores in the North of England, has concentrated on using decentralized methods of decision-making and responsibility since the early 1960's. However this has not stopped the provision of several centrally-provided services where considerable economies of scale are present. (see M.T. March 1974)

M-form

FITCH LOVELL

The lack of divisionalization and the numerous subsidiary companies, all over-lapping in terms of product and geográphical area means that an H-form classification is allocated to this company before 1974.

MOORES STORES

Examination of the annual reports allows little doubt that this company had insufficient strategic controls, or provision of common services (for the retail trade), to have any other classification than H-form. Attempts at change as late as 1971 had little effect.

ALCOHOLIC DRINK

ALLIED BREWERIES

The result of the merger of three regional breweries in 1961 - Ind Coope, Tetleys and Ansells - this company for the first few years made little attempt to co-ordinate the activities of the constituent companies, which carried on in the same way as before the merger. This, however, was not too serious because the territories of the separate companies did not overlap very much.

However in mid-1960's the company started to change so that the A.R. 1969 could report that the company was no longer a group of individual companies working on their own but an integrated whole. Part of the reason why this change was needed was undoubtedly the considerable diversification of the period.

By 1969 it would seem that Allied Breweries justified an M-form classification.

For period of study - M-form

BASS CHARRINGTON

Ever since this merger was consummated the divisionalization of the company, with appropriated controls, has been given top priority. No chance was given for a holding company set up to develop.

Even though central control is strong, the autonomy of action of subsidiaries whether in production, distribution or marketing is considerable. Obviously an M-form organization is being built in this company, but at the moment because of the lack of very recent information and the feeling that the system cannot be completely stable until production rationalization is fully completed, an M'classification must be allocated.

COURAGE

Courage has been gradually divisionalized for at least ten years now and was in fact relatively quick in submerging the identities of the firms that were part of the original merger. The A.R. 1972 remarks that "our policy is to operate on a decentralized basis of management with authority and responsibility delegated as far as possible down the line".

Each of the divisions at Courage, has a separate board and these board-members are unlikely to be on the main board. It seems unlikely therefore that central over-involvement is present.

M-form

DISTILLERS

Distillers is mainly concerned with the whisky trade, and this concentration was increased with the selling of its chemical operations to B.P. Incidentally, this chemical deal highlights one of the problems of subsidiaries with split control. Two chemical subsidiaries were left out of the deal because D.C.L's partners would not agree. D.C.L. is keen on split ownership of companies.

Although there is a divisional structure, D.C.L. is probably essentially a holding company not least because of the traditional independence of many of the distilleries which form the basis of the company.

"D.C.L. because of its extreme decentralization and specialization has not built a managerial group of experts in corporate planning (etc.)... at the centre". Director 1969. There is no evidence that any of the other D.C.L's activities is under any different type of control than the whisky trade, so precluding an X-form classification.

H-form

GUINNESS

Guinness is a strange company in that its two operating companies in the stout field, Park Royal and Dublin, are to a large extent autonomous: yet conflict is resolved by the agreement which set them up, under which they both take strictly controlled areas of operation. It can therefore be concluded that competitive behaviour between the two parts of the company is minimal.

Although co-ordination is adequate at Guinness it is likely that the company does not pass the cash flow criteria of the M-form; central management only involves itself in cash allocation problems when subsidiary company resources are inadequate.

The analysis above is not really changed by the company's diversification over the last few years, and is encouraged by the company's like of partial ownership of subsidiaries.

This is one of the holding companies which is on the borders of M-form classification.

H-form

SCOTTISH AND NEWCASTLE

Scottish and Newcastle is less diversified or vertically integrated than most of the big brewers. It has of course, got tied houses and hotels, but 65% of its sales come from the free sector of the market. This has allowed the company to organize itself along essentially functional lines.

U-form

WATNEYS

Watneys has tended to be the odd man out on the brewery trade as this quote would indicate:

"The administrative reorganization was completed during

the year; it (the company) is now organized on a functional basis for overall planning and control in production, marketing and tied estate development; ... with the boards of the regional companies being responsible for the profitable implementation of these plans." (A.R. 1969)

Watney has always been slow to get rid of the regional brewers' identities, something that contrasts strongly with the practice of most of the major companies in the industry. Indeed, the directors of these companies have, over the years, been the mainstay of the Watney board.

The reorganization of 1967 might be best viewed as that occurring in a company trying to overcome the independence of its subsidiaries, resulting in over-involvement (i.e. $\overline{M}$-form).

The choice between $\overline{M}$ and U was difficult, but essentially due to its history the role of the subsidiaries would seem such that a classification emphasizing the role of sub-units was selected.

$\overline{M}$-form

WHITBREAD

Whitbread for a long time was a holding company* for defensive reasons. The Whitbread "umbrella" was formed to stop aggressive moves by other breweries towards a large number of small independents. All these "independents" have been, or will be quite soon, taken over by Whitbread to form an integrated group. However the job of rationalizing capacity is a long one.

All the A.R. 1968-72 have reports of changes in the structure of the company, so obviously the full extent of the reorganization has not been seen yet.

M'-form

* holding company in the sense that it had considerable resources in trade investments.

ASSOCIATED ENGINEERING

"The group's central management today is relatively small consisting of a finance team, a systems team, a corporate planning section under the group economist and a technical service group ... The group has a fairly decentralized management structure which has not been subjected to any radical changes recently. However it has been tightened up now by more stringent financial controls, thus refining the corporate profit centres. (Greenwell).

"Each of the divisions is to a large degree autonomous and centred around its major subsidiary - these subsidiaries provide the management structure for the whole of their particular division."

M-form

AUTOMOTIVE PRODUCTS

While lines of control were somewhat blurred this company until (at least) 1972 was structured in an essentially functional manner. This is revealed by the nature of directorship responsibilities and the promotion procedures. (see A.R's)

However the size and limited range of products, may make a U-form structure optimal.

BABCOCK AND WILCOX

Babcock and Wilson (U.S.) owns 12% of the equity of this company but according to de Zoete Bevan the control exercised over the G.B. Babcock is "similar to the loose control exercised by the G.B. company over its continental associates".

Up to 1971 B & W was undoubtedly a holding company but

perhaps its U.K. subsidiaries were under much closer control than its overseas associates. However a new divisionalized form of organization was introduced but it is doubtful at this moment thát it has really fully integrated under central control the various B & W activities. This is particularly so since certain subsidiaries were not involved in the divisionalization.

H-form

BIRMID QUALCAST

Formed in 1967, this company underwent rapid rationalization to eliminate competition between the two constituent parts - the old Birmid and Qualcast companies. While the 1969 A.R. indicates a structure along multidivisional lines, a classification of M'form would seem appropriate for the years up to 1970.

M'-form

JOHN BROWN

This company seems to eschew divisionalization and lets the individual subsidiary companies carry on with little effort to integrate them technically or commercially.

Evidence from the annual reports from 1960-1970 gives the impression that the centres of control are at the subsidiary board level; indeed there is little central staff capacity either functional or managerial.

H-form

DAVY-ASHMORE

In 1973 (A.R.) it was reported that a divisionalized structure with profit accountability had been introduced at Davy-Ashmore, as the result of a major contract problem in

1968/9. However these reorganizational moves continued throughout the early 1970's (see A.R. 1973) and the result as yet cannot be justified as an M-form.

H-form

DUPORT

This company is in the process of extended change possibly resulting in the end in an M-form managerial structure. However at the moment the main board seems to have too little manpower or back-up services adequately to monitor the divisions. In addition the process of co-ordinating the various parts of the company has only just started.

H-form

GLYNWED

The company started its policy of divisionalization and decentralization in 1967 and the divisions were made responsible for profit performance.

The merger with Allied Ironfounders in 1969 has placed a considerable burden on the process of change, and it is this fact, coupled with a hint of over-involvement that necessitates an M'-classification even though the management structure seems to have been stable recently.

M'-form until 1971

G.K.N.

By the early 1960's it was obvious that G.K.N. was a group of largely autonomous companies, the product range of each being determined largely by historical factors. Central control was very weak. (see Simon Coates. 1970)

The regrouping of the firm into sub-groups took at least a decade. However even then the company had not fully finished its reorganization; the A.R. 1971 mentions the "excessive burden"

on top management which was the result of "expansion" and the persistence of the historic pattern of major sub-group representatives on the board. This it was felt would lead "in the future" to a board of excessive proportions and considerable biases.

While evidence points to an M-form structure after 1971 for this study an M-classification is used due to the comments in 1971 A.R. (above).

HAWKER SIDDELEY

Channon (17) has classified this company H C (holding company) for 1969. While it is agreed that up until 1965 there were few strategic controls, after that date the situation seems to have recitified, by the introduction of profit responsibility for sub-units and elimination of product overlap. Therefore for the period of this study, an M'-form classification has been allocated to Hawker Siddeley. (see Rowe Swann 1972, and Graham Turner (99).)

M'-form to 1970

M-form afterwards

LAIRD GROUP

The historical development of this group made it certain that it was an assortment of individual subsidiaries with little co-ordination or control to bind them together (see L.S.E. No. 238). The government intervention of 1970 inevitably caused change. The first move, understandably under the circumstances, was the introduction of very tight budgetary controls and a lot of centralization.

H-form until 1971

RENOLD

Prior to 1968, Renold operated on a functional basis, but expansion and diversification (although to related products), made a new management structure necessary. The four years 1968-72 were a period of transition to the M-form structure, with the formation of headquarters specialist groups, and the delegation of responsibility. Controls were adequate.

M'-form

STONE-PLATT

Until 1966 no attempt was made to integrate the original constituent companies - Stone and Platt.

However in 1968, a divisionalized structure was put into operation. However while the annual report 1968 would indicate an emerging M-form, this company it would seem remained an H-form until (at least) 1972. This is because although the reorganization reduced product overlap, the divisional responsibilities of top-level management (see A.R's) makes unbiased decision-making unlikely.

H-form

STAVELEY

In 1963 Staveley Industries was a company comprising twenty-two subsidiaries which were run independently of one another. (A.R. 1968). What the company did in 1963 was to group the subsidiaries into four divisions each under a chairman and board of directors, who attempted to increase efficiency in general and rationalize production in particular.

However this approach does not seem to have eliminated the independent nature of the company's sub-units and more reorganization was needed in the late 1960's and early 1970's to bring the group under tighter financial control. The

divisions of 1963, may have co-ordinated the firms under their control in a superior way, but there is little evidence that the control and co-ordination of the divisions themselves was adequate.

H-form

TUBE INVESTMENTS

Tube Investments prior to 1962 was a holding company which M.T. 1967 described as having "extreme decentralization" and "expensive competition" between constituent companies. Even capital spending approval was not formalized.

The remedy of the management at the time was a resort to divisional principles, but as so often happens, extreme decentralization was replaced by over-involvement. The effects of this excessive centralization are well reported by A.R.1970. Delegation of responsibility was needed both to encourage the performance of middle management and to remove the burden on top management.

M-form

VICKERS

Vickers was another British company whose structure was more due to its history than deliberate policy. Prior to 1967 Vickers had a holding company structure, but one which over the years had become liable to more and more central interference, in a very haphazard, unsystematic way.

The new divisionalized structure began to take shape in 1967 and the Financial Times was able to comment that for the first time "Vickers has a top executive who will be able to direct most of its time to planning future development". This reconstruction of the company has emphasized the profit responsibility of the divisions, whose actions are checked by

monitoring of performance relative to targets. Funds are to be allocated according to performance.

M'-form

THOMAS WARD

As Greenwell report Thos. Ward was for a long time a loose-knit federation of a large number of operating subsidiaries. Gradually management control became more difficult, and some subsidiaries were lagging behind the rest in efficiency and profitability. Also the difference between theparent and subsidiary company responsibilities became blurred.

Therefore the firm has taken steps to implement an M-form organization, delegating responsibilities and yet keeping tight control from the centre. Also there has been a realignment of the subsidiary company product range, so as to ease co-ordination problems, and a more active elimination of unprofitable areas of the organization. However this did not occur until after 1969.

H-form

WEIR GROUP

The Weir group divisionalized about 1966 but it was not until 1970 that strengthening of the central organization led to better central control, particularly in the area of product interdependency.

(see Hoare & Company 1971)

H-form until 1970

RICHARD JOHNSON AND NEPHEW

Near the end of the period of our study, Jessel Securities had built up a controlling interest in the stock of this company. A reorganization resulted (in 1972) which introduced the profit

centre approach, with financial control from the centre. Previously the organizational structure is believed to be holding company type, with managers taking their divisional responsibilities with them to board meetings. Therefore this firm is classified H-form.

A. HERBERT

There is little doubt that before 1968, this was a holding company of a particularly extreme form. Organizational influence was concentrated at the subsidiary board level. While a reorganization in 1968/9 (see A.R.) created seven product divisions and four service divisions, there seems to be little evidence that multidivisional type controls were initiated.

From 1968 to 1974, there were attempts (see A.R.'s) to centralize the company, but the classification must still be H-form.

DOWTY

While individual subsidiaries have long been accountable for performance in terms of sales and capital and some services, like publicity and data processing, have been provided centrally to obtain economies of scale, the lack of executive directors, and more important, the product overlap between the subsidiaries, mean that on balance an H-form classification is appropriate. However this must be considered marginal. The organizational structure has been stable since the sixties.

B.S.A.

When divisionalization was attempted in this firm, it failed to overcome the power and prestige of the individual subsidiaries. This was particularly so in the motor bicycle

division, which dominate the whole company and led to its eventual bankruptcy.

H-form

GEORGE COHEN 600

L.S.E. 1970, reports the introduction of a new structure at Cohen's. While this seemed to be on M-form principles, it did involve efforts to increase co-ordination between the constituent companies, and increase centralized buying. Hence an H-form classification is allocated for our study period.

MATHER AND PLATT

A divisionalized structure on the basis of product or location has been used at Mather and Platt since 1965. Since Capel and Co. reports this company to be highly integrated, there is little possibility that it is an holding-type company like so many others in mechanical engineering. While lacking conclusive evidence to eliminate the $\overline{M}$-form, an M-form classification is allocated.

SIMON ENGINEERING

Founded in 1960 this company until 1968 had few central office controls or services. From 1960 to 1964 the separate subsidiaries were operating in a manner little different to the pre-merger days, while from 1964-68 they each divisionalized.

Since 1968, the tightening of central control and a group reorganization resulting in much reduced product overlap means an M'-form classification.

WHESSOE

Until the 1970's, while split into product divisions, Whessoe also superimposed upon these the functional

responsibilities of the executive directors. However using the Williamson classification, this type of hybrid structure, must be classified as $\overline{M}$-form, reflecting central interference with day to day decision-making in the subsidiaries.

(In these cases, the decision between $\overline{M}$ and U-form is always difficult and must be one of emphasis.)

DELTA METAL

Delta Metal which has extensive interests in the metal industries grew up as a mass of loosely connected quasi-independent subsidiaries. Each retained almost as much freedom as a fully independent company.

Seeing the modern trend towards divisionalization management decided in 1967 to group the activities of the company into six divisions, each under an executive chairman. This would account for Channon's (17) classification of multi-divisional form until 1969. However Management Today (1974) reports that until 1972, the new structure did not affect the business very much; power remained at the subsidiary level. Therefore a classification of H-form seems appropriate.

CLARKE CHAPMAN

The change to a divisionalized structure came late in the 1960's at Clarke Chapman. The management philosophy was to delegate responsibility, provide a satisfactory control system from the centre, and to provide some centralized services (see A.R. 1971). The process of change would probably have finished by 1970, had it not been for the merger with J. Thompson.

M'-form

APPENDIX 'B' - A CLASSIFICATION OF 36 CONGLOMERATE COMPANIES FOR THE PERIOD 1963 - 71

A.V.P.

A.V.P. is not a company that has undergone significant organizational change in the last fifteen years. It is an industrial holding company that emphasizes management rather than asset possibilities.

Operations are grouped by area and central management although modest in size has through financial targets ensured that the subsidiaries did not get out of control. (Investors Chronicle July 1966). Product overlap between the subsidiaries is minimal.

M-form

BAIRD

This company has specialized in creating semi-autonomous subsidiaries, which it was intended to build up and then float off as separate entities. (see A.R. 1971/2)

As early as 1966 the company had been arranged so that the individual parts, could borrow "according to their needs" and achieve their own quotation. (A.R. 1967). While this procedure may be profitable, the company did not operate as an M-form, for which tighter financial control and regulation of intra-firm competition would have been necessary.

H-form

B.E.T.

As a conglomerate-type company, B.E.T. was founded upon the proceeds of the sale of its bus interests, but unlike Thomas Tilling, it has tended to act rather like a mutual-fund specializing in a loosely controlled group of partially-owned

subsidiaries. This quote from A.R. 1969 will illustrate the group's philosophy.

"During the year policy in relation to the group's portfolio of general investments was reviewed - it was decided to concentrate more on income than capital appreciation and opportunities were taken to switch out of low-yielding investments into first class equities affording a high return." (A.R. 1969)

H-form

COPE ALLMAN

Cope-Allman was a wheeler-dealer operation in the early 1960's: the management system was not very sophisticated and the group was crudely divided by geography into "north" and "south". Efforts were made to control capital expenditure and monitor profit performance but inadequate knowledge about the industries in which the subsidiaries operated and the predominance of interest in acquisitions and disposal made these targets impossible (see M.T. 1972).

Rationalization and development of the corporate structure started in 1965 and by 1968 a well-developed divisional organization had resulted with the normal M-form prerequisites of control and autonomy.

pre-1965 H-form

1965 - 68 M'-form

1968 onwards M-form

CHARTERHOUSE

In the 1960's the company, although having substantial interests, took very little effective part in controlling them. The limit of involvement was the appointment of

directors; and their job more to advise than direct.

From early 1969, changes were adopted which, coupled with managerial style of decentralization, increased central controls and shortened the lines of communication (see F.T. 8.1.74).

H-form up to 1969

1969 - 74 M'-form

DE LA RUE

This company is an illustrative case. The company divisionalized in 1959, but by 1964 it was realized that inadequate central control had led to over-extension of the company's resources (L.S.E. 1969). However the result of this discovery was a centralization of control which could only be described as excessive. The Deputy Chairman and Chief Executive became responsible for the day to day running of the group; committees of control multiplied. Not surprisingly this situation was found to be unsatisfactory and a further reconstruction of management was tried in 1971, but the results were disappointing and the chief executive was removed. Further organizational changes were promised.

1959 - 64 H-form

1964 - 71 M-form

DEVELOPMENT SECURITIES

Although information on this company owned and run by the McAlpines is sparse, it would seem that the activities of central management are very limited; during much of the period of study there was only one full-time executive director. While large-sized head-offices are not generally required by conglomerates, this company is just an umbrella for several largely autonomous subsidiaries. It is really an

investment company, possibly providing tax advantages for the McAlpine family as compared with direct investment in the companies concerned.

H-form

ELECTRICAL AND INDUSTRIAL SECURITIES

This company prefers to minimize centralization instead linking its semi-autonomous subsidiaries with the very slightest of financial controls.

There was considerable product overlap between the three major subsidiaries during the period of the study and this potentially competitive situation coupled with the lack of financial control (see A.R. 1970) or H.Q. managerial capacity means that an H-form classification is appropriate.

FRANCIS

Examination of the annual reports for 1969 and before, shows a divisionalized structure for the period of the 1960's. However these divisions existed in name only, since power remained at the subsidiary board level. In 1969, each division provided one executive for the main board; this is likely to cause conflict and bias in decision-making.

Financial control seems also to have been lax; a management report of £105,000 profit turned out to be a substantial loss (A.R. 1970). A.R. 1971 makes the point that there is a need for detailed budgets for each subsidiary.

H-form

GILTSPUR

While the philosophy of operation of this company has not changed over the past thirteen years, the organizational structure underwent superficial change in 1969. In that year, due to rapid growth by acquisition, a new divisional structure

was needed to rationalize control. Therefore a new level of management was inserted between the individual subsidiaries and the board. However this did not alter the M-form structure, which had the same tight financial and product control as used by Giltspur's Chairman, Sir Max Joseph, at Grand Metropolitan Hotels.

M-form

GRAMPIAN

The "unco-ordinated expansion" (see A.R. 1970) of the 1960's had led to considerable difficulties. That there had been too little co-ordination in a company with very few executive directors and no chief executive, is unsurprising.

Some of the changes to be introduced in 1970 were, a strengthening of management, a review and adjustment of the control systems for capital development throughout the group, and an increase in central co-ordination (see A.R. 1970).

H-form up to late 1970

M'-form afterwards

GROVEWOOD SECURITIES

Grovewood securities is a holding company specializing in taking over successful companies where there are problems of succession (A.R. 1973). While the autonomy allowed to new subsidiaries was never in any doubt, careful control of new financial projects is applied, so that even with some (minor) product overlap, M-form is the appropriate choice.

There was no change in structure over the period of the study.

HANSON TRUST

Since the mid 1960's, this company has operated a decentralized operation, keeping the parent board as an auditing

and co-ordinational body for the separate trading subsidiaries. Financial control from the centre in the form of month to month profit reports, ensure that sufficient financial control is present (see A.R. 1967; 1968).

M-form

HARGREAVES

The company has long been characterised by separate boards for its subsidiaries, but the A.R. 1971 recognizes the lack of delegation of responsibility and states that the structure will be appropriately amended; in future top management will concentrate on corporate planning, policy and financial control, and divisions will be formed.

$\overline{M}$-form

HARRIS AND SHELDON

While Harris and Sheldon did divide its operations into three groups in the early 1960's, this was on a very crude basis. The activities of the three groups "A", "B" and "C" seemed to have very little in common. Therefore little organizational significance is attached to this division of the company's activities.

However the emergence of new management in 1968, led to a streamlining of the group's operation, an improvement in organizational structure, and a tightening of financial control.

One result of this was a greater willingness to dispose of loss-making assets.

H-form to end 1967

M'-form from early 1968 onwards

JESSEL

Oliver Jessel's brainchild was the same type of take-over specialist as Slater Walker. Jessel was always involved in the management of the subsidiaries, so the company's rather loose structure disguised close personal control. Less was delegated than at Slater Walker.

Much of the company's early success and subsequent failure resulted not from organizational aspects but from the degree to which existence of under-valued assets, and market conditions could be foreseen.

The Williamson classification (103, 109) is not wholly relevant to this company; its stable environment assumptions may not be fulfilled due to the rapid turnover in subsidiaries. While similar to SlaterWalker in many aspects, it was considered that an M-form classification was not fully appropriate; the rather close personal control of Jessel was crucial here.

Sub-optimal

L.C.P.

Use in the early 1960's of a centralized structure was modified by organizational change between 1968 and 1970. (see Inv. Chr. 31/7/70)

Coupled with decentralization, a divisional structure was put into operation, along M-form lines. This organizational structure corresponded with considerable expansion and diversification.

M-form pre 1968

M'-form 1968 onwards

LAMSON

"Early this year it was decided to reorganize the operation of the group along divisional lines, each divisional

head assuming worldwide responsibility for the promotion of the product of his division.

"Additionally we are in the course of creating a service section to support all divisional activities in so far as these can be handled on a centralized basis.

"Our object is to increase profitability by knitting the group into a more cohesive entity ... rather than encouraging the independent development of separate quasi-autonomous companies." (A.R. 1968)

A group executive division was set up in 1969/70 with responsibility for finance, monitoring and corporate planning.

pre 1968 H-form

1968 onwards M'-form

LINDUSTRIES

Prior to the 'seventies Lindustries was not aggressive either in its acquisition policy or in elimination of loss-makers. (Inv. Chr. 10/1/69). This stemmed from the weak central management of the company, which had insufficient full-time executives to force the control of head office over the subsidiaries.

Corporate planning was started in 1972 in an effort to revitalize the company. It would seem that more organizational changes are planned.

H-form

LONDON AND MIDLAND

This company was a rag-bag of autonomous sub-units with little financial control. Indeed it was not until 1973 that a full-time Financial Director was appointed (see A.R. 1973) as part of a company-wide process to strengthen controls.

H-form

LONDON AND MERCHANT SECURITIES

This conglomerate specializes in part-ownership of companies. Although the percentage held is usually above 50% and this allows complete voting control of the company if so desired, such control is rarely exercised; the company preferring to play the role of an investment trust.

Sub-optimal

MELBRAY

Melbray developed as a holding company with comparatively little co-ordination or control from the centre. Rationalization of product responsibilities was also weak.

After recognizing the problems (in 1967), a divisional management team was introduced to rectify the faults (in 1968). However the reorganization of corporate structure seems to have proved to be more difficult than expected, and remained very much a corporate priority in the early 1970's.

H-form to 1968

M'-form after that date

NEVILLE

Neville is a highly streamlined company emphasizing financial control in its organizational structure, which particularly specializes in the buying and selling of firms in order to make profits on their assets.

However, at the same time, subsidiaries are run with an eye to steady-state efficiency, and the autonomy afforded to subsidiary management, coupled with tight financial control leads to an M-form classification. (see A.R's)

M-form

NORCROS

At Norcros managers receive "full autonomy" and high rewards, but are subject to the strongest financial control from head office. (see A.R. 1974). This M-form type structure was introduced in 1966 (see A.R.), at which time managers, although having sufficient discretion in decision-making, were subject to insufficient budgetary control.

Also in 1966, it was noted that the company was having problems associated with "over" diversification and this led to a deliberate restriction of the company's scope to three product areas.

M-form

PORTALS

Portals was an H-form prior to 1968, with individual subsidiaries having excessive autonomy. This was remedied by the formation of a "central office" committee responsible for overall group policy and the strengthening of financial control. (see A.R. 1968). While the period 1968-71 is allocated an M'-classification, evidence of the success of the reorganization is sparse.

H-form up to 1968

M'-form 1968 - 71

POWELL DUFFRYN

It was in 1968, that Powell Duffryn set about developing its central services and pin-pointing areas of responsibility and accountability. This, the A.R. reports, made it easier to allocate funds to areas of highest yield. Previously the company's holding company nature had made this difficult.

Up to 1968 - H-form

1968 - 72 - M'-form

RECKITT AND COLEMAN

This company, formed in 1953, was organized along holding company lines until 1969. By and large until that date the constituent companies carried on in a way similar to the pre-merger days. This was also true of new acquisitions that entered the group.

After 1969, there has been a reconstruction, as Laurie Milbank report. Although initially there may have been slight over-centralization, this was quickly rectified so justifying an M'form classification.

Up to 1969 H-form

Post-1969 M'-form

SCOTCROS

Realizing the lack of cohesiveness in the group in the 1960's (see A.R. 1970) management embarked on a programme of increasing control from the centre. Specialist central organizations were set up, capital control procedures were revised and strengthened, a widespread corporate planning programme instigated, and subsidiaries with low profitability sold: (between 1971-4 seven out of thirteen subsidiaries were sold).

H-form up to 1971

SCOTTISH AND UNIVERSAL

The company has always received a large proportion of its profit from investments (e.g. in the House of Fraser); but the holding is usually less than 50% of the share capital. This makes organizational control impossible over a large amount of its invested capital.

However even in those cases where a majority of the share capital is held, there seems to have been little effort to control.

H-form

SEARS

Sears has long been associated with Charles Clore and is characterized by a modest headquarters staff and a system that encourages managerial independence.

Since 1960 the company has had closely connected groups of trading companies enjoying "the advantages both of autonomous management and group co-operation" (A.R. 1960). The A.R. continues "we have avoided the creation of the large and costly central office organization which is normally essential to service and hold together a large number of more or less diverse industries." This statement was made in a period when centralized control was still common.

There has been little change since 1960.

M-form

NOTE: Channon (17) has classified both this company and Thomas Tilling as holding companies. There is no doubt that both companies maintain a rather small headquarters, but it is considered here that control is sufficient to justify an M-form classification especially when both groups seem to have organized their subsidiaries' activities into non-conflicting areas.

SPARK

Reorganization at Spark Holdings occurred early in 1966, with the formation of divisions. This reorganization was required by the poor profitability of the company in the years prior to 1965 (see Inv. Chr. 29/11/65).

Later problems, in 1972, resulted in no structural change, but a change of the incumbent management.

H-form up to 1966

M' or M-form 1966 onwards

SLATER-WALKER SECURITIES

Slater Walker Securities has gone through three distinct phases since its climb to predominance in 1964; first it was an industrial conglomerate, secondly it emphasized banking and finance, and thirdly, banking, insurance and property investment.

Much of its early success came from the identification of undervalued asset positions and growth areas in the economy. Both of these are the result of entrepreneurial insight rather than organizational structure.

However it would seem that the group was forward-looking in organizational aspects as well. Unlike some "entrepreneurs" who want to control everything themselves, Slater was willing to delegate responsibility, within the framework of tight central control. (see Laing and Cruickshank 1972). Such control consisted of strategic planning, financial control, and a special team used to back up new subsidiaries when first purchased.

M-form throughout the period

THOMAS TILLING

The high degree of managerial independence at the subsidiary level coupled with strong central controls (see Laurie Milbank) means that this group is an M-form.

The company according to the A.R. 1968, has had the same form since its inception as an industrial holding company, but to what extent this was true in the 1950's has not been established. (Tilling's became a conglomerate on the proceeds of the sale of its bus interests in the late 1940's.)

M-form

NOTE: Channon (17) classified this company an H-form; see "Sears" above for further discussion.

WOOD HALL TRUST

Until 1968 when product groupings were established, subsidiaries of the Wood Hall Trust were semi-autonomous. Then central financial and product controls were gradually increased, leading to a movement of power from the subsidiary to main-board level.

Up to 1968 H-form

1968 - 70 M'-form

1970 onwards M-form

WINN

The advantages, in the form of better co-ordination, in grouping together subsidiaries making similar products were recognized at Winn in 1970. (A.R.). So the company was divisionalized. At the same time financial control was strengthened in order to improve the utilization of resources.

There is little doubt this company had a sub-optimal organizational structure up until 1970; whether the company did in fact move to an M-form structure after that date can only be verified by additional information.

Up to 1970 H-form

WHITECROFT

Until 1970, central decisions were made on the basis of committee decision, the composition of which emphasized management's executive position within the subsidiaries. Hence it is expected that not only was central control weak because of the non-existence of executive head-office staff, but also that decision-making was biased by the different vested interests of "central" management (see A.R. 1970).

1970 saw the strengthening of the central management including the appointment of (more) executive directors and a chief executive.

prior to 1970 H-form

post 1970 M'-form

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ROWS 1-17

	OF	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MS	MA	COREG	COEND	RBB	RBE	RAB	RAE	L/E	RTC	OFII	OFIII	OFIV	H	H 11	M 11	H 11	E IND	F IND	R IND	N IND
BICC	1	0	0	.75	163	.48	243	82	.058	.020	2.89	2.69	.167	.155	.072	.067	.34	.119	1	1	1	1	0	1	0	1	0	0	0
CHLORIDE	0	0	0	.77	29	.83	50	.34	.059	.031	3.78	3.70	.222	.217	.122	.119	.23	.178	0	0	0	0	1	0	1	1	0	0	0
DECCA	0	0	1	.55	22	.15	20	.65	.073	.038	3.21	2.99	.234	.218	.122	.115	.24	.167	0	0	0	0	1	0	1	1	0	0	0
EMI	0	0	0	.69	67	1.77	52	1.32	.072	.035	2.20	1.81	.159	.131	.089	.073	.25	.123	0	0	0	0	0	0	0	1	0	0	0
EVER READY	1	1	0	1.00	22	.44	19	.53	.150	.076	1.85	1.66	.278	.250	.153	.140	.05	.255	1	1	1	1	0	1	0	1	0	0	0
FERRANTI	0	0	1	.71	17	.15	47	.22	.019	.012	3.11	2.95	.059	.056	.036	.035	.03	.058	0	0	0	0	0	0	0	1	0	0	0
GEC	1	1	1	.51	115	5.13	180	4.41	.069	.039	2.05	1.57	.142	.109	.086	.065	.44	.098	1	1	1	1	0	1	0	1	0	0	0
J LUCAS	1	0	0	.90	83	1.09	183	.74	.060	.030	3.14	2.74	.189	.165	.095	.082	.14	.155	1	1	1	1	0	1	0	1	0	0	0
PLESSEY	1	1	1	.62	110	1.21	144	.78	.099	.057	1.78	1.48	.177	.146	.102	.084	.17	.142	1	1	1	1	0	1	0	1	0	0	0
REYROLLE	0	0	0	.66	30	1.04	33	1.63	.041	.016	1.89	1.87	.078	.077	.031	.031	.25	.057	0	0	0	0	1	0	1	1	0	0	0
THORN	1	1	1	.72	64	1.63	75	1.24	.105	.060	3.15	2.55	.331	.269	.211	.166	.28	.243	0	0	1	1	0	0	1	1	0	0	0
SMITH IND	1	1	0	.59	33	.34	55	.54	.066	.037	2.60	2.49	.172	.164	.096	.091	.22	.133	1	1	1	1	0	1	0	1	0	0	0
ASS BISCUITS	0	0	1	.89	23	.20	43	.36	.045	.017	3.01	2.94	.137	.134	.055	.054	.35	.095	0	0	0	0	1	0	1	0	1	0	0
A.B.F.	1	0	1	.97	97	.62	300	.95	.042	.019	6.55	5.85	.274	.244	.161	.140	.55	.165	1	1	1	1	0	1	0	0	1	0	0
J BIBBY	0	0	1	.93	17	.41	51	.92	.018	.010	4.70	4.37	.087	.081	.049	.046	.19	.070	0	0	0	0	0	0	0	0	1	0	0
BROOKE BOND	0	0	1	.92	45	1.50	130	.73	.058	.029	3.12	2.79	.181	.162	.095	.086	.17	.149	0	0	0	0	0	0	0	0	1	0	0
J LYONS	1	1	1	.77	53	1.39	119	.41	.035	.018	2.60	2.25	.091	.079	.052	.044	.36	.067	1	1	1	1	0	1	0	0	1	0	0

ROWS 18-32

	OF	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MB	MA	T/E COMEG	COEND	MRB	MRE	RAB	RAE	L/E	RTC	OFII	OFIII	OFIV	M	H	H 11	H 11	E IND	P IND	N IND	M IND
RANK H McD	1	0	1	.72	139	.68	325	.25	.046	.025	2.98	2.64	.136	.120	.076	.067	.38	.090	1	1	1	1	0	1	0	0	1	0	0
SPILLERS	1	1	0	.94	123	.37	126	.52	.050	.029	1.41	1.30	.071	.065	.041	.039	.12	.060	1	1	1	1	0	1	0	0	1	0	0
UNIGATE	1	1	0	.93	84	.38	276	.23	.032	.021	4.26	3.85	.135	.122	.090	.081	.26	.101	1	1	1	1	0	1	0	0	1	0	0
UNILEVER	1	0	0	.84	957	.14	940	.31	.150	.076	1.43	1.39	.214	.209	.112	.106	.21	.168	1	1	1	1	0	1	0	0	1	0	0
UTD BISCUITS	0	0	1	.58	32	.56	26	1.02	.116	.070	1.34	1.28	.156	.149	.094	.090	.27	.119	0	0	0	0	0	0	0	0	1	0	0
N DAIRIES	1	1	1	.65	10	.48	35	.71	.039	.023	5.86	5.12	.226	.197	.144	.125	.29	.160	1	1	1	1	0	1	0	0	1	0	0
CADBURY	1	1	1	.60	44	2.70	80	2.70	.074	.038	2.55	2.00	.188	.148	.103	.0811	.08	.166	1	1	1	1	0	1	0	0	1	0	0
ROWNTREE M	1	1	1	.88	33	.86	72	.91	.060	.031	2.66	2.39	.160	.144	.089	.080	.05	.142	1	1	1	1	0	1	0	0	1	0	0
B SUGAR CORP	1	0	0	.53	23	.62	62	.28	.058	.034	2.89	2.67	.169	.156	.099	.091	.06	.148	0	1	0	0	0	0	0	0	1	0	0
TATE & LYLE	0	0	1	.79	112	.43	194	.77	.036	.015	3.04	2.84	.110	.102	.053	.050	.37	.073	0	0	0	0	1	0	1	0	1	0	0
ALLIED SUPP	0	0	0	1.00	45	.13	213	.34	.026	.015	6.39	6.14	.167	.161	.097	.093	.20	.140	0	0	0	0	1	0	1	0	0	1	0
BURTON	1	1	1	.73	67	.14	61	.31	.095	.053	1.19	1.21	.113	.116	.064	.066	.11	.097	0	0	1	1	0	0	0	0	0	1	0
B H S	0	0	1	.68	26	.33	43	.66	.077	.049	3.00	2.72	.231	.209	.147	.133	.28	.152	0	0	0	0	0	0	0	0	0	1	0
DEBENHAMS	0	0	0	.94	84	.00	102	.28	.052	.031	2.05	2.07	.107	.108	.063	.053	.41	.072	0	0	0	0	1	0	1	0	0	1	0
G U S	1	0	1	.94	178	.44	337	.31	.123	.070	2.29	2.14	.281	.263	.161	.151	.08	.238	1	1	1	1	0	1	0	0	0	1	0

ROWS 33-46

	OP	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MD	MA	COMEG	COEND	MBD	MES	RAD	RAE	L/E	RTC	OFII	OFIII	OFIV	M	H 11	M 11	H 11	E IND	F IND	R IND	CH IND
HOUSE of F	0	0	1	.79	48	.21	100	.41	.053	.032	2.98	2.91	.159	.155	.098	.093	.17	.129	0	0	0	0	1	0	1	0	0	1	0
KINLOCH	1	0	1	1.00	2	.62	27	.58	.022	.013	17.00	16.39	.376	.363	.216	.209	.08	.301	1	1	1	1	0	1	0	0	0	1	0
M & S	1	0	1	.85	136	.28	256	.63	.120	.071	2.90	2.81	.350	.339	.207	.200	.29	.272	1	1	1	1	0	1	0	0	0	1	0
MENZIES	0	0	1	.79	6	.10	39	.45	.015	.008	12.58	12.05	.191	.183	.116	.101	.34	.132	0	0	0	0	1	0	1	0	0	1	0
MORRIS & D JONES	0	0	1	.67	4	.24	43	.13	.019	.011	13.06	12.25	.253	.237	.142	.133	.20	.189	0	0	0	0	1	0	1	0	0	1	0
SAINSBURY	0	0	1	1.00	25	.61	129	.72	.028	.016	6.90	6.42	.195	.181	.119	.106	.15	.170	0	0	0	0	0	0	0	0	0	1	0
S & K HOLDINGS	0	0	0	0.50	10	.05	37	.95	.008	.005	5.81	6.60	.046	.052	.029	.033	.06	.043	0	0	0	0	1	0	1	0	0	1	0
W H SMITH	0	0	1	.54	26	.60	85	.37	.037	.020	4.94	4.44	.182	.163	.097	.087	.25	.132	0	0	0	0	0	0	0	0	0	1	0
TESCO	1	0	1	.71	17	1.75	100	1.59	.055	.030	8.68	6.90	.474	.377	.262	.209	.02	.384	1	1	1	1	0	1	0	0	0	1	0
UDS	1	0	0	.69	87	.20	99	.34	.118	.069	1.67	1.62	.196	.194	.116	.113	.19	.153	1	1	1	1	0	1	0	0	0	1	0
INT STORES	0	0	0	1.60	22	.19	96	.17	.029	.017	4.24	4.14	.121	.124	.079	.079	.06	.111	0	0	0	0	0	0	0	0	0	1	0
ASSOC DAIRIES	1	0	1	.70	5	1.09	20	2.74	0.039	.022	8.21	6.92	.319	.269	.184	.156	.06	.268	1	1	1	1	0	1	0	0	0	1	0
FITCH LOVELL	0	0	0	.87	20	.48	127	.25	0.025	.015	6.52	6.12	.165	.154	.096	.090	.11	.140	0	0	0	0	1	0	1	0	0	1	0
MOORES STORES	0	0	1	1.00	10	.01	44	.17	0.014	.009	6.27	6.23	.087	.087	.054	.054	.12	.076	0	0	0	0	1	0	1	0	0	1	0

ROWS 47-60

	OP	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MD	MA	COMEG	COEND	RBD	RBS	RAB	RAE	L/E	RTC	OPII	OPIII	OPIV	M	H	M 11	H 11	E IND	F IND	R IND	H IND
ALLIED BREW	1	0	0	0.88	245	.43	226	.93	.092	.052	1.90	1.77	.174	.162	.100	.094	.46	.109	1	1	1	1	0	1	0	0	0	0	0
BASS	1	1	0	0.57	310	.10	268	.43	.090	.052	1.60	1.51	.143	.135	.084	.079	.41	.094	1	1	1	1	0	1	0	0	0	0	0
COURAGE	1	0	0	0.73	87	.96	72	.89	.088	.051	1.62	1.45	.143	.128	.083	.074	.42	.099	1	1	1	1	0	1	0	0	0	0	0
DISTILLER	0	0	0	0.92	268	.29	364	.14	.131	.076	1.53	1.47	.200	.192	.117	.112	.14	.160	0	0	0	0	1	0	1	0	0	0	0
GUINNESS	0	0	1	0.53	56	.47	131	.62	.093	.046	3.08	2.74	.286	.255	.155	.138	.03	.252	0	0	0	0	1	0	1	0	0	0	0
SCOTTISH & NEW.	1	0	1	0.73	91	.27	100	.48	.108	.062	1.88	1.76	.204	.191	.118	.110	.45	.131	0	0	1	0	0	0	1	0	0	0	0
WATNEYS	0	0	0	0.91	163	.48	137	.26	.096	.054	1.30	1.19	.126	.115	.073	.067	.52	.078	0	0	0	0	0	0	0	0	0	0	0
WHITBREAD	1	1	1	0.64	128	.65	115	.82	.067	.039	1.78	1.64	.119	.109	.069	.063	.68	.070	1	1	1	1	0	1	0	0	0	0	0
ASSOC ENG	1	0	0	0.78	48	.35	63	.83	.060	.032	2.59	2.51	.155	.150	.087	.085	.32	.109	1	1	1	1	0	1	0	0	0	0	1
AUT PROD	1	0	1	0.71	18	.73	39	.45	.088	.051	2.70	2.52	.238	.221	.138	.129	.02	.212	0	1	0	0	0	0	0	0	0	0	1
BABCOCK	0	0	0	0.58	42	.17	80	.60	.028	.012	2.88	2.82	.081	.080	.036	.035	.17	.069	0	0	0	0	1	0	1	0	0	0	1
BIRMID QUALCAST	1	1	0	0.59	39	.20	64	.28	.104	.058	2.34	2.21	.244	.231	.137	.130	.20	.185	1	1	1	1	0	1	0	0	0	0	1
J BROWN	0	0	0	0.58	36	.21	77	.48	.046	.025	2.83	2.69	.130	.123	.075	.070	.16	.108	0	0	0	0	1	0	1	0	0	0	1
DAVY ASHMORE	0	0	0	0.57	18	.03	59	.23	.002	-0.001	5.09	5.14	.124	.013	-.006	-.006	.19	.009	1	1	1	0	1	0	1	0	0	0	1

ROWS 63-76

	OP	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MB	MA	T/E COBEG	COEND	RGB	RBE	RAB	RAE	L/E	RTC	OFII	OFIII	OFIV	N	H	H 11	H 11	E IND	F IND	R IND	M IND
DUPORT	0	0	0	0.68	22	.43	40	.63	.048	.027	3.20	2.97	.155	.144	.086	.080	.21	.115	0	0	0	0	1	0	1	0	0	0	1
GLYNWED	1	1	0	0.61	13	2.30	23	2.79	.079	.044	4.15	3.37	.327	.266	.187	.152	.57	.187	1	1	1	1	0	1	0	0	0	0	1
GKN	0	0	0	0.82	242	.42	355	.60	.084	.042	2.08	1.93	.175	.163	.092	.085	.12	.151	0	0	0	0	0	0	0	0	0	0	1
HAWKER SIDDLEY	1	1	0	0.49	208	-.05	358	.31	.042	.022	2.85	2.88	.120	.121	.073	.073	.24	.092	1	1	1	1	0	1	0	0	0	0	1
LAIRD	0	0	0	0.55	37	-.24	43	.43	.030	.024	3.19	3.50	.097	.106	.080	.087	.46	.065	0	0	0	0	1	0	1	0	0	0	1
RENOLD	1	1	0	0.46	33	-.92	32	.66	.141	.077	1.08	0.95	.154	.135	.084	.074	.27	.119	1	1	1	1	0	1	0	0	0	0	1
STONE PLATT	0	0	0	0.85	32	0.00	57	.08	.045	.027	2.23	2.21	.101	.100	.060	.059	.24	.081	1	1	1	0	1	1	0	0	0	0	1
STAVELEY	0	0	0	0.58	28	-0.05	47	.04	.012	.004	2.79	2.95	.032	.034	.012	.013	.41	.022	0	0	0	0	1	0	1	0	0	0	1
TUBE INV	0	0	0	0.74	212	0.05	208	.44	.063	.028	2.10	2.15	.132	.136	.061	.063	.28	.097	0	0	0	0	0	0	0	0	0	0	1
VICKERS	1	1	0	0.62	116	-0.04	207	-0.12	.038	.021	1.93	2.00	.074	.077	.042	.043	.19	.060	1	1	1	1	0	1	0	0	0	0	1
T WARD	0	0	0	0.92	29	.17	56	.40	.051	.027	1.94	1.89	.100	.097	.058	.056	0	.100	0	0	0	0	1	0	1	0	0	0	1
WEIR	0	0	1	0.69	17	1.15	41	.70	.037	.024	4.26	3.84	.50	.143	.100	.090	.54	.100	0	0	0	0	1	0	1	0	0	0	1
R JOHNSON & NEPHEW	0	0	1	0.86	14	.34	40	.33	.032	.019	3.63	3.40	.117	.110	.067	.063	.09	.102	0	0	0	0	1	0	1	0	0	0	1
A HERBERT	0	0	0	0.73	33	.18	44	-0.15	.000	-0.023	1.39	1.42	.001	.001	-.032	-.033	.13	.095	0	0	0	0	1	0	1	0	0	0	1
DOWTY	0	0	0	0.68	26	.19	36	0.44	.10	.058	1.78	1.70	.178	.170	.104	.099	.05	.158	1	1	1	0	1	1	0	0	0	0	1
B S A	0	0	0	0.65	25	-.43	55	-0.27	.014	.000	1.52	1.70	.022	.025	.000	.001	.01	.022	0	0	0	0	1	0	1	0	0	0	1

ROWS 77-82

	OF	T	OC	MT	Assets FS million	Assets FG	Sales FS million	Sales FG	MB	MA	CMEG	COEND	RGB	RDE	RAD	RAE	L/C	PTC	OFII	OFIII	OFIV	M	H	M 11	H 11	E IND	F IND	R IND	H IND
GEORGE COHEN	0	0	1	0.88	31	.24	47	.79	.048	.026	2.67	2.50	.129	.121	.069	.066	.22	.098	0	0	0	0	1	0	1	0	0	0	1
MATHER & PLATT	1	0	1	0.71	16	.47	30	.45	.064	.035	2.23	2.06	.144	.132	.080	.074	.16	.120	1	1	1	1	0	1	0	0	0	0	1
SIMON ENG	1	1	1	0.71	11	.97	69	.44	.040	.020	7.22	6.13	.287	.244	.149	.128	.12	.250	1	1	1	1	0	1	0	0	0	0	1
WHESSOE	0	0	0	0.51	7	.87	16	.20	.032	.018	3.36	3.31	.106	.105	.060	.059	.37	.066	0	0	0	0	0	0	0	0	0	0	1
DELTA	0	0	0	0.82	77	.39	130	.33	.067	.034	2.76	2.63	.185	.176	.102	.098	.21	.146	0	0	0	0	1	0	1	0	0	0	1
CLARKE CHAPMAN	1	1	1	0.69	6	5.15	13	6.28	.037	.020	6.47	4.76	.240	.177	.133	.099	.54	.146	1	1	1	1	0	1	0	0	0	0	1

DATA: CONGLOMERATES: PERIOD 1968-71

FIRM	OF	OC 10%	OC 3%	FS ooo's	FG	TI	L/E
AVP	1	1	1	9704	0.24	0	0.48
BAIRD	0	0	1	30393	0.04	1	0.06
BET	0	0	0	63195	1.53	0	0.06
COPE ALLMAN	1	1	1	23971	0.43	0	0.55
CHARTERHOUSE	1	0	0	36561	0.38	1	0.34
DE LA RUE	0	0	0	21541	0.20	0	0.19
DEV.SECURITIES	0	1	1	6291	0.71	1	0.25
E & I SECS.	0	0	0	1821	1.02	1	0.25
FRANCIS	0	0	1	5690	-0.01	0	0.40
GILTSPUR	1	1	1	4281	0.31	1	0.40
GRAMPIAN	0	0	1	10329	0	0	0.17
GROVEWOOD SEC.	1	1	1	5345	0.56	0	1.52
HANSON	1	1	1	2855	3.62	0	0.59
HARGEAVES	0	0	1	6329	0.33	1	0
HARRIS & S.	1	0	1	5701	0.20	0	0.03
JESSEL	0	1	1	1329	3.64	1	0.54
LC.P	1	0	1	3444	2.04	0	0.24
LAMSON	1	1	1	26497	0.39	1	0.02
LINDUSTRIES	0	0	0	15037	0.46	0	0.16
LONDON & MID.	0	1	1	2111	0.07	0	0.29
LONDON & M E R	0	1	1	58483	0.50	0	1.72
MELBRAY	1	0	0	12628	-0.14	0	0.36
NEVILLE	1	1	1	4041	0.60	0	0.23
NORCROS	1	0	0	13547	0.29	0	0.31
PORTALS	1	1	1	8796	0.75	0	0.07
POWELL D.	1	0	0	35400	0.16	1	0.19
SCOT CROS.	0	0	1	2646	0.04	0	0.44
SCOT.&UNIV	0	1	1	13421	0.40	1	0.06
SEARS	1	1	1	178525	0.18	0	0.75
SPARK	1	0	1	3539	0.59	0	0.41
SLATERWALKER	1	0	1	10951	11.17	1	0.63
TILLINGS	1	0	0	64438	0.75	0	0.32
WOODHALL	1	1	1	13744	0.65	0	0.40
WINN	0	0	0	4873	0.07	0	0.60
RECKITT & COLMAN	1	0	0	79552	0.37	0	0.07
WHITECROFT	0	0	0	14738	-0.09	1	0.20