# An Investigation into the Relation between Corporate Governance and Firm Value in the U.K

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# Abstract

The separation of ownership from control, which characterises the modern firm, necessitates monitoring and inducement mechanisms to ensure that managers maximise shareholder wealth. This study investigates the relation of firm value to these corporate governance mechanisms. The results of the analysis show that there is considerable interdependence between corporate governance and firm structure variables. Most importantly, it appears that the two principal governance mechanisms, managerial equity ownership and the board of directors, are optimally chosen. The methodology employed here suggests that previous work has not fully accounted for the comprehensive and simultaneous nature of the governance process.

Weaker evidence is obtained for directors' remuneration and outsider equity ownership. Directors' remuneration is substantially determined by the structure of the firm, and is not strongly related to the performance of the firm. In addition, it appears that large equity investors have different motivations and their presence within a firm's ownership structure may not always be associated with a monitoring function.

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# Chapter 1 Introduction and Overview

## 1.1 Introduction

This study investigates the determinants of four principal corporate governance mechanisms and assesses relation their relation to the value of the firm. The value of the firm is given by the present value of the discounted future cashflows which will arise from its investment projects. Corporate governance refers to the mechanisms which are set up in order to ensure that a firm's investment projects are chosen by managers, with the objective of shareholder wealth maximisation. For instance, Shleifer and Vishny (1997) define corporate governance simply as:

> *"the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment"(p.737).*

Corporate governance mechanisms can be broadly classified according to whether they involve the inducement or monitoring of the manager. These mechanisms are necessary because the legal structure of the firm separates the firm's owners from those who manage it. This separation of ownership and control is problematic because there will conceivably be differences between the interests of management and shareholders, both of whom can be expected to be acting in self-interest. This divergence of interests leads to agency costs. Agency costs involve the costs incurred by the owners of the firm in having to monitor and bind the executives to the task of maximising shareholder wealth.

Agency theory, as first advanced by Jensen and Meckling (1976), proposes two broad means of reducing agency costs: the binding (inducement) and monitoring of management. Managers' interests can be aligned with those of shareholders by incentives such as equity ownership. Monitoring of managerial investment decisions is carried out by the board of directors and large shareholders. If monitoring and inducement reduce agency costs, then effective corporate governance will have a positive effect on firm value. Therefore, corporate governance mechanisms are required to ensure that the value of the firm is maximised.

This study, based on UK public firms, seeks to determine the effect of a number of corporate governance mechanisms on the value of the firm. The two forms of inducement examined here are insider (managerial) equity ownership and directors' remuneration. The monitoring variables considered are large outside equityholders and the composition of the board of directors. These mechanisms are investigated because they form the basis of the corporate governance system within the U.K firm.

Although finance theory (Miller and Modigliani, 1958), states that the combination of equity and debt in the firm's capital structure cannot affect its value, the identity of the owners of this capital can determine firm value. The structure of equity ownership within the firm can be broken down into either equity holding managers (also referred to as 'insiders') or investors ('outsiders') who hold significant (that is, greater than three percent of the firm's equity) equity stakes. We can add further detail to these categories by differentiating between managers who hold a small fraction of the firm's equity, and those who dominate the firm by owning a substantial part of its equity (greater than 30%). At the same time, the identity of outside investors is also important. They can be founder members of the firm, institutional investors, trust funds or industrial holding companies, for example. Depending on their identity, they may have different objectives for owning large equity blocks. This study investigates the effect that the constituents of the equity ownership structure have on the value of the firm, and proposes that this effect depends on the identity of the equityholder and on the proportion of equity that they own.

The board of directors is the most formal monitoring mechanism within the firm; non-executive (outside) directors, in particular, are relied upon to fulfil this role. The proximity of non-executive directors to executives means that they are well placed to monitor management, but that they are also subject to influence by management. Non-executive directors, however, are concerned to develop reputations as effective monitors and the impact of their presence on the firm should be positive. This study investigates whether this is the case, and examines in detail, the influence of the board of directors on the firm. A recent corporate governance report (Cadbury Committee on the financial aspects of corporate governance) stated that outside directors should be responsible for setting the remuneration of executives. The strength of the link between directors' remuneration and firm performance is not only a test of the ability of remuneration contracts to motivate management, but also of the ability of outside directors to devise incentives for the creation, by managers, of shareholder wealth. Consequently, an important contribution of this thesis is to explicitly analyse the relation of directors' remuneration to the performance of the firm.

## 1.2 Background and Aims

The background to this study is to be found in agency theory. This literature is based on the work of Jensen and Meckling (1976), and on contributions from Fama (Fama,1980 and Fama and Jensen,1983). As mentioned above, agency theory is concerned with the costs which arise out of the separation of ownership and control, and the resulting corporate governance mechanisms which are required to motivate the manager to maximise the value of the firm.

A number of empirical studies have analysed the relation between corporate governance mechanisms and the value of the firm. Two prominent empirical works give direction to this field of study: Morck, Shleifer and Vishny (1988) and McConnell and Servaes (1990). Both of these studies use cross-sectional regression analysis to determine the effects of ownership structure on the value of the firm. They find that there is a non-linear relation between managerial equity ownership and the value of the firm. While their work was pioneering and their conclusions were the benchmarks for future work, it did not reflect the complexity of the issues that it initially uncovered. One of the aims of this study is to examine the issues raised by Morck et al. and McConnell and Servaes in more depth and scope, and to explore this area of study further by considering, for example, the simultaneous nature of the relation between firm value and corporate governance.

There are a number of other notable contributions to our knowledge of the effects of corporate governance on the value of the firm. The research of Black and Coffee (1994), Coffee (1991), Demsetz and Lehn (1985), Jensen (1993), Roe (1990) and Stulz (1990) investigates the workings of the different aspects of the corporate governance system. Empirical evidence relating to specific corporate governance areas, such as the board of directors and directors' remuneration, is provided by Baker, Jensen and Murphy (1988), Barnhart, Marr and Rosenstein (1994), Mehran (1995) and Yermack (1997). Nonetheless, there remain important aspects of the debate on corporate governance and firm value, which pointedly lack empirical and theoretical research. Regarding outsider equity ownership, for example, McConnell and Servaes (1990, p.579) state that:

> *"the relationship between corporate value and institutional ownership is as yet relatively unexplored terrain".*

Furthermore, in relation to the issue of directors' remuneration, Main and Johnson (1995, p.351) hold that

> *"in Britain there is a paucity of information in this area".*

Therefore, it is one of the objectives of this thesis to contribute to these under explored areas of research.

In line with much of the aforementioned empirical work, this study investigates the relation between corporate governance and the value of the firm using cross-sectional regressions; it is based on a sample of 1067 firms for 1995. This is a relatively large sample, and allows for a comprehensive view of the corporate governance system within the U.K firm. One of the reasons for the low level of research on ownership structure in the U.K is that, in comparison to the U.S, data are difficult to collect. Although the database used in this study represents one of the largest ownership structure samples in the U.K, it is constrained in that time-series data was difficult to collect. Nonetheless, a panel of 315 firms for the years 1993-1997 adds an important additional dimension to the study. Furthermore, company account data, such as current cost measures of capital stocks, are not easily obtainable. In any case, a range of methodological approaches is applied (Section 5.6, Chapter 5), in order to ensure that the results of the analysis performed on this data-set are robust.

It is important to point out that the model of the firm employed is a limited and specialised one. It is limited in that perspectives that are offered by other models (for example, models based on stakeholders, politics) are not referred to; moreover, it is confined to the capitalist view of the firm, prevalent in Anglo-Saxon countries. It is specialised in that it presents a financial view of the firm. In this case, the financial perspective takes precedent over competing views such as those of strategy or marketing. Furthermore, the model analysed here focuses on a number of governance mechanisms to the exclusion of others. For example, the monitoring roles performed by debt-holders, creditors and stock-market analysts are not examined. There are several reasons for these omissions.

First, according to agency theory, the monitoring and inducement mechanisms which this study analyses, are the fundamental instruments of governance within the firm. Second, these mechanisms are at the centre of most academic and policy debate on corporate governance. Finally, the scope of the methodology and data employed here does not allow factors such as the ownership structure of debtholders to be examined.

Corporate governance systems in the world's major economies are broadly defined as either insider or outsider systems. While outsider systems are considered Anglo-Saxon in nature, insider systems tend to refer to the German banking system or the Japanese keiretsu. American and British firms broadly rely on external capital markets, and governance systems which include mechanisms such as managerial equity ownership and the market for corporate control. On the other hand, German and Japanese firms rely on mechanisms such as cross shareholdings and influential banks to govern the firm. The similarity between the U.S. and U.K systems means that they can be studied using the same theoretical frameworks. However, the bulk of corporate governance research has been carried out in the U.S., and there is relatively little empirical evidence on corporate governance in the U.K.

In summary, this thesis aims to analyse the determinants of the following corporate governance variables: managerial equity ownership, directors' remuneration, the board of directors and outside equity ownership. The effect of these mechanisms on the firm is examined in order to assess whether corporate governance structures are optimally chosen. A further objective is to advance our understanding of the relation of corporate governance to firm value, by introducing a number of developments on previous work.

These aims are motivated by the following factors. First, corporate governance is becoming an increasingly important issue for academics, policy makers and financial market participants, (Shleifer and Vishny,1997). Second, there is relatively little knowledge in the United Kingdom about the effects of corporate governance on firm value. Finally, current research in the United States illustrates the fact that the relation between corporate governance and performance is more complex than initially believed, uncovering many new research questions.

## 1.3 Overview of Thesis

Chapter 2 consists of an extensive review of the literature on corporate governance. Chapter 3 presents the data used in the empirical tests, and describes the methodology employed to analyse this data. Chapter 4 discusses the relevance of performance measurement to corporate governance, and then presents the performance measures used in this study. Chapter 5 contains the core investigation into the relation between corporate governance and the value of the firm. The results of this analysis provide a base for further in-depth investigation. Chapter 6 considers the role of outside equity holders and examines their effect on firm value. Chapter 7 discusses the results of this thesis and their relation to existing empirical work, and current policy recommendations. It also assesses the contributions of this study, and introduces questions that could promote further research.

# Chapter 2 Literature Review

## 2.1 Introduction

This chapter examines both the principal-agent and the corporate governance literature, with the aim of placing the thesis within a particular theoretical framework and determining how the main hypotheses fit in. The chapter begins by introducing the firm as an entity in which formal and informal rules dictate the behaviour of the constituents of the firm. At the core, agency theory provides a framework which defines the roles and responsibilities of the principal and agents. This principal/agent relationship and the agency costs which arise from it are defined in Sections 2.2-2.4. Section 2.5 reviews the corporate governance mechanisms designed to minimise agency costs, and classifies them according to whether they involve the inducement or monitoring of managers. The theoretical and empirical evidence relating to the two principal inducement mechanisms (managerial equity ownership and managerial remuneration) are discussed in Sections 2.6-2.8. The role and effectiveness of the two dominant monitoring mechanisms (large shareholders and the board of directors) are reviewed in Sections 2.9 and 2.10.

The difference in the risk preferences of the manager and investors can be used to explain the divergence of their interests. Therefore, the interaction between the manager and risk is an important consideration in this thesis, and is discussed in Section 2.11. Another important issue is the causality of the relation between corporate governance and firm value. This issue has so far been neglected in much of the literature, but it is discussed in detail in Section 2.12. Finally, Section 2.13 concludes and highlights the hypotheses investigated in this study.

## 2.2 The Firm

The firm is the entity in which production (for others) takes place. In the modern corporation, the firm's agents organise and direct this production. The production process is facilitated by the investment of shareholder's capital. The primary responsibility of management is, through their investment projects and consequent production processes, to maximise the wealth of shareholders. In the course of fulfilling this objective, the firm takes on different roles and activities. The varied and intangible nature of these activities makes the firm difficult to define. Its most concrete form is in the legal context, where the firm is an individual with a legal personality of its own. While the structure of the modern day "joint stock corporation" is largely attributable to law, the existence of the firm gives rise to a number of other structures. Thus, the firm is not only a complex legal web, but a complex "web of significance" (Morgan 1988, p199).

These webs of significance are intangible and invisible, and are represented in various forms by concepts such as culture (Smircich,1983, Schein,1985), or conceptualised as power relationships (Pfeffer,1981, Lukes,1974). Morgan states that the metaphor of the webs of significance illustrates that organizations are socially constructed realities, and that these constructions have an existence and power of their own which enable them to exert control over those who inhabit the organisation. The webs determine, through processes such as social or psychological influence, how managers act, make decisions and for example, use technology to produce goods or services (Zuboff,1988). These webs provide an organisational context, laden with roles, rules and social influences. This context influences, and in turn, binds the "players" or agents within the firm (Latour,1992). Internal labour markets and managerial networks are an example of how these webs of significance operate, as they perform the function of complementary monitoring systems which hold management in check. In this way the webs of significance help form, and are formed by, relationships and contracts between agents themselves, and between the firm and the agent. By combining the legal web and the webs of significance we reach a more complete view of the firm, one which is consistent with the current theoretical finance perspective on the firm as represented by Jensen and Meckling (1976, p. 85):

> *"since the specification of rights is generally effected through contracting (implicitly as well as explicitly), individual behaviour in organisations, including the behaviour of managers, will depend on the nature of these contracts".*

The architecture of the firm is made up of contracts, some explicit and other tacit and invisible (Kotter, 1982 refers to psychological ones), which direct the activities of the participants within the firm. Jensen and Meckling's definition of the firm touches on the concepts of a legal web and a web of significance, with the legal web forming the shell, which contains the activity of setting contracts:

> *"It is a legal fiction which serves as a focus for a complex process in which the conflicting objectives of individuals are brought into equilibrium within a framework of contractual relations. In this sense the "behaviour" of the firm is like the behaviour of the market ...it is the outcome of complex equilibrium process" (p.88).*

This is affirmed by Fama (1980, p. 289):

> *"The firm is viewed as a set of contracts among factors of production with each factor motivated by its self-interest characterised under the rubric of "property rights".*

Hence, the concept of the firm employed here is that of a nexus of contracts which specifies the internal "rules of the game", the rights of each agent in the organisation, the performance criteria by which agents are evaluated and the payoff functions they face. The firm as a "web of significance" is relevant to the extent that its informal rules, cultural norms, and power relationships affect the way in which agents' interests are shaped.

## 2.3 The Separation of Ownership and Control

The legal framework of the firm defines the claim of its owners on the firm's investments. Shareholders' ownership is represented by the,

> *"existence of divisible residual claims on the assets and cash flows of the organisations which can generally be sold without the permission of other contracting individuals" (Jensen and Meckling 1976, p. 88).*

These residual claims (shareholdings) are a principal reason for the formation of the firm. The shareholdings are residual as they represent claims on the firm's cashflows once interest charges, costs, and tax have been deducted. The legal contracts of the firm ensure that these residual claims are unrestricted, and that ownership and control of the firm do not reside solely in the hands of the entrepreneur. Fama and Jensen hold that these residual claimants are unrestricted in that they are not required to have any other role in the organisation, their residual claims are freely alienable and are rights in net cashflows for the life of the organisation. They refer to companies whose residual claims allow unrestricted risk sharing among shareholders as "open corporations". (Closed corporations encompass organisational forms such as partnerships, where residual claims are largely restricted to internal decision agents). The advantages of common stock residual claims include unrestricted risk sharing among residual claimants, specialisation of management and the purchase of organisation-specific assets.

The characteristics of the residual claims allow the critical activities (mainly, investment decisions) of the firm to be controlled by management (firm's agents) while the rights to support and benefit from these decisions, may be freely bought and sold in the capital markets.

The separation of ownership and control means that the concept of the entrepreneur of the classical firm of economic theory is no longer relevant and his "role" is now split into two different functions: those of risk bearing and management. The separation of these functions also leads to a break in the decision making process. There is a functional split between decision initiation and ratification, and decision implementation and monitoring. In this way an agency relationship exists, where the managers (referred to as the agents) make investment decisions on the behalf of the shareholders (referred to as the principals), who provide them with capital. The standard definition of an agency relationship has been provided by Jensen and Meckling (1976, p.85). They define it as:

> *"a contract under which one or more persons (the principal(s) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent".*

One crucial aspect of the principal-agent relationship involves the costs that are incurred by the principal in ensuring that efficient monitoring of the agent's decisions takes place. The explanation of how costs arise will be provided in the next section.

## 2.4 Agency Costs

The separation of ownership and control is perhaps the most crucial and problematic characteristic of the firm. This separation produces, in turn, a divergence between the interests of management and shareholders, both of whom are held to operate according to self-interest. This divergence between managers' and shareholders' interests gives rise to residual risks, that is, the risk of the difference between stochastic inflows of resources and promised payments to agents. This risk is borne by the residual claimants (shareholders). The firm incurs agency costs in trying to minimise these residual risks. Agency costs are defined as:

> *"the costs of structuring, monitoring and bonding a set of contracts among agents with conflicting interests. Agency costs also include the value of output lost because the costs of full enforcement of contracts exceed the benefits" (Fama and Jensen, 1983, p. 328 ).*

Jensen and Meckling provide an example of how agency costs are generated. They illustrate how the value of the firm can change as the proportion of the company controlled by the entrepreneur (that is a manager with 100 per cent ownership of the firm) is decreased. As the entrepreneur sells his shares, agency costs are generated by the divergence between his interests and those of outside shareholders; this occurs because he bears only a fraction of the costs of any non-pecuniary benefits he takes out in maximising his own utility.

The value of the firm is a function of investment decisions made by managers. If managers invest sub-optimally or do not seek to maximise shareholders' wealth, the value of the firm will be negatively affected. One example of this is Jensen's (1986) agency costs of free cash flow theory. Free cash flow (FCF) is cash flow in excess of that required to fund all projects that have a positive net present value when discounted at the relevant cost of capital. When FCF is high, agency problems can be severe. Managers have incentives to cause their firms to grow beyond the optimal size, as growth will increase the manager's power by increasing the resources under his control. For instance, Jensen refers to the case where managers undertake acquisitions as a means of spending cash rather than paying it out to shareholders. Rather than have management spend their cash flow sub-optimally, a preferable strategy for shareholders would be for the management to pay out the money in the form of dividends, but this would reduce the resources under management's control. The free cash flow (FCF) hypothesis of take-overs predicts that managers of firms with unused borrowing power and large free cash flow are more likely to undertake low-benefit or even value destroying mergers. Diversification programs generally fit this category, and the theory predicts that they will generate lower total gains.

It has been suggested that, while the role of managers is to maximise the wealth of shareholders, managers may not always act with this objective in mind. The problems generated by agency costs can be addressed in two ways; by either inducing managers, via managerial equity ownership, to act like shareholders or by monitoring their activities, via the board of directors, to ensure that their actions do not deviate from the requirements and interests of shareholders.

In brief, the concept of agency costs provides a valuable insight into how the divergence in the interests of managers and shareholders affects decision initiation and implementation. A number of factors, most notably risk, can help determine the extent and impact of this divergence. In what follows, a review of the mechanisms for controlling agency costs will be provided.

## 2.5 Control of Agency Problems

The means used to reduce agency costs have been broadly classified in Manne's (1965) distinction between external and internal markets for corporate control. The hostile take-over and the market for executive labour are two of the more common forms of external market for control. Within the firm, mechanisms such as the board of directors, and career advancement operate to ensure that executives create shareholder wealth.

The corporate governance role can be separated into two functions, that of providing managerial incentives, and that of monitoring. According to Agrawal and Knoeber (1995), four broad mechanisms work to supervise managers and so alleviate the agency problems which may arise. Three of these rely on parties outside the firm to monitor managers, they are: the use of debt (through which institutions and markets can monitor managers), the market for managers which assesses a manager's performance and determines his opportunity wage, and third the market for corporate control which relies on take-over specialists to identify and discipline poorly performing managers. The fourth mechanism which Agrawal and Knoeber mention is that of monitoring by the firm's own large shareholders and board members. Similarly, Jensen (1993) lists four forces for the control of management, they are: capital markets, legal/political/regulatory forces, product and factor markets and the internal control system headed by the board of directors.

Many of the corporate governance mechanisms have their origin in the market, particularly those relating to the U.S. and U.K based firms. Market based mechanisms are perceived as an effective means of inducing adherence to shareholder wealth maximisation by managers. However, the take-over, particularly the hostile take-over has failed to correct poorly performing management teams. One study which provides evidence for this in the U.K is the one by Franks and Mayer (1996). Furthermore, other studies (Bradley, Desai and Kim,1988) have found that, on average, the shareholders of the bidding firm have done poorly, while the target firm shareholders have enjoyed large gains (Porter,1987). It seems that the hostile take-over is more a restructuring than a governance mechanism (Mitchell and Mulherin,1996).

However, the board of directors, the internal monitor of management, is governed by market forces; outside directors, compete in the market for professional corporate referees. They have the incentive to develop a reputation as effective monitors and controllers of decision management. The firm itself is constantly in the market for agents (managers), who effectively rent their labour to the firm. They have incentives to perform well because their actions and decisions will determine part of their future executive worth. Within the firm there is internal competition and monitoring, both up and down the firm's hierarchy. This internal market performs the role of internal monitor of managerial decision making.

Where managers perform poorly then shareholders always have recourse to the financial markets. Through the equity markets, shareholders can place their funds elsewhere if they are dissatisfied with a particular company. Alternatively, market participants may use the take-over as a form of court of last resort. In addition, diversification of unrestricted claims allows investors to hedge against agency costs.

Managers and shareholders can transact in the capital markets and from these transactions a structure of ownership will emerge. Small-dispersed shareholders, large blockholders, family owned stakes and institutions are some of the important constituents of the shareholder structure of the firm. The composition of this structure has important implications for the value of the firm when the proportion of a firm's equity held by management is considered. This is because the level of managerial equity ownership is a determinant of the decisions taken by the manager, influencing, in turn, the value of the firm. Large outside stakeholdings are also important as they have an impact on agency costs and ultimately the value of the firm (Stulz,1990). If investors have large holdings, they will have a strong incentive and more resources to individually monitor the firm's agents. If the need arises, these shareholders may, in Demsetz's term, "congeal" to force managers out (by the use of, for example, the take-over).

This section has reviewed the mechanisms which comprise the corporate governance system, placing particular emphasis on the distinction between internal and external governance mechanisms. This classification is useful as it delineates those mechanisms which are peripheral to the firm, and which often constitute research areas of their own (for example, the market for corporate control). However, the study's focus on the firm (Section 2.2) renders the distinction between external and internal markets less relevant. Here, corporate governance can be separated in two functions, the inducement (via managerial equity ownership and managerial remuneration) and the monitoring (via large shareholders and the board of directors) of managers. The following section discusses the theory relating to inducement in the form of managerial equity ownership can affect the value of the firm.

## 2.6 Ownership Structure

The ownership structure of the firm can be both the cause and the solution to the problem of separating ownership from control. To illustrate, a dispersed ownership structure means that individual shareholders have no incentives to monitor management. On the other hand, managerial equity ownership can align the interests of managers and investors. The determinants of ownership structure offer an explanation of how different ownership structures affect the principal-agent problem.

Demsetz (1983) argues that in each market and in each firm, a particular ownership structure will emerge in which various cost advantages and disadvantages are balanced to arrive at an equilibrium form of organisation. Demsetz and Lehn (1985) posit that the ownership structure of a firm is determined by four variables: value maximising size, control potential, regulation and the amenity potential of a firm's output. Each of these will be discussed in turn so that their effect on ownership structure can be spelled out.

The first variable, value maximising size, proposes that there will be an inverse relationship between firm size and ownership concentration for two reasons; the risk neutral effect of size on ownership, implies that more capital is required to purchase a given percentage of stock in a large firm than in a small firm. Furthermore, a small equity stake (in percentage terms) will give the investor more control in a large firm than in a small firm. The second reason for the inverse relation between firm size and ownership concentration, the risk aversion effect, implies that it is too costly (in terms of risk) for risk averse investors to hold a large stake in a firm. Demsetz and Lehn also refer to the role of regulators as subsidising the monitoring and disciplining of the management of regulated firms, which in general tends to lead to more diffuse ownership structures.

Conversely, control potential implies that wealth gains are achievable, particularly in noisy and volatile environments, through more effective monitoring of managerial performance by a firm's owners. As a result, this promotes concentrated ownership structures. Similarly, the amenity potential of a firm's output or the ability of an owner to influence what is produced (as is the case in media and sports companies) will encourage greater ownership stakes where the amenity potential is greater.

Roe (1990) shows how the forces of politics and law have determined the ownership structure of the firm. This study constitutes a rigorous and rare perspective of how factors, other than financial markets and management, are the architects of ownership structure. Diffuse ownership and liquidity are promoted by laws which prohibit active control and monitoring. For example, in the Anglo-Saxon corporation, large shareholders are prevented by law from having adequate information to allow them to monitor management. In many cases investors are prevented from exerting influence by fear that a successful effort to gain control will result in a political counter-reaction. Roe shows that political constraints have deeply influenced the evolution of the modern American corporation. These political influences are manifest in the laws which govern financial corporations.

This section indicates that the theoretical literature on the determinants of ownership structure, and its effects on firm value, is limited. The theory suggests that the structure of the firm is a determinant of managerial ownership, while in turn ownership can exert an influence on the value of the firm. One clarification on the nature of the relationship may be provided by the empirical evidence from studies that have examined the link between managerial equity ownership and firm value. The evidence relates to tests carried out in Anglo-Saxon capital markets.

## 2.7 Ownership Structure: The Evidence

### 2.7.1 Evidence on Ownership Structure in the U.S.

This section presents evidence to show how the identity of the owners of the firm's capital can affect the value of the firm. Demsetz and Lehn's (1985) study of 511 large American companies, finds that a number of variables significantly explain the variation in ownership structure. These variables are: firm size, instability of profit rate and whether or not the firm is a regulated utility or a financial institution. However, they state that there is no significant relationship between ownership concentration and firm performance, which is represented by accounting profit rates of return.

More recently, Wruck (1989) and Stulz (1990) have shown how ownership structure can affect firm value. Wruck's (1989) event study of the announcement of the private sale of equity illustrates how the value of the firm changes in line with the change in ownership concentration which results from the sale of equity. The relation of the change in firm value will depend on the level of ownership concentration after the sale and the purchaser's current or anticipated future relationship with the firm. The evidence shows that private sales tend to increase ownership concentration from 31% to 37%, and that the manager's decision to sell a block of securities to non-management investors increases shareholder wealth. Where the level of ownership concentration after the sale is low (0%-5%) or high (>25%) then the relation between changes in firm value at announcement and changes in ownership concentration is positive. In the middle of this range (5%-25%) however, the relation is negative.

Stulz (1990) demonstrates the effect of managerial ownership on firm value by showing how, in the context of a take-over, and depending on whether managerial control of voting rights is small or large, shareholders' wealth increases or falls when management strengthens its control of voting rights. He shows that management can change the fraction of votes it controls through capital structure changes, corporate charter amendments and the acquisition of shareholder clienteles.

Morck, Shleifer and Vishny (1988) analyse data from 1980 for a cross-section of 371 firms and find evidence of a significant non-monotonic relationship between performance and insider ownership. Firm value, as represented by Tobin's Q first increases, then decreases and finally rises slightly as equity ownership by the board of directors rises. They estimate a number of piecewise linear regressions for three levels of equity ownership: 0%-5%, 5%-25% and >25%. Tobin's Q is positively related to ownership structure in the 0%-5% range, is negatively and more weakly related to ownership in the 5%-25% range and finally, is positively related to ownership above the 25% level. One interpretation Morck et al. give to this is that the conditions necessary for entrenchment are significantly correlated with increasing managerial ownership above 5%, but that these conditions are not much different for firms with board ownership >25% than they are for those with 20%-25% ownership.

McConnell and Servaes' (1990) analysis yields similar results. Using a sample of 1173 firms for 1976 and 1093 firms for 1986, they find that there is a significant curvilinear relationship between Tobin's Q and the fraction of common stock owned by corporate insiders. This curve slopes upward until insider ownership reaches between 40%-50% and then slopes slightly downward. There is also evidence of a significant positive relation between firm performance (Tobin's Q) and the fraction of shares owned by institutions. This evidence seems consistent with the hypothesis that corporate value is a function of the structure of equity ownership.

Chen, Hexter, and Hu (1993) also examine the functional form of the relation between managerial equity ownership and firm value. They find that Tobin's Q rises when management ownership is between 0% and 5%-7% and falls as ownership increases to 10%-12%. These findings are not unlike those of Morck et al. and illustrate that at a low level of managerial ownership, both internal and external forces operate to ensure a positive relation between firm value and management ownership. Once management ownership goes beyond the low level, entrenchment may come into play resulting in decreasing firm value.

Furthermore, Hermalin and Weisbach's (1987) study of 134 NYSE companies shows a non-linear relation between Tobin's Q and CEO stock ownership. Their results reveal that the relationship between Q and CEO stock ownership is positive between 0% and 1%, negative between 1% and 5%, positive between 5% and 20%.

Finally, Danielson, Karpoff and Marr (1995) examine the relation between corporate governance and firm performance. They analyse the relation of twenty corporate governance provisions to five different measures of financial performance. Their primary and strongest finding is that the use of poison pills is negatively related to financial performance. Their analysis indicates that poor performance both motivates and is perpetuated by poison pill adoption. They also find that director indemnity provisions are positively related to performance. Several other provisions, including fair price charter amendments[1] and blank check preferred stock[2], are related to some performance measures, but these relationships are generally not statistically significant.

## 2.7.2 Evidence on Ownership Structure in the U.K

A review of the area suggests that there is very little documentation and analysis of the ownership structure of U.K public companies, and particularly of the smaller ones. Even less is known about the relation between ownership structure and firm value. However, a few relevant studies have been made, which are worth discussing.

Holl (1975) provides earlier evidence on the effect of control type on firm performance in the U.K. He analyses a final sample of 183 firms using data for the years 1948-1960. Of these firms, 127 are management controlled (58 very large firms, 38 medium large and 31 small large) while only 56 were owner controlled (28 very large, 38 medium large, 31 small large).

Leech and Leahy (1991) examine ownership structure and corporate control for large British companies. They studied a sample of 470 U.K listed companies, which is based on the years 1983-85. They find that only 25 firms are majority controlled (total large shareholdings are > 50% of the firm's equity), and that the holding of the largest single shareholder is greater than 20% in only 34% of the sample firms. However, the largest holding is less than 5% in only 41 companies, which would suggest that ownership is not greatly dispersed. Leech and Leahy provide some interesting information on the identity of large shareholders. Banks or nominees with unknown beneficiaries were the largest shareholders in 215 cases (46% sample) and company interest groups in 104 cases (22%). They find that the leading shareholder tends to be a financial institution in the most dispersed cases, a company interest group in intermediate cases, and a non-financial company in the more concentrated

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[1] These laws regulate the back-end price in a two-tiered takeover bid or other significant business combination involving a large shareholder (Danielson, Marr and Karpoff, 1995, p25).

cases. This constitutes some evidence that financial institutions are unwilling to take large active and possibly long-term equity stakes in U.K public companies. Finally, Leech and Leahy, underline the importance of the methodological issue of appropriately identifying ownership control using shareholder data.

The influence which corporate management exercises through equity ownership is one means of affecting corporate control; take-overs and other restructuring transactions perform a similar role. Thompson and Wright (1995) gather evidence of the effects of such transactions in the U.K. They pay particular attention to the management buy-out (MBO), which is one of the primary restructuring transactions in the U.K. Their study of 182 MBO's in the U.K showed that 68% of MBO's produced clear improvements in profitability, as opposed to 17% that showed a clear fall in profitability. Furthermore, asset sales are offset by new capital investment, especially in plant and equipment. The evidence on MBO's in the U.K supports the view that industries experiencing rapid technological or market changes may require greater managerial flexibility, and also suggests that it is possible to extend corporate restructuring to these cases with the use of more flexible governance systems which include quasi-equity finance and a greater role for venture capitalists. Finally, it seems that the restructured firm does not provide a strong alternative to the open public corporation, as many buy-outs soon return to quoted status after a relatively short period.

In summary, a number of studies find that there is a non-linear relation between managerial ownership structure and firm value. However, in terms of the methodology employed, research on this topic has so far failed to advance. In addition, it has stopped short of exploring the reasons for the non-linear relation between managerial equity ownership and firm value.

## 2.8 Managerial Remuneration

The compensation contract is the primary means of aligning managerial interests with those of shareholders'. This contract is composed of managerial remuneration and managerial equity ownership, discussed in the previous two sections. This section will

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[2] Authorised preferred stock for which the board of directors has broad discretion to establish voting, dividend, conversion, and other rights (Danielson, Marr and Karpoff, 1995, p24).

now examine the determinants of managerial remuneration, and how it is related to the value of the firm.

Mehran (1995) finds that companies in which Chief Executive Officer (CEO) remuneration is relatively sensitive to firm performance, tend to produce higher returns for shareholders than companies, in which the relationship between CEO pay and performance is weak. There is also a significant positive relation between the percentage of shares held by the CEO and firm performance. These findings support Jensen and Meckling (1976) who suggest that managers' incentives to work harder increase as their stake in the firm rises. However, Mehran has also found that both Tobin's Q and the Return on Assets are inversely related to the percentage of CEO's total compensation in cash. This inverse relationship holds even after controlling for the firm's growth opportunities, assets in place, leverage ratio, business risk and size.

According to Murphy (1985), while firm size is the only important determinant of executive remuneration, and performance plays at best a minor role. Murphy criticises previous studies of the link between performance and remuneration in that many of these have only concentrated on the most visible aspects of remuneration, namely salary and bonus. Furthermore, he holds that most previous studies are based on cross-sectional analysis of remuneration and performance data, and have omitted many variables. It must be noted that both Mehran and Murphy generally ignore the question of causality in the pay/performance relation. It is quite plausible that performance determines pay and not the other way around as suggested.

Gilson and Vetsuypens (1993) report findings that are helpful in addressing the issues of the causality of the pay/performance relation and the asymmetry in this relation. They study senior management remuneration policy in 77 publicly traded firms that filed for bankruptcy or privately restructured their debt during 1981 to 1987. Incumbent senior managers incur significant personal losses as a result of their firms' financial distress. Nearly one third of the CEO's in their sample are replaced in a given year within default, and those who remain often take substantial cuts in their salary and bonus. Newly appointed CEO's with ties to previous management are paid 35% less than the outgoing CEO. On the other hand, a CEO hired from outside the firm is paid 36% more than his predecessor, typically receiving large grants of stock options as part of their remuneration.

It is generally difficult to discern the actual determinants of managerial remuneration. Indeed, Baker, Jensen and Murphy (1988) insist that the current economic theory and the actual practice regarding remuneration seem particularly disassociated. Finkelstein and Hambrick (1988, 1989) propose frameworks for the determination and characteristics of CEO remuneration. They contend that CEO pay, salary and bonus, is determined by market and political forces. These include firm size, corporate performance, corporate complexity, CEO's human capital, CEO power and board vigilance.

Finkelstein and Hambrick (1995) propose an interesting argument with regard to how ownership configuration affects the determination of CEO pay rises. They differentiate between management and externally controlled firms and hypothesise that CEO pay in the two types of firm varies along the following criteria. First, corporate size enhances a manager's pay and is seen as a defensible way to justify pay. This criterion however, contributes to agency costs since increased firm size does not necessarily imply increased shareholder value. Managers are known to increase size at the expense of value in for example, corporate restructuring or diversification strategies (exemplified in Jensen's free cash flow theory of take-overs). Second, it is noted that the pay of top managers is asymmetric in relation to firm performance in that higher performance induces higher pay, but pay does not necessarily decrease in line with poor performance.

Furthermore, managers may base their remuneration demands on average levels of pay within industries, a fact which, in turn, pushes up these averages. Arrival and tenure effects on CEO pay will determine how much he or she is paid on arrival in the job and whether pay decreases marginally as tenure increases. The evidence presented by Finkelstein and Hambrick shows CEO's in management controlled firms to have considerable influence over their remuneration. Managers justify high levels of remuneration on the basis of counterparts' pay and increased firm size. However, Finkelstein and Hambrick find that remuneration contracts in management-controlled firms are designed to maximise pay. In contrast, it seems that they are aimed at minimising pay in externally controlled firms. CEO's in these firms are only partly rewarded for profit increases but they are sharply penalised for profit decreases. Dominant owners appear to be demanding of their managers.

Beatty and Zajac (1994, 1995) study executive compensation, ownership and board structure in the context of Initial Public Offerings. They put forward the argument that linking a manager's remuneration too closely to firm performance may lead to risk-avoiding behaviour on the part of the manager. Performance linked remuneration, particularly in the form of equity based compensation, would cause the manager's personal wealth (and executive capital) to be greatly under-diversified. Consequently, they hypothesise that the riskier the firm, the less likely it is that top managers will have stock options in their remuneration contracts. In addition, the riskier the firm, the smaller the equity holdings of its top managers, and the non-cash incentive portion of their total remuneration. As a consequence, Beatty and Zajac call for stronger monitoring of firms where managerial remuneration is not so tightly linked to performance. The results of their tests show support for the view that there is an inverse relation between levels of firm risk and the degree to which incentive remuneration for top managers is used. It appears that the willingness of managers to accept risky remuneration varies across firms and that the firm-specific and manager-specific factors examined here contribute to this variance.

To summarise, the relation between managerial remuneration and the performance of the firm is not well understood. There is scarce evidence which suggests that higher levels of remuneration lead to increased firm value. However, a number of studies show that remuneration is determined by factors which are related to the structure of the organisation (such as firm size and industry characteristics).

## 2.9 Large stockholders

The ownership structure of the firm cannot be properly analysed without careful consideration of the role of large investors. Zeckhauser and Pound (1990) point out that large stockholders solve a fundamental problem of modern capital markets; namely, diminishing the difficulty outside shareholders have in monitoring corporate management. For small individual shareholders there is a high cost to obtaining the information needed to adequately monitor managers and, they can only exert a small influence on corporate policy. At the same time, there are tangible benefits to the large shareholder who is an informed and active monitor. Shleifer and Vishny (1986) maintain that the presence of a large shareholder acts as a partial solution to the free-rider problem facing small investors.

Pound (1988) considers the benefits which accrue to institutional investors if they become large blockholders. He proposes three types of relation between the institutional investor and firm value. The first is an efficient monitoring role where institutional investors have greater expertise and can monitor management at a lower cost than small shareholders. This role is assumed to increase firm value. Second, the conflict of interest hypothesis posits that institutional investors side with management as they fear the loss of other profitable business relationships with the firm. Third, the strategic alignment hypothesis describes a situation whereby institutional investors and management co-operate in ways that are mutually advantageous but which do not address agency costs through monitoring.

Holderness and Sheehan (1988) identify several possible organisational roles for large block shareholders, some of which are likely to be value-decreasing, while others have the opposite effect. The voting power of large shareholders isolates them from hostile control activities such as proxy contests and tender offers and enables them to appoint and remove directors. However, the evidence presented by Holderness and Sheehan is inconsistent with their proposition that majority shareholders use their voting power to expropriate or consume substantial amounts of corporate wealth. Furthermore, majority shareholders are usually directly involved in the management of the firm. Finally, it appears that the identity of large block shareholders is important (the identity refers to whether the shareholder is an individual or an institution).

Mehran's analysis does not provide support for any relationship between firm performance and blockholders' equity holdings, nor does he find any support for a relationship between firm performance and the percentage of shares held by different groups of outside blockholders.

Bethel and Liebeskind (1993) find that large blockholders have a disciplinary effect on managers in that investors act as the catalyst for restructuring the organisation. A buy-in by blockholders into diffusely held firms was found to be a significant determinant of downsizing, reductions in total diversification and increases in cash pay-out. They regard this as evidence that large blockholders play a critical role in monitoring and redirecting corporate strategy.

A more recent study by the same authors examines the motivations and consequences of significant purchases of large US corporations in the 1980's. Bethel, Liebeskind and Opler (1998) report evidence of a market for partial corporate control whereby investors purchase equity blocks in poorly performing firms and then use their influence to rectify the underperformance. Activist investors usually target poorly performing diversified firms. They do not appear to be deterred by the costs of monitoring such as the loss of portfolio diversification, monitoring costs and some takeover defences. However, it appears that large inside blockholdings deter outside investors from intervening, either because of entrenchment or alternatively that insider held firms are already well run. The evidence in this study suggests that existing blockholders such as founders, founding families and family trusts can be expected to reflect insider interests.

When activist investors purchase a large stake they use this to effect an improvement in the performance of the corporation. Their presence leads to a real and lasting improvement in the performance of the target firm. The authors interpret this as evidence of quiet diplomacy by the investors within the firm, or simply their ability to identify turnaround candidates whose management are already willing to implement restructuring programs.

Empirical evidence (provided by Mikkelson and Ruback,1985, Holderness and Sheehan,1985) shows that the arrival of new large shareholders is greeted by a significant stock price increase. It is likely that this reaction is linked to take-over speculation and to this extent the previous research leaves unanswered the issue of whether the ongoing presence of a large shareholder has significant effects on corporate performance.

This question is addressed by Barclay and Holderness (1989) who present evidence of the private benefits of control. They show that trades of large blocks of equity are typically priced at substantial premiums to the exchange price even after any stock price changes associated with the trades accounting for. Where over 5% of the common stock of an NYSE company is traded, the average premium is 20%. In addition, they find that the value of the premium increases at a decreasing rate with firm size and at an increasing rate with the fraction of the firm's outstanding common stock transferred in the block. Investors are found to pay larger premiums for firms with higher leverage, lower stock return variance and more cash and marketable securities. On the other hand, poor performance before a trade lowers the average premium.

The authors first of all consider that premiums merely reflect the superior information of the block-trading parties or that purchasers systematically overpay for blocks either because of hubris or agency costs. However, they conclude that the private benefits from control provide the most likely explanation for block premiums. This suggests that large - block shareholders typically use their voting power to secure private corporate benefits that do not accrue to other shareholders.

Holderness and Sheehan's (1991) study of 106 negotiated block trades underlines the importance of the blockholder's identity as a determinant of the value of the firm. The findings of their paper suggest that the specific skills and expertise of blockholders and not only the concentration of ownership are important determinants of firm value. They state that when a block trades, the concentration of ownership typically does not change but the blockholders identity does change. This is important because blockholders possess different managerial and monitoring skills, different blockholders have different incentives to increase value and corporate block purchases can provide synergies in research and development and production. In addition, the authors dismiss the alternative hypothesis that un-revealed information explains the cumulative abnormal returns they find.

In detail, their study shows that when a block trades and the firm is not fully acquired, cumulative abnormal returns average 5.6% and also 33% of CEO's are replaced within a year. The stock price increases are greater when control passes to the new blockholder, when management does not resist the blockholders effort to influence corporate policy and when the block purchaser eventually fully acquires the firm. Based on their evidence, they propose that firm value is not independent of who owns the firm, and that the value of the firm depends in part on the skills of its owners.

Zeckhauser and Pound (1990) hypothesise that firms with large outside shareholders will have a higher price relative to their reported earnings. When a firm acquires a monitor, earnings will be pushed more toward their future value and the sum of current plus expected discounted future earnings should increase. Recognition of this effect by the market would tend to raise the price associated with any given level of earnings. Therefore, in relation to the above hypothesis, large shareholders may reduce the need for take-overs, and they may raise the value of the company by showing that corporate results are credible and free from managerial duplicity or distortion.

The results of the Zeckhauser and Pound study show that in industries with relatively low asset specificity and open information structures, the presence of a large shareholder leads to significantly higher future expected performance and vice versa. This evidence suggests that, where the nature of firms' investment and production decisions make outside monitoring difficult, large shareholders cannot solve the agency problem. Furthermore, there is no significant difference in dividend payout rates between firms with and without large shareholders, which suggests that dividend payments and large share holdings are not substitute forms of monitoring.

Demsetz and Lehn point out that there is no apparent logic to a large shareholder mismanaging a firm, as the value of their holding will fall once the market finds out. Weston's (1979) entrenchment hypothesis, on the other hand, suggests that corporate assets can be less valuable when managed by an individual (that is, a large shareholder) free from checks on his control. Similarly, although the convergence of interests hypothesis suggests that higher valuation may be associated with larger stakes, this may facilitate more and deeper entrenchment. With relation to the entrenchment of large shareholders, Holderness and Sheehan present an interesting account of the negative effect of a dominant owner (Ted Turner) on a corporation (Turner Broadcasting). More importantly, they show how organisational mechanisms can be adapted to constrain a domineering owner-manager and protect minority investors. At Turner Broadcasting these constraining features involved creating a class of preferred stock with unusual features, concentrating ownership among a small group of investors, allowing the new directors to elect several directors and requiring super-majority approval of major management decisions by a reconstituted board. Since these changes were implemented the value of TBS has risen substantially.

Wruck (1989) demonstrates that depending on whether an equity block is sold in the public or private market it can have different effects on firm value. In a private sale, a greater level of ownership concentration will increase firm value in two cases; where the blockholder efficiently monitors the firm's management or where the existence of the block promotes speculation of a take-over. On the other hand, greater ownership concentration may decrease firm value if it entrenches management and insulates managers from the market for corporate control. The benefit of a private sale is that it puts a block in place and dilutes the voting power of existing blocks, whereas a public sale to a large group of dispersed purchasers simply dilutes the voting power of existing blocks. It is possible that the difference in stock price reaction to private and public sales of equity could be attributable to these differences in the resulting share ownership structure.

Pound (1995) attributes corporate failures to contemporary corporate governance structures, where dispersed ownership implies that shareholders are no longer involved in setting corporate policy. He holds that most performance crises are the result of errors that arise not from incompetence, but from failures of judgement. Demsetz also proposes that there is a vacuum in control by owners, built on the presumption that ownership of the modern corporation is so diluted among the multitude of shareholders that their interests are essentially un-represented in corporate management. However, if shareholders are to become involved in decision making (Pound) it must be questioned whether they have adequate expertise and information to do so.

In cases where investors actively participate in corporate governance, the evidence of their effectiveness is weak. Smith (1996) finds that the leading activist fund, CalPERS, largely succeeds in changing the governance structure of target firms. This results in a statistically significant increase in shareholder wealth for those firms. However, when a wider sample of active funds is considered (Wahal,1997), these institutions are successful in changing the governance structure of target firms, but there is no significant evidence of long-term improvement in either the stock price or accounting measures of performance in the post-targeting period. Wahal concludes that these results cast doubt on the effectiveness of pension fund activism as a substitute for an active market for corporate control. Given their apparent failure to increase shareholder value, active funds do not appear to reduce their stakes, as other types of investors might.

Overall, in the light of the above evidence, it seems that the assessment of McConnell and Servaes (1995, p. 133) that

*"a consensus interpretation is that the allocation of equity ownership matters"*

can only be weakly applied to the case of large blockholders. Their apparent unwillingness to serve as active corporate monitors can however be traced to fundamental principles of finance. Huddart (1993) underlines the fact that the more risk averse large shareholder bears more non-systematic risk as his stake in the firm increases. Investors need to make a decision between diversification and control. The highly liquid equity markets in the U.S. and U.K render diversification a much easier option through speedy exit. The ease of exit (Bhide,1993) makes shareholder activism unattractive. Further, monitoring by blockholders diminishes the main attraction of holding equities, namely the benefits of specialisation in risk-bearing and management.

In contrast, Maug finds that liquid stock markets are beneficial because they make corporate governance more effective. He counters the argument of Bhide by stating that it is easy to accept the argument that in a more liquid stock market it is less costly to sell a large stake but such a market also makes it easier for investors to accumulate large stakes without substantially affecting the stock price and to capitalise on governance based activities. Successful corporate restructuring comes about in a liquid market because it allows large investors to benefit from monitoring through informed trading and help to overcome the free-rider problem. Furthermore, the more liquid the market, the more likely that a restructuring method will be preferred for its effectiveness rather than for its low costs.

In summary, agency theory predicts that large shareholders perform a role as monitors of management. While, there is very little evidence that blockholders fulfil this role, there is sufficient evidence to suggest that the motivations of blockholders are more complex than is initially anticipated. Their behaviour can often produce value decreasing consequences, and while a number of theories seek to explain this, the link between outside equity ownership and firm value is not well understood.

## 2.10 The Board of Directors

While large shareholders are expected to act as monitors of managerial decision making behaviour, a more formalised and perhaps effective form of control is the board of directors. The board is the top level court of appeal of the internal agent market (Fama and Jensen,1983). Barnhart, Marr and Rosenstein (1994) hold that the board of directors is one of several internal governance mechanisms that are intended to ensure that the interests of shareholders and managers are closely aligned. Boyd

(1994, p.336) underlines the importance of the board in the governance debate by emphasising that

> *"a spate of recent shareholder suits has underscored the board's role as ultimate legal responsibility for policy decisions".*

In situations where agency costs between shareholders and managers are severe (agency problems between shareholders and managers are particularly severe in going-private transactions, for example, where top managers may have an incentive to reduce the premium paid to outside shareholders). Kosnik (1990), the composition of the board has been found to play a substantial role in corporate performance. Where the public corporation is concerned, Barnhart, Marr and Rosenstein declare that the sparse empirical evidence is far less convincing when assessing the impact of board composition on overall firm performance. Their own study finds that there is little evidence to support the hypothesis that board composition is a factor in determining overall firm performance.

Employing a sample of almost 400 large U.S. firms, Agrawal and Knoeber (1995) examine the use of seven control mechanisms, one of which is the board of directors. They find that a larger fraction of outside directors, greater debt, and more activity in the market for corporate control, exert a negative effect of on firm performance in Ordinary Least Squares (OLS) estimations. However, only the negative effect of board composition persists in the systems framework (Two Stage Least Squares Regression), suggesting that perhaps boards contain too many outsiders (non-executives).

Hermalin and Weisbach (1993) state that there appears to be no relation between board composition and performance. They explain this result by suggesting that firms, despite any variation in the severity of their underlying agency problems, reduce their agency costs to approximately the same residual level. Thus variation in performance will be un-correlated with actions taken to reduce underlying agency problems such as board composition, and that it is impossible to find evidence of a "board effect" by regressing performance on board composition. Hermalin and Weisbach (1991, p.101) conclude that

> *"the board's effectiveness in fulfilling this monitoring role is not clear",*

and that there is little or no direct evidence that outsiders exercise any direct control except in crisis situations.

Additional evidence from the study of the performance of outside directors again indicates that their actual behaviour departs from their expected roles as monitors. The conclusion of Mahoney et al.(1995, p.3) accurately sums up the present debate:

> *"the impact of increased outsider representation on the outcome of board actions is less clear"*

The findings of their study on anti-takeover provisions run contrary to agency theory predictions in that the market reacts more negatively to anti-takeover provisions adopted by outsider-dominated boards than to antitakeover provisions adopted by boards with fewer outsiders. Jensen (1993) encapsulates this problem.

> *"The board at the apex of the internal control system has the final responsibility for the functioning of the firm .... Few boards in the past decades have done this job well in the absence of external crises" (p. 862).*

On the other hand, Boyd (1994) finds that CEO salaries were greater in firms with lower levels of board control. This evidence is taken to indicate that the board is a key internal control mechanism. In the light of the link between CEO pay and performance, he quotes Eisenhardt who argues that active (well informed) boards will compensate CEO's based on their behaviour, therefore diluting the CEO pay/performance relationship. Consequently, superior board information and performance appraisal based on CEO abilities may lead to a weakened relationship of CEO pay with short-term performance but a strengthened relationship with long-term performance.

Underlying the apparent failure of board members to act as monitors is the unresolved question of whether outside directors are agents or principals (insiders or outsiders). There are a number of reasons for this ambiguity. First of all, it may be attributable in part to a form of reverse causality whereby outside directors are added to the board after poor performance (Hermalin and Weisbach, Yermack). It is also possible that the number of directors might arise endogenously as a function of other variables such as company size, performance or CEO preferences. Nonetheless, there are a number of distinct agency cost related factors which diminish the effectiveness of non-executive directors.

Borokovich, Parrino and Trapani (1996) highlight the most prominent of these problems. They find that there is a positive monotonic relation between the proportion of outside directors and the likelihood that an outsider is appointed CEO. The authors suggest a number of board and outside director characteristics which imply that outside directors will not necessarily act in shareholders' interests. First, CEO's tend to dominate the nomination process. Second, interlocking directorships may diminish the willingness of directors to challenge the CEO. Third, outsiders who are appointed because of their expertise in a specialised area may not feel qualified or confident in challenging the CEO. A related point is that directors may not be trained monitors, in that they do not fully understand financial accounts, for example.

Outside directors may also be appointed for internal political reasons. Kaplan and Reishus (1990) and Singh and Harianto (1989) present a passive view of directors, where they are hired to advise management and to strengthen relationships with clients. They regard outsiders as being appointed for their business knowledge and not necessarily for their abilities as monitors. In this case it is conceivable that as the board grows so does the spectrum of interests which it represents. This may contribute to an explanation as to why performance appears to decrease as the number of outsiders on the board increases.

A corporate governance insider (Charkham) offers one related explanation for the negative effect that the board of directors can have on firm value. In reality the members of the board are business advisors to the executives, rather than the monitors of the executive's activities, for example,

*"the board is virtually an advisory body to those in power"*

*"so non-executives have responsibilities as advisers, as decision-makers and as monitors; yet it is apparent that there are serious incompatibilities among these functions...it is the inconsistency of these functions which makes the non-executive directorship a weak institution in practice. The blending of these functions diminishes the ability of the non-executive to perform any of them" (Charkham).*

Charkham cites other problems facing outside directors. Most non-executives are CEO's of other companies and are subject to severe time constraints and other business commitments. This leaves them more dependent on management for factual information, and heightens the feeling of shared loyalty and group ethos of both insiders and outsiders.

To return to the initial point made by Borokovich et al., insider members are generally more influential than outside members and these outside members are often decision agents in other complex organisations. Control of a corporate board may frequently be in the hands of insiders. Managers can determine the composition of the board by using their knowledge of the organisation to nominate outside board members with relevant complementary knowledge. In response to this, Fama and

Jensen assume that outside directors have an incentive to develop a reputation as experts in decision control, given that the value of their executive capital depends on their performance as internal decision managers in other organisations. Kaplan and Reishus also present a case for the existence of an external labour market for outside directors. Their results suggest that executives who are perceived as good managers become outside directors and that an executive's standing in the market for outside directors is positively related to his own firm's performance.

Boyd posits a number of measures of board control; these include CEO duality (where the CEO occupies both the role of CEO and of Chairman), the ratio of insiders on the board, board stock ownership, the number of directors representing ownership groups, and the level of director remuneration. With regard to the role and effectiveness of inside directors, Boyd argues that inside directors will feel that they are being evaluated by the outside directors on the board. Inside directors, particularly those considered as possible successors to the CEO, may fear the appearance of siding with the CEO and of alienating outside board members. Hermalin and Weisbach (1988) underline the importance of the process of CEO selection in shaping the composition of the board. Insiders may be added to the board in order to "groom" them for succession. The end of the CEO's tenure may often mean that successful insider cliques may leave. Further, a new CEO may necessitate additional outside directors in order that he is monitored. Conversely, the need for impartial outside monitoring may grow as the CEO becomes more powerful.

The same free-rider problems which commonly prevent a shareholder from being an active principal, tend to prevent shareholders from choosing the board. In practice, the CEO almost always chooses the board. Thus, outside directors will potentially be more aligned to management's interests than to the shareholders'. Nonetheless, two factors, legal obligations, and the desire to establish a reputation as effective monitors, are likely to ensure at least some independence of board members.

Rosenstein and Wyatt (1997) add to the debate on directors by analysing whether the addition of non-executives to the board leads to more efficient monitoring and decision making, or to the entrenchment of existing insiders. This study considers board composition in the light of insider equity holdings, and in this respect it enhances the debate on the role of board directors. It seems that the perception of the inside directors' role depends on the holdings of insiders. At low levels of ownership, the addition of insiders to the board is seen as an attempt to entrench existing management. This is more the case when the incumbent CEO is old. For medium levels of insider equity ownership (5%-25%), where there is closer alignment of managerial interests with those of outside shareholders, the expected benefits of the specialised knowledge provided by an inside manager outweigh the expected costs of increased managerial entrenchment. Finally, for levels of ownership above 25%, where insiders could be expected to insulate themselves from monitoring pressure, the addition of an insider to the board is not well regarded. Rosenstein and Wyatt conclude that that managerial ownership dominates board composition as a tool for aligning managerial and shareholder interest. Furthermore, they raise the important issue of the balance of power between insiders and outsiders on the board. Nonetheless the importance of this relation can only be judged in the light of the power of incumbent management to appoint both insiders and outsiders, and also in the apparent ineffectiveness of outsiders as monitors.

Severe cases of breakdown in corporate governance systems (for example, bankruptcy or hostile take-overs), provide additional evidence that lends an extra dimension to the activities of board members. Shivdasani (1993) considers the impact of the structure of the board and insider equity ownership on the incidence of hostile take-overs. His results suggest that the board of directors and hostile take-overs are substitute mechanisms. Moreover, unaffiliated blockholdings and hostile take-overs are complementary mechanisms for corporate control. Hostile take-overs should occur when monitors such as board members fail to monitor and correct the value decreasing decisions of management. Similar to Rosenstein and Wyatt, Shivdasani considers the equity holdings of directors, and finds that take-overs are more likely to take place where outside directors have low levels of equity holdings. He holds that (1993, p.196)

> *"this supports the view of those sceptical of the governance functions performed by corporate boards, who hold that without a significant equity stake, directors have few incentives to monitor".*

Furthermore, hostile bids are more likely where non-executive directors do not hold many other posts in large companies.

Gilson (1990) reports that out of 111 cases of bankruptcy/debt restructuring between 1979 and 1985, only 46% of incumbent directors remained in place. This seems to confirm Hermalin and Weisbach's assertion that firms which perform poorly, tend to appoint new outsiders to the board. Bankruptcy exacts its toll on the reputations of directors who resign, as they subsequently hold fewer seats on the boards of other firms. Overall, it seems that effective outsiders are those with established reputations as monitors and who own part of the firm.

The board of directors is the most important and formal monitor of managerial investment decisions. Yet, the summary of the evidence of the effectiveness of the board suggest that the composition of the board exerts a negative, if any, effect on the value of the firm. It seems that the addition of outside directors to the board is often associated with a decrease in firm value. Similar to most other governance mechanisms, the board appears to act only in crises. The ineffectiveness of the board, and particularly of non-executive directors, may be attributable to the fact that outside directors are usually selected and appointed by executives, and therefore they may not be entirely independent. Non-executives also appear to be appointed for their business skills and not their ability as monitors.

## 2.11 Ownership, Debt and Diversification

Most of the empirical evidence on the relation between ownership structure and firm value (as provided in Morck et al.,1988) adheres to the view that this relation is not linear. In fact, it appears that firm value rises for low levels of insider ownership and then falls for ownership at the medium level (5%-25%), while finally rising as ownership tends toward 100% when managers become owners. This suggests that the simple prescription of agency theory that managers will improve corporate performance when they are given equity based inducements is inadequate on its own. Indeed, the behaviour of senior managers within the firm may be better understood if we include the roles of debt, diversification and firm risk in our analysis.

A fundamental difference between the manager and the shareholder is that they make investment decisions from divergent perspectives. Hill and Snell (1989) posit that managers maximise a utility function that has remuneration, power, security and status as its central elements. We assume that the investor is rational and makes his decisions in accordance with mean-variance portfolio theory. He relies on the principle of diversification in order to spread the residual risks of the investments that he chooses. Generally, his decision on what proportion of equity to hold will have more to do with portfolio theory than a desire to exercise control. Conversely, the manager cannot diversify to the same extent as the investor and as a result he is in a far more risky position than the investor. We accept that the wealth of managers is limited, so they cannot diversify their entire personal wealth by holding stakes in other firms, similar in size to the amount of equity which they hold in their "own" firm. Remuneration contracts and stock market expectations make it difficult for managers to dispose of their equity holdings at will. Therefore it is likely that as managerial equity holdings increase, more of their wealth is tied up in the firm they work for. The increased under-diversification of equity holding managers has been noted in the literature. Jensen, Solberg and Zorn hold that insiders with a major stake are less diversified and have an incentive to reduce financial risk, while Agrawal and Nagarjan (1990, p.1325) state that

> *"overall, the evidence suggests that managerial choice of an all-equity capital structure may be aimed at reducing the risk associated with large un-diversified investments of personal wealth and human capital".*

Furthermore, the manager's executive capital is bound up in the fortunes of one firm. Bagnani et al (1994), and Agrawal and Knoeber (1995), note that managers' increased non-human wealth investment in the firm may become so large as to make them increasingly sensitive to the riskiness of the firm. If their executive wealth is relatively job specific, this will reinforce managerial risk aversion at high managerial stake-holding levels. In many cases, most of the manager's personal and financial wealth is tied up in a particular firm, leaving the position of the manager over-geared. In consequence, it makes the manager further risk averse in his decision making. Easterbrook (1984, p. 653) underlines the risk aversion of managers.

> *"Managers therefore will be concerned about total risk, and their personal risk aversion will magnify this concern. The risk averse managers may choose projects that are safe but have a lower expected return than riskier ventures. Shareholders have the opposite preference"*

As a result, it can be argued that as an increasing amount of the manager's wealth is invested in a firm, then he will behave more like a bondholder than an equity holder. This divergence between managerial and shareholder risk preferences may explain why performance tends to decrease when management ownership increases above the 5% level. The separation of ownership from control exacerbates this effect, as the shareholder and the investment decision maker can have vastly different risk profiles. It may also be argued that the already risk averse manager, who holds a significant portion of equity, is rendered even more risk averse where the firm has high levels of debt and/or variable cashflows.

The role of debt in the firm is manifold and complex. First, debt can serve as a governance mechanism (Agrawal and Knoeber,1995) to monitor managers. For example, the presence of debt limits the ability of management to expand its empire too much by reinvesting profits unwisely (Hart,1995). This occurs primarily when firms issue debt and are scrutinised by the providers of debt; it is especially important in situations of asymmetric information (Myers and Majluf,1984). In addition, it has been shown (Miller and Modigliani,1958) that although debt cannot affect the value of the firm, this is not the case if it affects the way in which managers make their investment decisions. McConnell and Servaes (1995) consider what they define as the two "faces" of debt in relation to the role of the manager and firm value. They present two perspectives on the role of debt in investment decisions, namely the underinvestment and overinvestment problems.

First, the underinvestment problem (Myers,1977) results from the fact that excessive levels of debt induce managers, acting in shareholders' interests, to forego positive net present value projects. In particular, high levels of debt mean that managers are committed to paying out a large portion of cashflows to bondholders; as a results, there is less cash available for investment in economically viable opportunities. Thus, for firms with growth opportunities, debt has a negative effect on the value of the firm.

On the other hand, the overinvestment problem arises when firms have more internally generated funds than positive net present value projects, and the presence of debt in the capital structure causes managers to pay out funds that might otherwise be invested in negative net present value projects. It is likely that this effect is heightened by the fact that retentions form the bulk of funding for public companies (Mayer,1987), given that retention financing is at management's discretion. This is confirmed by Jensen, Solberg and Zorn (1992) who find that ownership structure is an important determinant of dividend policy. The evidence provided in their work is consistent with the view that more insider ownership permits managers to control the financial policies of the firm.

Managers have an incentive to expand the scale of the firm even if this is detrimental to shareholder's interests. Where the opportunity exists (provided by high level of FCF) managers benefit from increased firm size through increased remuneration and power, for instance. This tendency is increasingly well documented. Bethel and Liebeskind (1993) hold that a manager's wealth is linked to the size of the firm, the risk of bankruptcy rather than firm performance. They find empirical evidence which supports the argument that managers in public firms tend to expand and diversify firms without increasing their value.

Denis, Denis and Sarin (1996) hypothesise that corporate diversification may be rooted in the need for managers to diversify their own un-diversified personal portfolios. They document a strong negative relationship between the fractional equity ownership of insiders and the level of diversification. The presence of debt can curtail these tendencies where managers must pay out cash to bondholders, limiting their discretionary expenditure. Thus, for firms with more internally generated funds than investment opportunities, debt financing can have a positive effect on the value of the firm. Furthermore, McConnell and Servaes find that the effects of debt policy and ownership structure on the value of the firm differ between firms with many, and firms with few, net positive present value opportunities.

In addition, Stulz also considers the impact of debt on firm investment policy. Specifically, he analyses the underinvestment problem in the light of the assumption that managers derive utility from maximising the size of the corporation. Again, the presence of debt in the balance sheet constrains the funds available to management in the long run, so they are sometimes obliged to forego positive net present value projects. The undiversified position of many insiders contributes to the influence of debt on firm value.

One interesting aspect of the more general capital structure problem, is the search for determinants of capital structure, as highlighted by Stulz's analysis. Stulz holds that the proportion of insider equity ownership in a firm can be changed purely by effecting changes in capital structure. One result that emerges from this is that capital structure changes affect the value of the firm through their effect on insider ownership. Another view is that managers may make capital structure decisions that are influenced by both the insider's level of ownership and the extent to which the manager's financial and personal wealth is diversified. Friend and Hasbrouck (1988) address part of this issue. They state that managers do not use as much debt as stockholder optimisation would suggest. They attribute this to the fact the manager's stake in the firm is composed of both shares and firm-specific executive capital which are non-diversifiable. Therefore the manager has a stronger interest in ensuring the viability of the firm, and will prefer lower debt ratios. Further, the implied loss of control associated with debt will make higher debt levels less attractive to managers.

On a related note, Friend and Lang distinguish between closed and publicly held corporations and produce evidence which shows that for closed corporations the debt ratio is negatively related to management's shareholdings, reflecting the greater non-diversifiable risk of debt to management than to public investors for maintaining a low debt ratio. The level of corporate debt decreases as the level of management investment in the firm increases, reflecting the greater non-diversifiable risk of debt to management than to investors.

Hence, managers and shareholders have different risk preferences. Managers tend to be more risk averse, a tendency that is exacerbated where their executive capital and equity ownership are concentrated in a single firm. Increased exposure to risk causes the manager to undertake sub-optimal investments, in turn lowering the value of the firm. For example, the manager may invest free cash flow in a diversification programme, with the intention of reducing the riskiness of the entity he manages.

## 2.12 Causality

While one of the early empirical papers in the ownership structure literature (Demsetz and Lehn,1985) presents the case for treating insider equity ownership as an endogenous outcome that maximises firm value for a set of exogenous determinants, most studies in this area (Morck et al., McConnell and Servaes) treat ownership as a determinant of firm value. Although some caution is expressed about the issue of causality (McConnell and Servaes), there are few studies which expressly deal with this problem (Kole,1994). Therefore, it is unsurprising that Holthausen and Larcker (1993, p.3) remark that

> *"with the exception of Jensen, Zorn and Solberg, there have been few attempts to investigate the simultaneous determination of the attributes of organizational structure" and that "prior research has ignored the endogenous nature of organizational structure".*

Chung and Pruitt (1995, p.1) contribute to this sentiment.

> *"the scope of these studies is limited in that they do not fully explore the simultaneous nature of the process determining ownership structure and value".*

The basic weakness of studies such as Morck et al. is that the Ordinary Least Squares (OLS) regressions which they use

> *"fail to consider interrelations among the control mechanisms, and because of this any findings tend to be spurious"(Agrawal and Knoeber, 1995, p.3).*

Kole (1994) made one of the first steps towards the empirical recognition of the interdependence between firm value and ownership structure. She finds that the direction of causality is not from managerial ownership to firm performance but from firm performance to managerial ownership. She argues that increased managerial ownership is the reward for good performance by the firm. This raises the important issue as to whether insider ownership is an incentive or a reward for good performance. Kole holds that if there were a relationship between performance and firm value then one would expect to observe corrective transfers of equity from non-management owners to managers. It may also be the case that the managers of successful firms are more likely to be rewarded with additional amounts of stock ownership.

There is further evidence to support the reverse causality thesis. Holthausen and Larker suggest that the level of managerial equity ownership is an increasing function of management's' expectations of subsequent firm performance. In this way larger equity ownership may signal management's expectations of better future performance. In a similar manner, poison pill amendments (Danielson, Karpoff and Marr,1995) and changes to the board of directors (Barnhart, Marr and Rosenstein,1994) tend to be put in place before and after poor performance, respectively. There is also evidence to show (Hermalin and Weisbach,1988) that CEO turnover is correlated with performance and that outsiders are more likely to join a board after a firm performs poorly or leaves an industry.

Agrawal and Knoeber undertake a similar study. They examine the use of seven control mechanisms in a sample of nearly 400 large U.S. firms. These mechanisms are: shareholdings of insiders, institutions and large blockholders, use of outside directors, debt policy, the labour market for managers, and the market for corporate control. The first of their two principal findings is that there is evidence of interdependence among the use of these mechanisms. Second, given this interdependence, cross-sectional ordinary least squares (OLS) regressions of single mechanisms on firm performance can be misleading. They find a positive effect of insider shareholding on firm performance when insider shareholding is examined alone, but this effect disappears when all of the mechanisms are included in an OLS estimation and when the relation is estimated within a systems framework. They find a negative effect of a larger fraction of outside directors, greater debt, and more activity in the market for corporate control on firm performance in the OLS estimations. However, only the negative effect of board composition persists in the systems framework, suggesting that perhaps boards contain too many outsiders.

Chung and Pruitt (1995) provide a unifying framework on the case of executive ownership, corporate value and executive compensation. Their integrated study reports that the market value of a firm, executive stock ownership and executive compensation are jointly determined. Furthermore, it is suggested that executive stock ownership and executive compensation may serve as a type of bond by which top executives are induced to act in the best interests of shareholders. The study also finds that a firm's Q ratio and an executive's job-specific experience are important determinants of executive remuneration.

These studies mark an important development in the empirical study of agency theory and more specifically, of the effects of ownership structure on firm value. In doing so, they have rendered the results of previous and subsequent empirical work ambiguous, and made corporate governance policy prescriptions less straightforward. In following with these recent developments in the literature, this study examines the relation between corporate governance and firm value in view of the possibility that they are jointly determined.

## 2.13 Summary

The firm is defined as a legal fiction which serves as a nexus for a set of contracting relationships among individuals. The dominant characteristic of this form of organisation is the separation of the control and ownership of the firm. The firm's agents (management) control the firm and its investment decisions and the residual claimants (shareholders) own it. It has been shown that where the interests of management and shareholders diverge, this conflict or divergence of interests gives rise to agency costs.

This study reviews the principal corporate governance mechanisms which operate within the firm. They are classified according to whether they involve the inducement (via managerial equity ownership and managerial remuneration) and monitoring (via large shareholders and the board of directors) of managers. Managerial investment decisions are also governed by other factors within and outside the firm, such as debt and the market for corporate control. These are not examined in this study as they relate to external and peripheral aspects of the governance model. Furthermore, these factors constitute large research areas in their own right.

A number of general comments can be made about the literature relating to the inducement and monitoring mechanisms surveyed here. Despite the fact that certain governance issues have been widely researched, our understanding of these has not been well advanced. For instance, a number of studies indicate that there is a non-linear relation between managerial ownership and firm value, but they fail to contribute evidence relating to the cause and direction of this relation. It is surprising to note that any of the important corporate governance mechanisms are under-researched. For example, we have reasonably little conclusive knowledge about the link between large blockholders and firm value.

The view of corporate governance which emerges from the literature is that inducement and monitoring mechanisms do not work as well as agency theory predicts. The relation between these variables and the value of the firm, is more complex than we would initially assume. While we can expect that the corporate governance variables are related to each other, many of them are do not appear to be associated with higher firm value.

It has already been stated that the general aim of this thesis is to investigate the relation between corporate governance and firm value. In the next section, specific hypotheses are developed according to the view of the corporate governance system presented in this study and these are also guided by the findings of previous work. These hypotheses are tested using a variety of methodologies and analytical approaches to ensure the robustness of their results.

## 2.14: Empirical Framework

### 2.14.1 Discussion

The literature review provides us with a theoretical background and a knowledge of prior empirical work which we use to form an empirical framework in order to investigate the relation between firm performance and corporate governance. However, in many areas an insufficient amount of theoretical work and conflicting empirical results lend credence to the statement of Morck, Shleifer and Vishny (1988, p. 294) that:

> *"Since theory provides relatively little guidance as to what this relationship should be ..., our paper is as much descriptive data analysis as formal hypothesis testing".*

Nonetheless, a simple guiding framework is necessary to direct and interpret the empirical analysis. The purpose of this section is to specify an empirical framework which forms a general representation of the relationships among the variables investigated in this study. This will provide a basis for regression equations, and for explaining the results obtained from these. In constructing this model, this study follows the tradition of Demsetz and Lehn (1985), Jensen and Murphy (1990), McConnell and Servaes (1990), Holthausen and Larcker (1993), Conyon and Leech (1994), and Chung and Pruitt (1995). These studies analyse the determinants of corporate governance mechanisms, and the relation of these mechanisms to the value of the firm by proposing simple empirical models based on predictions from previous theoretical and empirical work.

The model of corporate governance presented in the literature review is based around four basic corporate governance mechanisms: managerial equity ownership, directors' compensation, the board of directors and large blockholders. This study has two aims. First, to examine the determinants of each of the corporate governance variables, and second to assess the relation of these mechanisms to the value of the firm.

Until very recently, research in this area has tended to focus on one corporate governance mechanism at a time, and analyse its (unidirectional) relation to firm value, e.g. McConnell and Servaes (1990, 1995) in the case of inside ownership structure. This approach ignores the fact that firms are directed by a network of relationships, and that an attempt to single out any one aspect of corporate governance ignores this network. It also disregards interdependence amongst components of this network and the process by which combinations of these mechanisms are chosen in order to maximise the value of the firm. Interdependence amongst these alternative control mechanisms can make regressions relating the use of any single mechanism to firm performance difficult to interpret. Where these mechanisms are interdependent, the increased use of one will be associated with reduced use of another, resulting in equally good performance (provided they are optimally chosen). Therefore, it is proposed that managerial equity ownership, directors' compensation and the composition of the board are part of a simultaneous system that determines the value of the corporation. Thus, by treating these variables as endogenously determined this study presents an integrated investigation into the relation between corporate governance and firm performance by explicitly incorporating the simultaneity of the process determining these variables into the empirical estimation.

The model to be estimated here provides for the endogenous determination of managerial ownership, directors' remuneration, the composition of the board and the value of the firm. However, each of these variables has exogenous determinants within the firm's environment. Many of these effects have already been discussed in the literature review but are re-iterated here for the purpose of building a empirical model. The justification for the inclusion of these exogenous determinants is based on the prior theoretical and empirical research that has analysed corporate governance and firm performance.

Theoretical finance provides a starting point from which basic predictions on the relations between corporate governance variables and the performance of the firm can be developed. Agency theory (Jensen and Meckling, 1976) and a number of ownership structure theories (e.g. Weston's entrenchment hypothesis) have already been discussed in the literature review. In addition, principal agent theory allows us to draw a number of hypotheses regarding the incentives offered to the executive and how his activities are monitored. For instance, principal agent theory has been used to model the executive compensation contract. The standard approach to specifying the CEO's compensation is to estimate the equation below

$$Y_i = b_0 + b_1 R_i$$

where Y is the CEO's compensation, R is a measure of firm I's income, and $b_I$ indicates the sensitivity of CEO pay to firm performance. This equation forms the basis of a number of theoretical and empirical studies of the relation between managerial compensation and firm performance (Holmstrom and Milgrom 1987, Garen 1994, Conyon and Leech 1994). The slope of the equation, $b_I$, indicates the sensitivity of executive compensation to the performance of the firm.

For a utility maximising CEO who chooses his level of effort, $\mu$, optimally, Holmstrom and Milgrom (1987) solve $b_I$ as

$$b_I = 1/(1 + k\rho\sigma^2)$$

where $\rho$ is the coefficient of absolute risk aversion, k is equal to the ratio of incentive pay to effort over the elasticity of effort with respect to $b_I$, $\sigma^2$ is the variance in firm value. Therefore, the more risk averse the agent and the more risky the firm, then compensation is less sensitive to performance. Unfortunately, even such a simple model is difficult to test here as we are not accurately aware of factors such as the CEO's utility function, his level of risk aversion or his investment portfolio. In addition, measurement problems such as the fact that $\sigma^2$ is large for very large firms, can lead to very low values of $b_I$. Therefore, the simple principal agent model is difficult to relate to observed levels of the sensitivity of CEO pay to firm performance.

Garen (1994) modifies the simple Holmstrom and Milgrom model. He extends the model by incorporating the return to both the CEO and the investor in terms of the capital asset pricing model, that is, they each allocate part of their wealth/salary to a risk free asset and part to the market portfolio[3]. This model yields the following predictions: $b_I$ decreases with increases in the variance of the firm's return, and increases in the firm's assets. For CEO's with a large amount of their wealth in the market portfolio, $\sigma_{fm}$ lowers $b_I$. As Garen states (p. 1183),

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[3] He produces the following solution for $b_I$

$$b_I = (1 - k(\rho M - q)T\sigma_{fm})/(1 + k\rho T^2\sigma_f^2)$$

where M is the amount of CEO's income allocated to the market portfolio, q is the market price of risk, T is total assets, and $\sigma_{fm}$ is the covariance of the firm and the market return.

> *"The general intuition of these findings is as expected from principal-agent theory. The setting of pay involves a trade-off between incentives and insurance. As the output the agent produces becomes inherently riskier, the insurance component of pay is increased and the incentive component is reduced"*

Nonetheless, Garen finds that the explanatory power of his empirical tests of the principal-agent model are low, and that the model fails to explain a number of aspects of executive compensation, such as relative performance pay.

Huddart provides a more complete model which incorporates the incentives of executives with the costs of monitoring by (large) shareholders[4]. He makes the following predictions. First, monitoring depends on the risk aversion of the principal and agent and on the size of the major shareholder's holding in the firm. Second, the power of the executive's incentives and the intensity of monitoring increase with the ownership share of the major shareholder. Finally, monitoring is most intensive at intermediate levels of risk aversion. In effect, the Huddart model predicts that large shareholders will only monitor and set the executive's compensation contract, when it is beneficial for them to do so. Huddart therefore anticipates that the market price of a stock will increase as the concentration of stock ownership grows.

While the above models yield a number of interesting predictions, they are difficult to test empirically. For instance, we cannot accurately determine the levels of risk aversion, utility and wealth of executives and shareholders. In addition, the models may not adequately allow for the complete range of determinants of incentives and monitoring mechanisms, and may require often unavailable or unobservable information to test their predictions. Furthermore, tests of the principal agent model, at least with regard to executive compensation, have no yielded statistically strong results (Garen). Therefore, this study does not seek to explicitly test a principal agent model, but nonetheless uses the basic predictions from principal agent theory to inform the empirical framework presented here. In comparison to the approach of Garen (1994), Conyon and Leech (1994) present a more realistic framework, based on

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[4] In this case, the large shareholder (who holds $\alpha$ of the firms shares) needs to maximise the expected utility, Eu $\{\alpha[x - w(y)] - c\gamma^2\}$ which essentially represents his share of the output of the firm (x), less the manager's compensation (w(y)), and less the cost of monitoring to the major shareholder ($c\gamma^2$). (If the monitoring costs were shared amongst all the shareholders then the cost of doing so ($c\gamma^2$) would be included inside the square brackets).

Similar to Garen, Huddart expresses the managers compensation (w(y)) as the linear function $w(y) = b + ay$, where b is the intercept of the compensation contract equation, a is the slope and y is the (noisy) signal of managerial effort.

the basic principal agent linear compensation equation. Their empirical model contains "other variables which are also potentially important in shaping top pay". They expand the linear compensation equation to include performance measurement and corporate governance variables. This study adopts a similar approach, beginning with a system of equations where firm value, managerial equity ownership, directors' remuneration and the board of directors are endogenous variables. Each of these is also influenced by a number of exogenous variables.

The most important exogenous variable in this system of equations is outsider equity ownership. Unlike the executive's compensation contract and the composition of the board, the size and number of large blockholders is decided outside the firm. The composition of outside blockholdings is usually determined by maximising the welfare of the blockholder and not the value of the firm. For instance, it is more likely that an investor chooses the size and type of an equity block with more regard to his investment portfolio than to the corporate governance characteristics of a particular firm. Therefore, outsider ownership is not classified as an endogenous variable, but as an important exogenous one. The relation of this variable to the performance of the firm, and to the other governance mechanisms is discussed in detail at a later stage (Chapter 6).

The endogenous variables are effected in the following ways by a number of exogenous variables. Consider first managerial equity ownership. It is proposed that managerial ownership is exogenously determined by both outsider equity ownership and risk. Managerial equity holdings often represent a large proportion of total managerial wealth, thereby leaving the manager under-diversified. Systematic risk exposes already risk averse managers to market risk, and consequently managers will be inclined to hold less shares where systematic risk is high. The greater the number of shares held by blockholders, and the greater the number of blockholders, the less shares there will be available for managers to own, and more importantly managers will be less willing to hold large equity stakes given the potential control exercised by blockholders.

It also follows that the size and number of blockholders will be a determinant of the composition of the board as outsiders seek to have their representatives on the board.

There is empirical evidence that directors' remuneration is smaller in the presence of large blockholders, so we postulate a negative relation between outsider equity ownership and directors' remuneration. Finally, the debt to equity ratio, the log of firm size and industry dummies are included in each of the equations in order to control for the effects of firm size, leverage and industry.

### 2.14.2 Structural Model

The structural equations below provide a framework within which we examine a number of hypotheses and relations. In general, two areas of interest are examined. First, we explore for evidence of interdependence among the governance mechanisms and also of the effects of exogenous variables on these. Second, the study examines the empirical relation between the governance mechanisms and firm performance as measured by Tobin's Q. In the light of the empirical findings from previous studies, we can make a number of predictions about these relations.

The format adopted here is similar to the approach found in a limited number of papers which have examined the relation between corporate governance and the value of the firm, in a simultaneous framework (e.g. Holthausen and Larcker, 1993, Chung and Pruitt, 1995). Specific testable hypotheses are proposed regarding the dependent variables and their endogenous determinants. In addition, predictions are made regarding the effects of other governance and firm structure variables on the dependent variables.

With regard to managerial equity ownership (OWN) it is proposed that higher levels of performance (Tobin's Q) lead managers to buy or be rewarded with more equity. It is also hypothesised that OWN is a negative function of the proportion of outside directors on the board, owing to increased checks on the activities and control of the manager as the proportion of outsiders on the board grows.

*Hyp 1A: Managerial ownership is a positive function of Tobin's Q*

*Hyp 1B: Managerial ownership is a negative function of the proportion of outside directors on the board (%ODIR)*

On the other hand, risk (Beta and the debt to equity ratio) and the size of the firm should have a negative impact on the size of insider's equity holdings (OWN) as these factors make it more costly for managers to build stakes. Finally, we can expect a negative relation between the size of significant outside shareholdings (OUT). Thus, equation (1) describes the choice of managerial equity ownership.

$$OWN^5 = f(TQ, \%ODIR, OUT, BETA, D/E, IND, LS) \qquad (1)$$

Equation 2 below presents the hypothesised determinants of remuneration per insider director (DR/ID). If remuneration and equity holdings are relative forms of compensation, then we expect a negative relation between OWN and DR/ID. Increased monitoring by non-executive directors should exert a negative influence on remuneration. Although previous evidence suggests a weak relation, we expect return on assets (ROA) to be positively related to DR/ID. Specifically,

*Hyp 2A: Directors' remuneration is a negative function of managerial ownership (OWN)*

*Hyp 2B: Directors' remuneration is a negative function of the proportion of outsiders on the board (%ODIR).*

*Hyp 2C: Directors' remuneration is a positive function of profitability (ROA).*

Previous evidence suggests that remuneration is determined by the structure of the firm and not performance. Therefore, a positive relation between firm size, risk (Beta and debt to equity ratio) and remuneration is predicted. We also expect outside controlled firms to pay less, and design the remuneration contracts of executives more efficiently, and therefore expect OUT to negatively influence DR/ID. Equation (2) describes the choice of directors' remuneration.

$$DR/ID = f(ROA, OWN, \%ODIR, OUT, BETA, D/E, IND, LS) \qquad (2)$$

In equation 3, the determinants of the composition of the board (%ODIR) are modelled. Insider ownership and firm performance (Tobin's Q) are endogenous variables. It is expected that insider ownership has a negative effect on %ODIR, and although the effect of Tobin's Q is more ambiguous, it is likely to have a positive effect on the composition of the board. Thus,

*Hyp 3A: The composition of the board is a negative function of managerial ownership (OWN).*

*Hyp 3B: The composition of the board is a positive function of Tobin's Q.*

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[5] Key: TQ (Tobin's Q), OWN (Managerial Equity Ownership), OUT (Total Equity held by Outsiders (>3%), NB (Number of Blockholders), %ODIR (Proportion of Outsiders on the Board), BETA (Beta), LS (Log Firm Size), D/E (Debt to Equity ratio), IND (Industry dummy variables).

Furthermore, we also expect the level of significant outside equity holdings (OUT) to have a positive effect on the number of non-executive directors on the board. Firm structure, in the form of the debt to equity ratio and firm size are expected to have a positive effect on the composition of the board. Increased levels of debt will necessitate more independent directors, and expanding firms lead to the adoption of more directors. The choice of %ODIR is described as follows.

$$\%ODIR = f(TQ, OWN, OUT, D/E, IND, LS) \quad (3)$$

Finally, regarding equation 4, we expect that firm performance is a function of the endogenous choices for corporate governance mechanisms (OWN, DR/ID, and %ODIR). If the firm chooses the combination of the three internal governance mechanisms optimally, then we expect no cross-sectional relation between the value of the firm and the extent to which these mechanisms are used. (In keeping with previous work, the effect of insider equity ownership is modelled as non-linear). Essentially, this is the null hypothesis of this study. If it is accepted then it implies that corporate governance contracts in the UK are generally efficient. On the other hand, if it is rejected the alternative interpretation is that one or more of the governance variables is sub-optimally chosen.

*Hyp 4: Tobin's Q is a function of the optimal choice of managerial ownership (non-linear), directors' remuneration and the proportion of outsiders on the board.*

If one of these mechanisms is significantly related to Tobin's Q within a systems equation, then we can conclude that it is not set with the maximisation of firm value in mind. Furthermore, we would expect a positive relation to exist between outsider equity ownership and firm value. Equation (4) describes the determinants of firm value.

$$TQ = f(OWN, OWN^2, \%ODIR, DR/ID, OUT, LS, IND., D/E) \quad (4)$$

## System of Equations

1. OWN = f(TQ, %ODIR, OUT, BETA, D/E, IND, LS)

2. DR/ID = f(ROA, OWN, %ODIR, OUT, BETA, D/E, IND, LS)

3. %ODIR = f(TQ, OWN, OUT, D/E, IND, LS)

4. TQ = f(OWN, OWN$^2$, %ODIR, DR/ID, OUT, LS, IND., D/E)

# Chapter 3 Data and Methodology

## 3.1 Introduction

This chapter describes the data used in the empirical tests conducted in this study, presents summary statistics relating to them, and introduces the regression methodologies employed. Summary evidence relating to the data is presented in the form of descriptive statistics (Section 3.7), sample data correlation matrix (Section 3.8), sample data ranked by ownership structure (Section 3.9), and industry analysis (Section 3.10). Section 3.11 presents the regression techniques (Ordinary Least Squares and Three Stage Least Squares) used to analyse the data. Section 3.12 provides a conclusion.

## 3.2 Data

A database comprising of a large cross-sectional sample of 1067 U.K firms for the year 1995, has been collected. All of the company account data for this study has been obtained from the Datastream data service. Company account data for an initial sample of 1128 U.K based non-financial firms was collected at 31 May 1995. The size of this sample was reduced to 1067 after firms with missing or inferior data were removed. In order to test the stability of the cross-sectional regression analysis over time, two smaller samples of panel data are collected. First, additional ownership structure data is collected for 182 firms for the years 1996 and 1997. Second, data on directors' remuneration and firm performance was collected for 120 firms for the years 1993-1997. The difficulty in obtaining time series ownership and remuneration data for U.K based firms is underlined by the fact that theses two samples are based on an original list of the largest 350 UK firms. This list was chosen on the basis that data for these larger firms was more likely to be available and accurate. However, the fact that ownership and remuneration time series data was available for only 182 and

120 firms, respectively, illustrates the difficulty of collecting UK corporate governance data.

Market value data for each of these firms at their Balance Sheet date was obtained from the Extel data service. The market value data corresponds in date (that is, market value at the balance sheet date) with the Balance Sheet data in order to ensure accuracy and to capture the annual returns on capital invested by management. Ownership structure data for this sample was collected from Datastream. (In order to ensure the accuracy of the data obtained from Datastream, ownership structure data for approximately fifty companies was cross-checked with company accounts. Company account data was also cross-checked against data from the Extel service). Finally, data on Beta coefficients was obtained from the London Business School Risk Measurement Service.

## 3.3 London Stock Market Data

While the London Stock Market is the third largest in the world, and the most important one in Europe, there is a relative lack of empirical work based on it. One reason for this is the difficulty in compiling satisfactory databases of U.K stock market data. The quality of databases is further compromised by reporting standards in the U.K, which require companies to report less frequently and publish less data than for instance, the reports (for example, 10-K) required by the Securities and Exchange Commission in the U.S. A particular problem in this regard, was that current cost estimates of capital stock and other company account items were not available. However, a number of procedures (Section 4.8, Chapter 4) have been adopted in order to overcome this difficulty. As mentioned earlier, time series ownership structure data is extremely difficult to obtain for large samples, and this by and large restricts the researcher to cross-sectional analysis.

## 3.4 Measures of Ownership Structure

Six measures of share ownership and a number of other measures of corporate governance are analysed in this study. Different measures of insider and outsider share ownership are used to determine whether, for example, companies perform differently when controlled by different types of investor. The ownership structure data used here is collected from the Datastream company accounts service and relates to directors' and significant outsiders' shareholdings published in the most recent set of accounts at 31 May 1995. Insider ownership is defined as the shareholdings of company directors, as published in the company accounts. Two measures of insider ownership are used in the regression analysis. They are directors' beneficial holdings (OWNB) and total directors' holdings (OWN), (beneficial plus non-beneficial). Similarly, two other measures of ownership are used to test for a relationship between share ownership of outsiders and corporate performance. The first of these is outsider ownership (OUT) which is the total percentage of significant shareholdings (greater than 3% of the equity capitalisation) held by shareholders other than company directors. It is thus a measure of the significance of blockholders as much as it is a measure of outside ownership. Second, the variable AB measures the combined shareholdings of all insiders (directors) and all blockholders combined, and in this way it is not unlike the (INO + LB2) variable used by McConnell and Servaes.

A number of other ownership and corporate governance measures are used. The influence, and the ability to control and monitor corporate activities, of the largest outside blockholder is represented by the variable (LB1). This is similar in name and composition to the variable LB1 used by McConnell and Servaes, and constitutes the holding of the largest outside shareholder. The collective influence and power of outside shareholders is captured by the variable, NB, which gives the number of shareholders with holdings above 3% (Limitations in the data collected did not permit the construction of concentration ratios (Herfindahl). The percentage of non-executive directors on the board (%ODIR) is used as an indicator of outsider monitoring of management activities. The number of inside (DIR) and outside (ODIR) directors is also considered. Finally, the total amount of directors' remuneration is denoted by DR, while DR/D and DR/ID represent directors' remuneration scaled by the number of inside directors and the number of outside directors, respectively. Remuneration does not include important performance related components of pay such as stock options. This is a weakness in the data currently available for U.K firms, although some authors (Chung and Pruitt, 1995) have suggested that this should not have a material bearing on the results of regression tests analysing the link between firm performance and executive pay.

It is important to note that 3% is the level of share ownership classified as significant by the London Stock Exchange[6] (Yellow Book). This figure was previously 5% (pre 1989), similar to that amount deemed significant by the Securities and Exchange Commission in the United States.

There are a number of problems with the way in which outsider ownership data is reported. For example, firms are not required to report holdings which are less than 3% of the company's issued shares. Consequently, we cannot determine the contribution of investors who hold less than 3% of the firm's equity, to the corporate governance of the firm. This limits the scope of available data as the majority of large U.K investors are likely to hold stakes in large firms (FT100 companies) which are lower than 3% of the firm's equity. We are also unable to explicitly examine the possibility of coalition formation on the part of these investors. Furthermore, additional data could clarify the issue of whether the identity and motivation of a large shareholder affect his role as a monitor.

## 3.5 Control variables

It has been shown that firm value varies across factors such as firm size (Banz,1981, Fama and French,1992), debt (Miller and Modigliani,1958, Ross,1977) and industry classification (Lindenberg and Ross,1981). In order to account for any performance biases and also to accord with previous research, three control variables are used in the regression analysis to control for other influences on firm value. These variables are: the book value of firm assets, the debt equity ratio and industry dummy variables. These additional measures should increase the explanatory power of the regression analysis results.

Similar control measures to the three mentioned above, have been used in previous related studies: Barnhart, Marr and Rosenstein (debt, size and industry code), Morck et al. (debt ratio, replacement cost of assets, industry codes), Mehran (logarithm of total assets, debt ratio), Demsetz and Lehn (total assets), McConnell and Servaes (debt

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[6] The Companies Act 1989 redefined significant shareholdings from 5% to 3%.

ratio, and total assets). Unfortunately, the above studies also used two important control variables, advertising and research and development expenditures, both of which are not fully available in U.K databases.

With regard to controls for firm size, most studies (including Berger, Ofek and Yermack, 1997, Agrawal and Knoeber,1995), favour the use of the book value of assets as a control variable, because market value based measures can lead to biased results. However, the use of book value of assets as a proxy for firm size is consistent with the fact that control variables such as the debt to equity ratio use the book value of assets as their denominator.

## 3.6 Study Variables

Table 3.1 presents the data used in this study and lists the variable names assigned to them. The variables are divided into the following categories: ownership structure, performance measurement, board of directors, risk, remuneration and control variables. Table 3.6 (Appendix) lists the Datastream codes of the variables in this sample.

Table 3.1 Definitions of Variables employed in Regression Analysis

| Variable Type | Name | Description |
|---|---|---|
| **Ownership Structure** | | |
| | OWN | Directors non-beneficial and beneficial shares |
| | OWNB | Directors beneficial holdings |
| | OWNNB | Directors non-beneficial holdings |
| | OUT | Holdings of non-directors >3% |
| | AB | Combined holdings of directors and outsiders |
| | LB1 | Largest single outsider shareholder |
| | NB | Number of outsider shareholders >3% |
| | L15 | Outside holdings > 15% |
| **Performance Measurement** | | |
| | MBV | Market to Book Value |
| | TQ | Tobin's Q |
| | Blundell Q | Q estimator used by Blundell et al. (1991) |
| | ROA | Return on Assets (Op. Profit/CAP) |
| **Board of Directors** | | |
| | ODIR | Number of outside directors on the board |
| | DIR | Number of directors on the board |
| | %ODIR | Percentage of non-executives on the board |
| **Risk** | | |
| | Beta | Beta |
| | CoC | Cost of Capital |
| | STD | Standard deviation of monthly stock returns (60 months, 1990-1995). |
| **Remuneration** | | |
| | DR | Directors' Remuneration |
| | DR/D | Remuneration per director |
| | DR/ID | Remuneration per inside director |
| | HIDIR | Highest paid directors' remuneration |
| **Control Variables** | | |
| | D/E | Debt/Equity ratio (relative to b.v. assets) |
| | IND. | Three digit industry code |
| | CAP | Total value (book) of assets |
| | MVBS | Market Value at Balance Sheet date |
| | LS | Logarithm of book value of assets |
| | LMVBS | Logarithm of MVBS |
| | Sales | Total Sales |
| | DPS | Dividend per Share |
| | R & D | Research & Development |
| | T.INV | Total Investment |

## 3.7 Descriptive Statistics

The variables which represent firm value, Tobin's Q (TQ), and Market to Book Value (MBV), have high mean and median values. This is a reflection of a buoyant stock market during this period (1994-1995), and are also indicative of the more problematic issue of high variance in the Tobin's Q values appearing in the literature. For example, only 14 out of 371 companies in the Morck. et al. sample have a Tobin's Q value greater than 1, while on the other hand Barnhart, Marr and Rosenstein report an average of 2 for their Market to Book value type variable. However, the average value of the adjusted Blundell Q, is closer to what would be expected to be an average Q value (that is, 1), although this measure does appear to be more variable than either Tobins' Q or MBV. Nonetheless, Blundell Q is still relegated to the role of substitute performance measure because it is more difficult to calculate than TQ or MBV, and industry specific price index data is difficult to obtain. This should not have a strong impact on the results as all three measures are closely correlated. Sections 4.8 (Chapter 4) and 5.4 (Chapter 5) discuss the procedures adopted in this study to ensure that the firm value measures employed here are accurate and reliable.

The average values for the study variables reported here are very similar to those presented in other studies based on ownership structure. In Table 3.2.A, average values for OWNB and OWN are 13% and 15.9%, respectively. In McConnell and Servaes (1990), the corresponding measures for OWN are 13.6% (1976) and 11.8% (1986), while the corresponding measure for OWN in Denis, Denis and Sarin (1996) is 11.7%. McConnell and Servaes also report average figures for OUT: 32% (1976) and 25% (1986), while the figure here is 31.26% (Table 3.2.A). This would seem to indicate that ownership structure is stable over time.

Furthermore, the average figure for D/E in this study is 28%, which is similar to a number of other studies (for example, Holthausen and Larcker, Bagnani et al.). A final example is the proportion of outside directors on the board, which in this case is 38% (Table 3.2.C), and is given as 37% in Main and Johnston (1993), and as 36% in Peel and O'Donnell (1995).

Table 3.2.A: Descriptive Statistics

| Statistic | OWNB | OWNNB | OWN | OUT | AB | LB1 | NB | L15 |
|---|---|---|---|---|---|---|---|---|
| *Average* | 13.04 | 2.84 | 15.90 | 31.26 | 47.32 | 14.12 | 4.10 | 9.09 |
| *Median* | 5.00 | 0.00 | 6.45 | 29.15 | 48.90 | 10.95 | 4.00 | 0.00 |
| *Max.* | 80.00 | 95.20 | 95.20 | 99.69 | 100.00 | 98.60 | 15.00 | 99.00 |
| *Min.* | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| *Stdev.* | 17.42 | 8.65 | 20.46 | 21.23 | 26.10 | 13.29 | 2.55 | 17.53 |

n=1067

Table 3.2.B: Descriptive Statistics

| Statistic | TQ | MBV | Blundell Q | DPS | ROA | D/E | CoC(%) | Beta |
|---|---|---|---|---|---|---|---|---|
| *Average* | 1.94 | 1.65 | 1.07 | 0.08 | 0.11 | 0.28 | 9.84 | 0.902 |
| *Median* | 1.69 | 1.37 | .80 | 0.04 | 0.12 | 0.21 | 9.82 | 0.9 |
| *Max.* | 6.53 | 6.53 | 5.89 | 16.00 | 2.43 | 4.14 | 14.41 | 2.4 |
| *Min.* | 0.02 | 0.00 | -.94 | 0.00 | -4.26 | 0.00 | 6.49 | 0.09 |
| *Stdev.* | 1.10 | 1.07 | 1.15 | 0.51 | 0.26 | 0.34 | 1.26 | 0.29 |

Table 3.2.C: Descriptive Statistics

| Statistic | Dir | ODir | %ODIR | LS | DR/D | DR/ID |
|---|---|---|---|---|---|---|
| *Average* | 7.16 | 2.81 | 0.38 | 7.59 | 93524 | 166955 |
| *Median* | 7.00 | 3.00 | 0.40 | 7.41 | 75125 | 125000 |
| *Max.* | 23.00 | 16.00 | 1.00 | 10.54 | 934000 | 2335000 |
| *Min.* | 0.00 | 0.00 | 0.00 | 5.12 | 0 | 0 |
| *Stdev.* | 2.65 | 1.72 | 0.18 | 0.82 | 75878 | 154362 |

## 3.8 Correlation matrix

The evidence (Table 3.3) from the correlation matrix shows that ownership structure is strongly correlated with factors such as systematic risk, firm size, dividend yield, and the number of directors. This has implications for both of the control variables used here and for the analysis of the relation between corporate governance and firm value. It is also notable that the two principal measures of firm value used here, Tobin's Q and MBV, are 94% correlated with each other.

Table 3.3 Correlation Matrix

| | TQ | MBV | CoC | DirRem | DIR | DPS | Nonexe | OWNB | OWNNB | OWN | AB | OUT | LB1 | N3 | D/E | BETA | %ODIR | ROA | DR/D | DR/ID | LS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TQ | 1.00 | | | | | | | | | | | | | | | | | | | | |
| MBV | 0.94 | 1.00 | | | | | | | | | | | | | | | | | | | |
| CoC | -0.03 | 0.07 | 1.00 | | | | | | | | | | | | | | | | | | |
| DirRem | 0.01 | -0.01 | 0.25 | 1.00 | | | | | | | | | | | | | | | | | |
| DIR | 0.01 | 0.02 | 0.23 | 0.61 | 1.00 | | | | | | | | | | | | | | | | |
| DPS | -0.03 | -0.01 | 0.00 | 0.04 | 0.05 | 1.00 | | | | | | | | | | | | | | | |
| Nonexec | -0.03 | -0.03 | 0.21 | 0.40 | 0.66 | 0.03 | 1.00 | | | | | | | | | | | | | | |
| OWNB | 0.00 | 0.01 | -0.14 | -0.14 | -0.13 | -0.04 | -0.20 | 1.00 | | | | | | | | | | | | | |
| OWNNB | -0.03 | -0.02 | -0.09 | -0.07 | 0.00 | -0.02 | -0.05 | 0.17 | 1.00 | | | | | | | | | | | | |
| OWN | -0.01 | 0.01 | -0.16 | -0.15 | -0.11 | -0.04 | -0.20 | 0.92 | 0.54 | 1.00 | | | | | | | | | | | |
| AB | -0.09 | -0.08 | -0.19 | -0.21 | -0.15 | -0.01 | -0.14 | 0.57 | 0.33 | 0.62 | 1.00 | | | | | | | | | | |
| OUT | -0.10 | -0.10 | -0.08 | -0.11 | -0.08 | 0.02 | 0.02 | -0.19 | -0.12 | -0.21 | 0.64 | 1.00 | | | | | | | | | |
| LB1 | -0.05 | -0.07 | -0.04 | -0.06 | -0.01 | 0.09 | 0.08 | -0.12 | -0.02 | -0.11 | 0.50 | 0.71 | 1.00 | | | | | | | | |
| N3 | -0.08 | -0.06 | -0.08 | -0.11 | -0.09 | -0.05 | -0.04 | -0.11 | -0.05 | -0.11 | 0.46 | 0.68 | 0.11 | 1.00 | | | | | | | |
| D/E | 0.23 | -0.10 | -0.31 | 0.04 | -0.02 | -0.03 | 0.00 | -0.03 | -0.03 | -0.04 | -0.05 | -0.03 | 0.00 | -0.05 | 1.00 | | | | | | |
| BETA | -0.01 | -0.05 | 0.70 | 0.20 | 0.16 | -0.05 | 0.17 | -0.12 | -0.08 | -0.14 | -0.15 | -0.06 | -0.02 | -0.07 | 0.12 | 1.00 | | | | | |
| %ODIR | -0.02 | -0.04 | 0.12 | 0.05 | 0.13 | -0.01 | 0.76 | -0.15 | -0.08 | -0.16 | -0.07 | 0.07 | 0.11 | 0.02 | 0.05 | 0.11 | 1.00 | | | | |
| ROA | 0.18 | 0.27 | 0.08 | 0.06 | 0.06 | 0.03 | 0.01 | -0.02 | 0.00 | -0.01 | -0.10 | -0.11 | -0.08 | -0.06 | -0.25 | -0.09 | -0.05 | 1.00 | | | |
| DR/D | 0.04 | 0.01 | 0.28 | 0.92 | 0.41 | 0.03 | 0.28 | -0.13 | -0.08 | -0.15 | -0.20 | -0.11 | -0.07 | -0.10 | 0.07 | 0.24 | 0.05 | 0.06 | 1.00 | | |
| DR/ID | 0.01 | -0.02 | 0.27 | 0.83 | 0.38 | 0.02 | 0.47 | -0.17 | -0.09 | -0.18 | -0.20 | -0.06 | -0.02 | -0.08 | 0.09 | 0.25 | 0.33 | 0.03 | 0.91 | 1.00 | |
| LS | 0.09 | 0.09 | 0.44 | 0.66 | 0.61 | 0.12 | 0.50 | -0.26 | -0.09 | -0.26 | -0.33 | -0.16 | -0.08 | -0.16 | 0.03 | 0.31 | 0.18 | 0.15 | 0.64 | 0.61 | 1.00 |

## 3.9 Data ranked by Ownership Structure

This section presents average values for the sample data ranked by ownership structure and firm size. In general, it appears that the highest levels of performance (Tobin's Q) occur where insider ownership is close to 20% (that is, 15%-20%, 20%-25%), and where outside ownership is close to 10%. The small number of firms where equity holdings exceed 30%, makes it difficult to make more authoritative deductions and comparisons from these tables.

Table 3.4.A: Average values (per decile) for sample data ranked according to the Log of Firm Size (LS)

| | LS | TQ | OWN | OUT | N3 | D/E | NB | ROA | DR/ID | %ODIR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 16.41 | 1.66 | 21.35 | 28.48 | 3.63 | 0.30 | 0.84 | 0.08 | 35772 | 0.42 |
| 2 | 16.46 | 1.55 | 22.18 | 34.56 | 4.66 | 0.21 | 0.77 | 0.12 | 66716 | 0.43 |
| 3 | 16.86 | 1.59 | 22.17 | 33.54 | 4.22 | 0.28 | 0.80 | 0.10 | 84088 | 0.40 |
| 4 | 17.38 | 1.90 | 21.20 | 31.67 | 4.41 | 0.21 | 0.81 | 0.10 | 99437 | 0.42 |
| 5 | 17.77 | 1.81 | 14.86 | 32.50 | 4.42 | 0.24 | 0.84 | 0.12 | 117597 | 0.38 |
| 6 | 17.96 | 2.06 | 12.53 | 34.11 | 4.64 | 0.32 | 0.94 | 0.11 | 136500 | 0.41 |
| 7 | 18.38 | 1.94 | 11.96 | 31.77 | 3.95 | 0.26 | 0.93 | 0.12 | 165221 | 0.36 |
| 8 | 19.12 | 1.89 | 13.81 | 31.16 | 4.25 | 0.28 | 1.04 | 0.08 | 204685 | 0.33 |
| 9 | 19.95 | 1.88 | 9.38 | 25.34 | 3.41 | 0.33 | 1.03 | 0.13 | 281763 | 0.33 |
| 10 | 21.00 | 1.75 | 8.19 | 28.68 | 3.40 | 0.37 | 1.07 | 0.13 | 546750 | 0.35 |

Table 3.4.B: Average values (per decile) for sample data ranked according to Tobin's Q

| | TQ | OWN | OUT | N3 | D/E | NB | ROA | DR/ID | LS | %ODIR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.78 | 18.33 | 36.77 | 4.45 | 0.10 | 0.86 | 0.01 | 140972 | 17.22 | 0.36 |
| 2 | 0.95 | 18.29 | 35.16 | 4.57 | 0.23 | 0.89 | 0.06 | 147342 | 17.70 | 0.38 |
| 3 | 1.15 | 18.06 | 32.16 | 4.07 | 0.24 | 0.90 | 0.05 | 143890 | 17.66 | 0.39 |
| 4 | 1.31 | 14.81 | 31.20 | 4.11 | 0.28 | 0.93 | 0.11 | 180191 | 18.20 | 0.39 |
| 5 | 1.51 | 14.02 | 28.96 | 3.76 | 0.32 | 0.94 | 0.11 | 202669 | 18.58 | 0.41 |
| 6 | 1.67 | 13.96 | 29.70 | 4.07 | 0.29 | 0.93 | 0.11 | 189917 | 18.61 | 0.40 |
| 7 | 2.01 | 13.77 | 31.66 | 4.11 | 0.29 | 0.86 | 0.12 | 181317 | 18.17 | 0.39 |
| 8 | 2.36 | 15.25 | 30.16 | 4.52 | 0.31 | 0.90 | 0.14 | 147565 | 18.13 | 0.38 |
| 9 | 2.89 | 15.35 | 27.80 | 3.69 | 0.27 | 0.95 | 0.19 | 170919 | 18.45 | 0.37 |
| 10 | 3.75 | 17.47 | 28.69 | 3.70 | 0.49 | 0.84 | 0.19 | 153036 | 17.95 | 0.36 |

Table 3.4.C: Average values (per decile) for sample data ranked according to Insider Equity Ownership (OWN)

| | OWN | TQ | OUT | N3 | D/E | NB | ROA | DR/ID | LS | %ODIR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.01 | 1.69 | 17.48 | 1.76 | 0.24 | 0.92 | 0.16 | 237051 | 19.23 | 0.40 |
| 2 | 0.14 | 1.78 | 28.55 | 3.51 | 0.34 | 0.96 | 0.08 | 246776 | 19.17 | 0.46 |
| 3 | 0.59 | 1.82 | 41.25 | 4.70 | 0.29 | 0.99 | 0.11 | 176604 | 18.49 | 0.40 |
| 4 | 1.89 | 1.88 | 38.66 | 5.06 | 0.27 | 0.94 | 0.12 | 172227 | 17.95 | 0.42 |
| 5 | 4.87 | 1.96 | 34.81 | 4.70 | 0.29 | 0.97 | 0.14 | 160032 | 18.27 | 0.39 |
| 6 | 9.39 | 1.81 | 36.65 | 5.11 | 0.28 | 0.85 | 0.10 | 140035 | 17.78 | 0.41 |
| 7 | 16.69 | 1.67 | 37.23 | 5.01 | 0.29 | 0.85 | 0.10 | 151787 | 17.70 | 0.36 |
| 8 | 26.74 | 1.78 | 34.49 | 4.65 | 0.25 | 0.84 | 0.05 | 122138 | 17.26 | 0.33 |
| 9 | 42.97 | 1.85 | 26.20 | 3.75 | 0.27 | 0.84 | 0.11 | 125914 | 17.25 | 0.33 |
| 10 | 66.27 | 1.82 | 13.63 | 2.55 | 0.26 | 0.85 | 0.13 | 123011 | 17.47 | 0.35 |

Table 3.4.D: Average values (per decile) for sample data ranked according to Remuneration per Inside Director (DR/ID)

| | DR/ID | TQ | OWN | OUT | N3 | D/E | NB | ROA | LS | %ODIR |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 74562 | 1.38 | 27.06 | 33.05 | 4.12 | 0.25 | 0.79 | 0.00 | 15.31 | 0.33 |
| 2 | 85227 | 1.51 | 19.65 | 35.26 | 4.54 | 0.28 | 0.84 | 0.06 | 16.20 | 0.36 |
| 3 | 99439 | 1.52 | 18.70 | 33.16 | 4.31 | 0.31 | 0.81 | 0.07 | 16.69 | 0.36 |
| 4 | 126754 | 1.92 | 20.88 | 32.52 | 4.28 | 0.29 | 0.85 | 0.15 | 17.17 | 0.37 |
| 5 | 119507 | 1.93 | 14.71 | 35.15 | 4.85 | 0.28 | 0.80 | 0.11 | 17.63 | 0.38 |
| 6 | 146564 | 2.03 | 15.23 | 31.90 | 4.55 | 0.27 | 0.89 | 0.15 | 18.08 | 0.38 |
| 7 | 164986 | 2.05 | 13.35 | 32.88 | 4.33 | 0.22 | 0.89 | 0.15 | 18.68 | 0.40 |
| 8 | 195647 | 1.98 | 12.72 | 29.96 | 3.75 | 0.31 | 1.04 | 0.13 | 19.40 | 0.41 |
| 9 | 277847 | 1.87 | 7.99 | 25.86 | 3.19 | 0.29 | 1.10 | 0.15 | 20.48 | 0.43 |
| 10 | 434563 | 1.83 | 6.64 | 20.69 | 2.92 | 0.31 | 1.03 | 0.15 | 22.13 | 0.44 |

## 3.10 Industry Analysis

Tables 3.5.A and 3.5.B (Appendix) report industry averages for the study variables. The data is broken down into 23 industry groups. The most common industry groupings are food producers, retailers, leisure, and building materials. Tobin's Q tends to differ across industries, usually according to the growth rate of the industry and the type of good/service it produces (Fruhan,1979, Lindenberg and Ross,1981). High Q industries tend to have characteristics such as high R&D (Aerospace), high growth (Media), and involve high technology (Computers). On the other hand, low Q industries tend to be capital intensive and declining (Transport, Utilities, Oil).

## 3.11 Methodology - Simultaneous Equations

Previous work has investigated the relation between corporate governance and the value of the firm by assuming first of all that governance mechanisms influence firm value even though there is a strong case to be made for claiming that insider equity ownership for example, is endogenous to performance. Indeed, it is unlikely that the relation between corporate governance mechanisms and firm performance is unidirectional in its causality.

If we presume that Tobin's Q and insider ownership structure for example, are simultaneously determined, then analysis of the relation between these variables using Ordinary Least Squares (OLS) can produce misleading results. If the system of equations in question is non-recursive, OLS estimation will not give consistent estimates of the coefficients in these equations. These estimates are biased where the predictor variable(s) is correlated with the error terms of the dependent variable. Therefore, it is necessary to use simultaneous equations to analyse the effects of a system of governance mechanisms on firm value.

Simultaneous equations require variables to be classified as either endogenous or exogenous. Endogenous variables are determined by/within the economic model and exogenous variables are determined outside of it (Maddala,1988, Dougherty,1992). Simultaneous equations first obtain a predicted value of the endogenous variable which is a good predictor of the dependent variable, but is not correlated with the error terms. This predicted endogenous variable is then used to explain the dependent variable in the second stage of the analysis. The predicted variable is obtained by replacing the problematic endogenous variable with instrumental variables in an Ordinary Least Squares regression. Instrumental variables are variables that are not influenced by other variables in the model but that do influence those variables. Effective instruments are highly correlated with the endogenous variables, but are not correlated with the error terms (although in practice this is difficult to determine).

Of the few studies to apply this methodology to the study of corporate governance, Holthausen and Larcker, and Agrawal and Knoeber employ Two Stage Least Squares while Chung and Pruitt, and Jensen, Zorn and Solberg, use another method of estimating simultaneous equations called Three Stage Least Squares (3SLS). The difference between the two approaches is that 2SLS are limited information models while 3SLS are full information models. Limited information models are like OLS, single equation methods, although they distinguish between endogenous and exogenous variables in the equations, and within the system. These methods are termed limited as they do not exploit the information available about (including restrictions on) the other equaions in the system. Full information methods attempt to estimate all of the structural equations for all values simultaneously. This allows them to exploit the information from the entire system while estimating each of its structural equations; hence, they use both intra- and inter-equation information. In order to present a comprehensive analysis of the relation of corporate governance mechanisms to firm value, a system (3SLS) of equations is used here. This technique is applied to the system of equations specified in Section 2.13.

The simultaneous equations analysis is constrained by a number of factors. First, the simultaneous models specified here may be incomplete in that they do not contain the full set of exogenous variables, which determine the endogenous ones. Holthausen and Larcker comment on this problem

> *"there is the distinct possibility that our system of equations is mis-specified due to correlated omitted variables and inappropriate zero restrictions on the coefficients between the exogenous instruments and the endogenous variables" ( p.24).*

This is attributable to the composition of the original data set. Second, the number of instrumental variables which is specified for each non-recursive equation may be limited,

> *"another potential mis-specification occurs if the instruments are only weakly associated with the endogenous variables" (Holthausen and Larcker, p. 25).*

It is important to mention that some of the independent variables, which are termed exogenous, may in fact be endogenous (e.g outsider equity ownership). However, it is necessary to assume their exogeneity in order to assess the other endogenous variables. Noise is an additional problem. Agrawal and Knoeber (p.21) state that the expected relations in their system of equations are partly obscured by the fact that the coefficient estimates for the endogenous variables may be noisy.

## 3.12 Conclusion

This chapter describes the data collected for this study and reports the summary statistics and characteristics of that data. The data can be classified into the following categories: performance measures, ownership structure variables, risk measures, executive remuneration, the board of directors and control variables. A preliminary analysis of the data is presented in the form of descriptive statistics, correlations, rankings on the basis of ownership and industry analysis. Finally, the regression methodology (Three Stage Least Squares) which is used to analyse the data is presented.

# Appendix

Table 3.5.A: Average values of study variables for each industry group

| *Industry* | TQ | MBV | CoC | OWN | OUT | LB1 | NB |
|---|---|---|---|---|---|---|---|
| *Mines* | 1.4 | 1.29 | 9.12 | 4.62 | 40.81 | 18.30 | 4.44 |
| *Oil* | 1.38 | 1.08 | 9.97 | 13.43 | 26.56 | 15.22 | 2.96 |
| *Food & Drink* | 1.74 | 1.39 | 9.51 | 14.97 | 31.60 | 15.50 | 3.59 |
| *Clothing, Textiles* | 1.63 | 1.31 | 9.41 | 17.15 | 33.22 | 14.34 | 4.52 |
| *Furniture* | 2.58 | 2.18 | 9.55 | 25.45 | 26.49 | 13.37 | 3.83 |
| *Paper & Packaging* | 2.11 | 1.87 | 9.81 | 22.94 | 30.00 | 14.59 | 3.86 |
| *Engineering* | 1.90 | 1.55 | 9.69 | 16.52 | 31.97 | 13.74 | 4.31 |
| *Aerospace, Electronics* | 2.29 | 1.97 | 9.63 | 15.43 | 31.39 | 13.79 | 4.41 |
| *Instruments* | 1.86 | 1.69 | 9.97 | 13.33 | 33.28 | 14.79 | 4.47 |
| *Chemicals* | 1.98 | 1.76 | 10.25 | 9.16 | 32.36 | 18.64 | 4.08 |
| *Steel, Metals* | 1.61 | 1.39 | 10.40 | 13.77 | 48.80 | 18.83 | 6.50 |
| *Diversified Ind.* | 1.92 | 1.68 | 10.54 | 11.63 | 34.89 | 14.95 | 4.30 |
| *Utilities* | 1.57 | 1.39 | 10.45 | 5.36 | 27.06 | 14.45 | 2.92 |
| *Building* | 1.71 | 1.39 | 10.11 | 18.53 | 29.40 | 12.03 | 4.21 |
| *Vehicles* | 1.76 | 1.36 | 9.74 | 13.95 | 32.73 | 13.01 | 4.79 |
| *Distribution* | 1.88 | 1.50 | 9.51 | 17.30 | 27.81 | 12.70 | 3.64 |
| *Retailers* | 2.17 | 1.88 | 9.93 | 17.14 | 29.49 | 14.00 | 3.93 |
| *Hotels* | 1.91 | 1.61 | 9.93 | 14.52 | 30.15 | 14.42 | 3.73 |
| *Transport* | 1.52 | 1.20 | 10.19 | 13.32 | 29.55 | 13.65 | 3.33 |
| *Education* | 3.61 | 2.99 | 9.79 | 10.84 | 34.93 | 12.17 | 5.29 |
| *Bus.Support, Compt.* | 2.32 | 2.13 | 9.86 | 17.77 | 31.97 | 14.65 | 4.05 |
| *Leisure & Health* | 2.21 | 1.85 | 9.70 | 15.05 | 34.48 | 14.23 | 4.77 |
| *Media* | 3.05 | 2.96 | 10.28 | 11.45 | 31.58 | 12.13 | 4.13 |

Table 3.5.B: Average values of study variables for each industry group

| *Industry* | D/E | Beta | %ODir | ROA | DR/ID | LS |
|---|---|---|---|---|---|---|
| *Mines* | 0.93 | 0.86 | 0.50 | 0.10 | 239476 | 19.87 |
| *Oil* | 0.27 | 0.96 | 0.40 | 0.06 | 180876 | 18.57 |
| *Food & Drink* | 0.33 | 0.85 | 0.38 | 0.12 | 202135 | 18.79 |
| *Clothing, Textiles* | 0.31 | 0.84 | 0.34 | 0.12 | 137334 | 17.33 |
| *Furniture* | 0.27 | 0.82 | 0.30 | 0.18 | 101040 | 17.13 |
| *Paper & Packaging* | 0.22 | 0.90 | 0.34 | 0.11 | 154200 | 18.05 |
| *Engineering* | 0.33 | 0.92 | 0.39 | 0.07 | 179752 | 17.73 |
| *Aerospace, Electronics* | 0.26 | 0.82 | 0.40 | 0.14 | 148577 | 17.91 |
| *Instruments* | 0.16 | 0.85 | 0.37 | 0.13 | 174833 | 17.93 |
| *Chemicals* | 0.21 | 0.96 | 0.38 | 0.18 | 209137 | 18.57 |
| *Steel, Metals* | 0.17 | 1.00 | 0.39 | 0.08 | 127520 | 17.68 |
| *Diversified Ind.* | 0.22 | 1.03 | 0.36 | 0.12 | 219526 | 18.71 |
| *Utilities* | 0.17 | 0.86 | 0.46 | 0.16 | 177855 | 19.85 |
| *Building* | 0.28 | 1.01 | 0.37 | 0.05 | 141480 | 17.73 |
| *Vehicles* | 0.38 | 0.91 | 0.42 | 0.13 | 161246 | 17.93 |
| *Distribution* | 0.31 | 0.87 | 0.36 | 0.11 | 112058 | 17.15 |
| *Retailers* | 0.25 | 0.89 | 0.38 | 0.11 | 191797 | 18.61 |
| *Hotels* | 0.28 | 1.03 | 0.43 | 0.07 | 177446 | 18.54 |
| *Transport* | 0.32 | 0.92 | 0.38 | 0.10 | 146343 | 19.13 |
| *Education* | 0.54 | 1.02 | 0.40 | 0.21 | 194090 | 17.57 |
| *Bus.Support, Compt.* | 0.17 | 0.85 | 0.37 | 0.12 | 146786 | 17.45 |
| *Leisure & Health* | 0.34 | 0.84 | 0.41 | 0.12 | 184201 | 17.82 |
| *Media* | 0.09 | 0.97 | 0.49 | 0.11 | 189481 | 18.30 |

Table 3.6: Company account variables employed and their source

| Company Account Variable | DataStream Code | Notes: |
|---|---|---|
| Total Sales | 104 | |
| Political contributions | 121 | |
| Directors remuneration | 126 | |
| Charitable contributions | 128 | |
| No. directors. | 242 | |
| Nonexec. directors | 243 | |
| Subordinated Debt | 295 | |
| Deferred Capital | 302 | |
| Equity Cap. and Reserves | 305 | |
| Preference Capital | 306 | |
| Share Capital | 307 | |
| Short Term Loans | 309 | |
| Total deferred tax | 312 | |
| Long Term Provisions | 314 | |
| Minorities | 315 | |
| Long term Loans | 319 | |
| Convertible Loans | 320 | |
| Total Loan Capital | 321 | |
| Fixed Assets | 339 | |
| R and D | 342 | |
| Goodwill | 343 | |
| Total Intangibles | 344 | |
| Investments | 356 | |
| Other | 359 | |
| Total Cash | 375 | |
| Total Current Assets | 376 | |
| Prepayments | 378 | |
| Total Current Liabilities | 389 | |
| Net Current Assets | 390 | = 376-389 |
| Total Capital | 391 | =339+344+356+359+390 |
| Tax Paid | 433 | |
| Change in net cash | 457 | |
| Movements in Working Cap | 597 | |
| Borrowing Ratio | 733 | |
| Working Capital ratio | 741 | = 376/389 |
| Average salary per employee | 766 | |
| Operating Profit | 1008 | |
| Cash in from op. activities | 1015 | |
| Net Interest Income | 1018 | |
| Inv. serv. fin. | 1022 | |
| Cashflow pre investments | 1023 | |
| Cash out investments. | 1040 | |
| Cash in before finance | 1041 | |

| | |
|---|---|
| Cash in from finance | 1045 |
| Cash in after finance | 1046 |
| Exchange adjustments | 1047 |
| Net Cashflow | 1048 |
| Profit | 1087 |
| Beta | 'Beta' |
| Dividend per share | 'DPS' |
| P/C (Price to Cash) | PC |
| P/E (Price to Earnings) | PE |
| Directors beneficial shares (OWNB) | Prog. 130 |
| Directors non-beneficial (OWNnB) | Prog. 130 |
| OUT | Prog. 130 |
| AB | Prog. 130 |
| NB | Prog. 130 |
| LB1 | Prog. 130 |

# Chapter 4 Performance Measurement

## 4.1 Introduction

Most studies which examine the link between corporate governance and firm value use Tobin's Q as their measure of the value of the firm. However, the apparent popularity of Tobin's Q with academics belies the fact that it is difficult to accurately calculate it. The aim of this chapter is to combine the argument for using value based measures of performance[7] over accounting profit based ones, with a practical approach to constructing and using estimates of value based measures. Several "easy to construct" estimators of Tobin's Q (TQ) are considered here, and they are found to be very similar to each other, both conceptually and practically.

This chapter is structured as follows. Section 4.2 relates performance measurement to the agency theory of the firm. In Section 4.3 the shortcomings of accounting based measures of performance are discussed. The present value approach to calculating the value of the firm is reviewed in Section 4.4, and this is linked to the economic based measures of firm value presented in Section 4.5. Sections 4.6 and 4.7 highlight the background and the problems involved in constructing estimates of Tobin's Q. Finally, the measures of firm value employed in this study, and the reasons why they are chosen are presented in Section 4.8. Section 4.9 offers a conclusion

## 4.2 Performance Measurement and the Firm

In order to locate the role of performance measurement within the theory of the firm, we return to the agency theory discussed in Chapter 2. According to Jensen and Meckling (1976) and Fama (1980), the firm is run by agents (managers) who make investment decisions on the behalf of the principals (shareholders) with the goal of maximising shareholder wealth. Finance theory holds that shareholder wealth is created when firms invest in projects where the rate of return on capital is greater than

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[7] The terms "firm value" and "firm performance" are used interchangeably in the literature and also in this thesis. A more accurate approach would be to use the term "firm value" throughout and to recognise that performance is a determinant of value (for example, Black, 1986, p. 535).

the cost of capital. This is underlined by Edwards, Kay and Mayer (1987), who state that a firm acting in its shareholder's interest should assess investments on the basis of their net present value rather than by any rate of profit measure. More specifically, they identify investment appraisal as

> *"calculating the rate of profit on capital employed and .... comparing it to a measure of the opportunity cost of capital" (p. 12).*

We assume that the interests of managers and shareholders are not perfectly aligned and that agency costs arise out of this separation of ownership and control. As a result, shareholders will incur agency costs through monitoring and inducing managers to act in their interests. It is likely that these costs are related to the quality of the performance measure used to evaluate the outcome of managerial decisions. That is, the quality of monitoring depends on the quality of the performance measures used to appraise management. Consequently, any performance measure that improves the ability of shareholders to monitor and induce managers, can increase the value of the firm.

There are two broad reasons as to why performance measurement is a determinant of agency costs. First, a robust performance measure means that shareholders can monitor the actions of management more effectively; the performance measure shows how closely managers are adhering to the objective of shareholder wealth maximisation. In addition, it also contributes to the efficiency of the organisation if it allows monitoring at low cost and effort.

Second, an accurate performance measure helps to induce managers to act in shareholders' interests. The most common approach to motivating managers to act in the interests of shareholders is to alter the structure and size of their remuneration package, for example through the use of stock options (Murphy,1985, Mehran,1995). The value of a robust performance measure lies in the fact that it quantifies and clarifies the manager's task of maximising shareholder wealth, and binds the manager's welfare to that of the residual claimant. A particular problem is that performance targets and measures have been susceptible to smoothing and manipulation by managers, creating further agency costs. Widely accepted measures of managerial performance, such as earnings per share, suffer from this problem and therefore lack reliability. To summarise, the separation of ownership and control within the firm requires a performance measure which measures how well managers invest shareholders' capital.

## 4.3 Accounting based measures

According to finance theory, performance measurement should be a simple matter of calculating the return on risky capital. However, value based measures of the return on investment have traditionally not been popular with practitioners, largely because they are difficult to calculate. In practice, accounting based measures of performance have dominated, even though they have been subject to much criticism. Edwards, Kay, and Mayer (1987) hold that the theoretical basis for the use of accounting rates of return as performance measures is far from clear. Fisher and McGowan (1983) state that economic rates of return are the only correct measures for the purposes of economic analysis and that accounting rates are useful only to the extent that they yield information concerning economic rates of return. They hold that it is only by accident that accounting rates of return will be in one to one correspondence with economic rates of return.

There are many other criticisms of accounting measures of performance. Bentson (1985), for example, who holds that accounting rates of return are distorted by a failure to consider differences in systematic risk, tax laws and in accounting conventions regarding research and development, and advertising. The difference in accounting conventions over time and across countries does not contribute to reliability or confidence in accounting measures of performance. For example, Daimler-Benz who appear to make huge losses under U.S. accounting rules are more than profitable when one looks at their German accounts. In each case the economic profit of the company remains the same. It can also be argued that the earnings per share measure has become more volatile and less reliable with the advent of Financial Reporting Standard (FRS) 3. Finally, Schmalensee (1985) finds that accounting profits are strongly influenced by industry effects.

An example of a deficient accounting measure is Return on Investment (ROI), which according to Jacobsen (1987, p. 470),

*"is extensively criticised as being a totally inadequate indicator of the economic rate of return and one which does not properly relate the stream of profits to the investment that produced it".* The

shortcomings of ROI are said to be so severe that its cross-sectional variation can be completely explained by the inappropriateness of the measure. Empirical investigations using ROI have been labelled by Fisher and McGowan as "totally misleading enterprises", and by Bentson as being of doubtful value.

The arbitrary and unreliable nature of accounting based returns does not promote the cause of accounting based measures of corporate performance. Indeed it only serves to underline the usefulness of economic value as an alternative measure of firm performance. Crises such as the collapse of the Polly Peck and Maxwell Communications corporations have at least undermined accounting measures and at most acted as rebuttal to the efficient markets hypothesis. For example, to take the case of Polly Peck, it is likely that cashflow based measures of performance would have given a better indication of the firm's prospects than net profit figures which were distorted by accounting policies (Smith,1992).

Many of the shortcomings of accounting profit based measures can be understood if accounting profit is taken as an isolated measure. It is isolated in the sense that it is only a component of either economic value based measures or net present value (NPV), and in that it does not reflect a number of variables which are critical to the calculation of firm value. In addition, accounting profits do not reflect the riskiness of the firm, nor do they give an indication of the future performance of the firm.

## 4.4 Firm Value

A better starting point in developing a performance measure is to return to the theory of the firm, and move away from accounting based measures of performance. The starting point for the performance measure must be the basic discounted cash flow model. The value of the firm given by discounted cash flow is,

$$\text{Value}_{\text{FIRM}} = \sum_{t=1}^{\infty} \text{CASH FLOW}_t \,/\, (1+\text{WACC})^t$$

(WACC is the Weighted Average Cost of Capital)

Following from this, we can introduce a related variable called the Profitability Index (Weston and Copeland, Brealey and Myers) as a performance measure, at least in the theoretical sense. The profitability index (PI) is a form of the net present value equation for a one period capital constraint problem.

$$\text{Profitability Index (PI)} = \frac{\text{Present Value of Project's Cashflows}}{\text{Outlay}}$$

or, $$\text{Profitability Index (PI)} = \frac{\text{Value}_{\text{FIRM}}}{\text{Outlay}}$$

The PI provides a useful demonstration of what is central to the maximisation of firm value; value is only created where managers invest in projects which have a positive net present value, or in other terms, where the rate of return on capital is greater than the cost of capital. A PI of greater than one indicates that a particular project has created value relative to the capital invested in it. The PI can prove to be misleading as it does not explicitly relate the firm's budgeted capital expenditure to the outlay required for individual projects. However it is a useful illustration of the investment criterion which a value maximising manager should use, and it also gives us a glimpse of what a value-based performance measure may look like.

## 4.5 Economic Value based Performance Measures

The net present value decision rule remains the best investment appraisal measure available to the investor. Not withstanding this, accounting based performance measures have dominated the analytical perspectives of most of the constituents of financial markets. The economic or value based measures are centred around the basic financial rule that in order to create value, the return on investment must exceed the cost of the capital allocated to that investment. Although it has so far proved relatively difficult to operationalize, this rule has taken on several forms of performance measure such as economic profit, residual income and abnormal earnings. The latter is defined by Ohlson (1991) as current earnings minus the risk-free rate times the beginning of period book value.

More recently, economic value based performance measurement has become popular in the corporate arena with the promotion in the United States of a measure called Economic Value Added (EVA). The growing popularity of EVA is largely attributable to the way in which simple financial concepts have been promoted in a vigorous and somewhat distracting manner. That the attractiveness of EVA lies in its ability as a marketing product and not as a financial concept, may nonetheless be advantageous as it appears to give rise to a new consciousness among corporate managers of the need to "create value" for shareholders. Indeed, EVA is now used by large American firms such as Coca-Cola, AT&T and Disney, and is attracting the attention of European firms such as Unilever. A recent KPMG (1996) survey indicates that value based management is increasing in popularity across Europe. EVA seems to be of particular benefit within the firm, in that it makes explicit value drivers such as cost of capital, at the business unit level. A recent comment in the Lex column of the Financial Times helps to highlight the importance of this:

> "Veba, the conglomerate, is one of the very few companies which has actually worked out a risk adjusted cost of capital for all of its business units" (3/9/96).

EVA is given as,

$$\text{EVA} = (r\text{-}c)^{*}\text{Capital}$$

where $r$ is the return on capital and $c$ is the weighted average cost of capital. This means that the value created is a function of the spread between rate of return and cost of capital, times the capital invested. The rate of return, $r$, is given as

$$r = \frac{\text{NOPAT}}{\text{Capital}}$$

where NOPAT is the net operating profit after taxes, and Capital is the sum of the capital that has been invested in the firm's assets.

EVA can be expressed in terms of the value of the firm by calculating the Market Value Added (MVA). Market Value Added is a cumulative measure of corporate performance and is defined as the absolute difference between the company's market value and its capital. As it is market value based, it represents the equity market's assessment of the firm's past and future capital investments.

$$\text{MVA} = \text{Market Value - Capital}$$

$$\text{MVA} = \text{Present Value of all future EVA,}$$

$$\text{Market Value - Capital} = \text{EVA}_1/(1+c)^1 + \text{EVA}_2/(1+c)^2 + \ldots..$$

In the sense that it offers a long-term assessment of a firm's cashflows, MVA is a preferable measure to both EVA and accounting profits. One problem with the MVA figure is that it does not fully take account of the size of a firm; hence a better measure to use is MV/C, as opposed to MV - C. This gives a quotient indicator of the value created.

## 4.6 Tobin's Q

A more established and rigorous economic based performance measure is Tobin's Q. Tobin's Q has been used in numerous studies as a measure of corporate performance, Chung and Pruitt (1994), and many studies exploring the link between corporate performance and corporate governance have used it: Demsetz and Lehn (1983), Morck, Shleifer and Vishny (1988), McConnell and Servaes (1990), Hermalin and Weisbach (1992), Lloyd and Jahera (1994), Mehran (1995) and Zeckhauser and Pound (1991).

In his 1969 paper, Tobin developed his macroeconomic measure, Q, which he defined as the value of capital relative to it's replacement cost, $Q = R/r_k$, where R is the marginal efficiency of capital relative to its reproduction cost, and $r_k$ is the real rate of return on capital. Tobin introduced it into macroanalysis in order to explain the causal relationship between Q and investment. He argued that if at the margin Q exceeds unity, then firms have an incentive to invest. If such investment opportunities are widely exploited, the marginal value of Q should tend toward unity. Lindenberg and Ross' (1981) study of Q finds that sectors of the economy that have high Q ratios are often those with relatively unique products and factors of production. Those companies with low levels of Q are in relatively competitive, tightly regulated or dying industries.

Although Q is widely used by academics in the economics and finance fields, finance practitioners do not frequently employ it. Essentially, the usefulness of Tobin's Q as an indicator of the economic profitability of the firm, is constrained by the fact that its denominator (the replacement value of assets) is difficult to calculate. In employing it, the researcher is presented with a number of problems; it is both subject to a number of varying definitions, and difficult to construct. For instance, Barnhart, Marr and Rosenstein comment that

> *"the replacement value of assets cannot be measured precisely. The literature is replete with different definitions" (p, 332).*

Owing to accounting conventions and data restrictions, the replacement cost of assets is hard to measure precisely. Company accounts report the book values of corporate assets, and these can differ from replacement values in a number of ways. For example, book values will understate the replacement cost of inventories when firms account on a LIFO basis, as inventories will be recorded at historical rather than contemporaneous production costs. Similarly, book values will understate the replacement costs of structures and equipment acquired in previous periods, whose equivalent price has risen in the meantime.

A further difficulty with the replacement cost of assets is that it assumes cross-sectional homogeneity in technological progress across plant and product types as well as uniformity across firms in actual depreciation. In firms with older assets, this technique is likely to overestimate the true replacement cost of the firm's physical plant. In addition, the omission of intangible assets from calculations of firm replacement cost implies that Tobin's Q will overestimate management performance in firms with intangible assets relative to firms for which the value of intangible assets is low. As a partial correction of the intangible assets problem, Wernerfelt and Montgomery include estimates of a firm's current marketing and research and development expenditures, divided by the replacement cost of physical assets in the denominator. Nevertheless, the use of proxies for the cost of intangible assets does not fully solve this problem.

This problem may result in Tobin's Q giving misleading assessments of the worth of financial assets in future years. As the structure of international industry changes from manufacturing to service, information and technology based organisations, Q may be of diminishing use. That is, as an increasing amount of corporate investment is made in intangibles such as software and brands, and is also expensed as opposed to capitalised, then this will produce a deceptively high Q value. This high Q may not account for the cost of the assets (that is, patents, software) which drive the firm's competitive advantage and hence its stock market returns. This issue is likely to be of increasing importance, particularly to whole stock market sectors such as high technology stocks.

A more serious problem is that replacement cost data is very difficult to obtain. In the United States, large companies are required to report replacement cost values for their assets. The National Bureau of Economic Research in the United States maintains a database of replacement values of firm assets for firms that are required to file such data under U.S. securities regulations. Nevertheless, this data is not without its faults. As Cohen and Einhorn (1996) point out, the U.S. Federal Reserve underestimate the "Land" component of the replacement value of assets figure in their Tobin's Q calculations and consequently this tends to bias Q upwards. Unfortunately, the requirement that firms report the replacement cost of their capital stock does not apply to small U.S. firms or to firm listed outside the U.S. In the U.K listed firms are not required to report replacement cost of assets, and the relatively limited (compared to the U.S.) range of data available through information services such as Datastream, makes the collection of replacement cost data more difficult.

Nonetheless, Tobin's Q remains theoretically and practically more appealing a performance measure than accounting returns. First of all, Tobin's Q is generally free from distortions caused by taxation and accounting laws. Second, accounting based returns suffer more seriously from the same problems as Tobin's Q does; measures such as return on investment (ROI) can be biased downward where intangible assets such as goodwill are written off as expenses in the profit and loss statement. Third, and most significantly, the financial market data component of Tobin's Q allows this measure to reflect firm risk and to provide a market based assessment of the firm's future cash generating potential. In this way, Q can be viewed as the market's prediction of the returns generated per pound invested in corporate assets. Consequently, the higher this predicted economic return on investment is, the higher the value of Q, Landsman and Shapiro (1995). Similarly, there will be a poor correspondence between accounting rates of return and the actual stock returns of a firm, as stock prices contain far more information about a firm's prospects than accounting variables do. It is for this reason that Perfect and Wiles state:

> *"Tobin's Q has become an increasingly important measure of firm performance because it provides an estimate of the value of a firm's intangible assets such as monopoly power, goodwill, managers and growth opportunities" (p. 313).*

## 4.7 Calculating Tobin's Q

As we have seen, the primary empirical difficulty with Tobin's Q lies in attempts to construct an estimate of Q with accounting data, in situations where the replacement value of a firm's assets is not readily available. In its most simple form Tobin's Q can be given as:

$$\text{Tobin's Q} = \frac{\text{Market Value of the Firm}}{\text{Replacement Value of Assets}}$$

This is given in more detail in the Lindenberg and Ross (1981) study which is considered a central part of the debate on Q.

$$\text{L - R Q} = \frac{\text{PREFST + VCOMS + LTDEBT + STDEBT - ADJ}}{\text{TOTASST - BKCAP + NETCAP}}.$$

where PREFST is the liquidating value of a firm's preferred stock, VCOMS is the price of the firm's common stock multiplied by the number of shares outstanding at the close of the year, LTDEBT is the value of the firm's long-term debt adjusted for its age structure, STDEBT is the book value of the firm's current liabilities, ADJ is the value of the firm's net short-term assets, TOTASST is the book value of the firm's total assets, BKCAP is the book value of the firm's net capital stock, and NETCAP is the firm's inflation-adjusted net capital stock. However, Lindenberg and Ross insist that the application of their model requires at least two years of firm-reported replacement cost of values. This requirement makes it more difficult to obtain adequate data to construct estimates of Tobin's Q.

The complexity of many Tobin's Q estimators, and the difficulty in obtaining reliable data to construct these estimates, represent a considerable empirical challenge to researchers who wish to calculate accurate estimates of Q. Lewellen and Badrinath (1997, p.2) acknowledge that attempts to estimate Tobin's Q can only provide estimates of unobservable true values, and set out a number of standards for the calculation of Q. These standards are:

- *It should be able reliably to replicate truth when we know what that truth is*
- *It should yield objectively reasonable estimates under all possible combinations of actual corporate circumstances*
- *It should be economical in its computational requirements, so as to permit the efficient analysis of large samples*
- *It should rely only on, and be derivable directly from, the widely available standard financial data bases*

- *It should not be dependent upon a discretionary historical "build up" period over which to cumulate asset replacement cost estimates forward to the date of research interest, but instead should be implementable in a single computational step as of that date.*

The above are particularly relevant and important to the data analysed in this study. The database studied here is a large cross-sectional set for one year (1995), and is obtained from a limited database (Datastream). Therefore, the estimates of Tobin's Q constructed here are developed with special reference to Lewellen and Badrinath's requirements. These criteria reflect the difficulties faced by researchers who wish to use Tobin's Q, but who do not use or have access to databases of large U.S. firms.

In response to the problems faced by researchers, there have been several recent attempts to develop "easy-to-calculate" substitutes for the Lindenberg - Ross (1981) Q, and it appears that these have been successful. Perfect and Wiles' (1994) study constitutes the most developed approach to-date to analysing alternative constructions of Tobin's Q. They compare five estimates of Q which range from the simple-to-construct estimator based on book values, to a relatively complex estimator based on the Lindenberg and Ross Q. They find that two particular estimators, $Q_{pw}$ and $Q_h$ are the most attractive from the point of view of their usefulness for empirical study. Perfect and Wiles hold that the estimator $Q_s$ is also attractive, largely because it is easily constructed. The estimates are:

$$Q_{pw} = \frac{\text{COMVAL} + \text{PREFVAL} + \text{PWBOND} + \text{STDEBT}}{\text{PWRC}}$$

$$Q_h = \frac{\text{COMVAL} + \text{PREFVAL} + \text{SBOND} + \text{STDEBT}}{\text{LRRC}}$$

$$Q_s = \frac{\text{COMVAL} + \text{PREFVAL} + \text{SBOND} + \text{STDEBT}}{\text{SRC}}$$

where COMVAL is the year end value of the firm's common stock, PREVAL is the estimated year-end market value of the firm's preferred stock, PWBOND is the market value of the firm's debt using the modified LR estimation technique, SBOND is the year-end book value of the firm's long-term debt, STDEBT is the year-end book value of the firm's short-term debt with a maturity less than one year, PWRC is the estimated asset replacement cost using the modified LR technique, SRC is the firm's year-end book value of total assets and LRRC is the replacement cost of the firm's assets using the LR estimation technique.

A second approach to calculating an alternative estimate of Q is that proposed by Chung and Pruitt (1994). This estimate has been adopted in a number of studies which investigate the relation between corporate governance and firm performance (Agrawal and Knoeber,1996, and Chung and Pruitt,1996). They construct a simple approximation of Tobin's Q based on the following equation

$$Q = \frac{MVE + PS + DEBT}{TA}$$

where MVE is the market value of equity, PS is the value of the firm's outstanding preferred stock, DEBT is the value of the firm's short-term liabilities net of its short-term assets plus the book value of the firm's long-term debt, and TA is the book value of the total assets of the firm. This measure is very similar to the $Q_s$ estimator used by Perfect and Wiles. In their analysis, Chung and Pruitt find that

> *"at least 96.6% of the total variability in L-R's Tobin's Q is explained by approximate Q. This result is completely in line with the finding of Perfect and Wiles (1994), that the correlation coefficients between a simple variant of Q and the L-R Q and the Lang and Litzenberger (1989) exact Q are 93% and 92.5%, respectively" (p. 71).*

Another approach is that of Blundell, Bond, Devereux and Schiantarelli (1991), who construct an estimate of Tobin's Q that is similar to those developed by Perfect and Wiles, and Chung and Pruitt. Their estimator can be constructed as

$$Q = \frac{((MVE + TLC)-1)}{((1-DEP)RCC)} \cdot \frac{PIPM}{WP}$$

where MVE is the market value of all ordinary equity, plus deferred and preference capital, TLC is the book value of debt, DEP is the rate of depreciation for plants and machinery: set at 8%), RCC is the value of the firm's capital stock, PIPM is the price index for plant and machinery, and WP is the manufacturing industry wholesale prices.

With regard to the problems involved in constructing estimates of Tobin's Q, it is notable that Blundell et al. state that

> *"we have found that our results are not very sensitive to the particular measure of the capital stock used" (p. 2).*

This indicates that there may not be a great disparity between replacement and current cost values for assets, and that estimates of Q provide reliable measures of firm value.

Finally, Market to Book Value (MBV), a similar but less sophisticated measure to Tobins's Q, is calculated. MBV is straightforward to calculate, and will provide the estimates of Tobin's Q with a comparable measure of firm value. Barnhart, Marr and Rosenstein (1995) use MBV in their study of the relation between board composition and firm value, and they underline its virtues as compared to Tobin's Q.

> *"Fama and French (1992) document a strong relationship between MB and long-term performance. MB also is directly observable and easily measured, as opposed to Q, which is not directly observable and whose operational definition is an unsettled issue" (p. 329).*

Moreover, a recent paper, Hubbard et al. (1997), which also examines the link between ownership and firm value, underscores the problems associated with developing estimates of Tobin's Q and the relative attractiveness of a measure such as Market to Book Value. In this study the authors calculate Q as

> *"the market value of common equity plus the estimated market value of preferred stock plus the book value of total liabilities, and for replacement value of assets we use the book value of total assets. This definition is closely related to the market-to-book ratio, which is easily seen by subtracting total liabilities from both the numerator and denominator" (Table 4).*

To summarize, in response to difficulties in calculating Tobin's Q, a number of "easy to construct" estimates have been developed. The evidence shows that these estimates closely approximate the more complicated versions of Q, and thereby solve the problems associated with the replacement cost of assets.

## 4.8 Study variables

The previous section discussed the difficulties associated with using Tobin's Q as an estimator of firm performance, and presented a number of attempts to construct reliable, "easy to use" measures of Q. This section introduces the performance measures which are used in this study, and also highlights the procedures taken to ensure that these measures generate accurate estimates of firm performance. In this study, firm value is represented by the Chung and Pruitt estimate of Tobin's Q (this estimate is very similar to the Perfect and Wiles ($Q_s$) estimate) and to MBV, the Market to Book Value ratio. The estimators are given as:

$$TQ = \frac{MVE + PS + DEBT}{CAP}$$

$$MBV = \frac{MVE + PS}{TA}$$

where MVE is the market value of the firm's equity, DEBT is the total (book) value of short and long-term debt, PS is the firm's preferred equity, TA is the book value of the firms total assets, and CAP is the book value of the firm's total capital. (The construction of the estimates is given in detail in Appendix 1).

In addition, the Blundell Q estimator (presented in Section 4.7) is also used as a dependent variable in Table 5.15 in the Appendix of Chapter 5, in order to determine whether the relation between firm value and ownership structure is sensitive to the type of firm value measure used. The three estimators mentioned above, are employed to represent firm value for a number of reasons. First, while the true value of Q is unobservable, those studies which explicitly address the problem of calculating Tobin's Q, find that the more complicated estimators (Lindenberg and Ross) are accurately approximated by the "easy to construct" estimators (in the work of Chung and Pruitt, for example). Furthermore, the use of the simple approximation of Q is prevalent among recent papers (Hubbard et al.), and this may signal that compromises in constructing Q do not impede its accuracy and its usefulness to academics.

Second, in following the criteria set out by Lewellen and Badrinath and the constraints imposed by U.K financial databases, the above estimates are constructed because the data they require is easy to obtain, particularly for large cross-sectional samples (in fact basic time-series Q data back to 1985 is available for only 356 firms). These estimates thereby solve the problem posed by the unavailability of current cost estimates of capital, by providing reliable "easy to construct" estimates of Q.

Third, the firm value measures used here are strongly correlated (that is, TQ and Blundell's Q are perfectly correlated, while TQ and MBV are 94% correlated). Furthermore, as the evidence in Chapter 5 (Sections 5.3-5.4) shows, the significant relation between ownership structure and firm value is maintained, regardless of which measure of firm value is employed.

## 4.9 Conclusion

The modern firm is characterised by a separation of ownership from control, where the agent and principal now share the rights and responsibilities of the entrepreneur (Fama 1980). In the light of this theory of the firm, this chapter proposes that value based measures of firm performance provide the most valid means of appraising the creation of shareholder value. However, value based measures such as Tobin's Q have traditionally not been popular with practitioners, chiefly because they are difficult to calculate. The primary difficulty is that the denominator of Tobin's Q, the replacement cost of assets, is difficult to measure and calculate (particularly when data resources are constrained). This chapter presented "easy to construct" estimates of Tobin's Q, and a related measure, Market to Book Value. Furthermore, the reasons for which these estimators were chosen, and the procedures adopted to ensure their accuracy as approximations of firm value, have been highlighted.

# Appendix

Table 4.1: Construction of Performance measures by Datastream code.

| | Tobin's Q | Blundell Q | MBV |
|---|---|---|---|
| Numerator | MVBS | MVBS | MVBS |
| | 309 | 302 | 306 |
| | 306 | 306 | |
| | 321 | 321 | |
| Denominator | 339 | 339 | 339 |
| | 344 | 344 | 344 |
| | (342and343) | (342and343) | (342and343) |
| | 356 | 356 | 359 |
| | 359 | 359 | 390 |
| | 390 | 390 | |

# Chapter 5 Corporate Governance and Firm Value

## 5.1 Introduction

The chapter examines two broad aspects of the problem of monitoring and inducing management. In particular, it considers the two areas of corporate governance that have given rise to a great deal of public debate and policy deliberation in the U.K: directors' compensation (cash and equity based) and the board of directors. These mechanisms have been designed to monitor and induce managers, so that they pursue the objective of shareholder wealth creation. However, there is a perception that they have proved to be ineffective, and have drawn sustained criticism from a number of quarters. This dissatisfaction has culminated in the appointment of corporate governance committees to recommend changes to the workings of the board (Cadbury Committee) and the remuneration contract (Greenbury Report) in the U.K. While policy makers continue to examine the functions performed by the board (Hampel Report), and the remuneration contract, there remains little conclusive empirical evidence relating to their quality as corporate governance mechanisms. Therefore, the principle aim of this chapter is to contribute empirical evidence on the workings of the board and directors' compensation, with the intention of providing a basis for more informed discussion and policy making.

Recent research has revealed the complexity of the relation between firm value and ownership structure (Morck, Shleifer and Vishny, 1989, McConnell and Servaes, 1990, 1995) and has shown that the link between other corporate governance mechanisms and the firm is more complicated than agency theory appears to predict (Mehran, 1995). However, there are aspects of the relation between corporate governance and firm value which remain unexamined (notably, the effects of outsider ownership on firm value). In addition, the issue of causality has been avoided by most studies of corporate governance. This is a serious omission and raises considerable doubts about the validity of previous research.

This chapter addresses these shortcomings by presenting a comprehensive analysis of the relation between corporate governance mechanisms and firm value, based on a system of equations. This approach will allow us to determine whether the specified corporate governance mechanisms are interdependent, and whether they are chosen optimally. Ordinary least squares equations are also included to facilitate comparison and to demonstrate how these results can be misleading when endogeneity and full information are not included in the analysis.

Thus, the aim of this chapter is to establish the determinants of the corporate governance mechanisms (directors' remuneration, managerial equity holdings and the board of directors) within the system of equations specified in Chapter 2 (Section 2.14), to analyse their interdependence, and to examine their relation to firm value as represented by Tobin's Q. The methodological approach employed here differs from previous work in that it presents an integrated perspective on the relation between corporate governance and firm value using a systems model.

This chapter is organised as follows. Sections 5.2-5.4 analyse the determinants of insider equity ownership, directors' remuneration and the composition of the board, respectively. Section 5.5 examines the effect of these mechanisms on the value of the firm. In Section 5.6, a number of methodological issues are addressed, in order to ensure the robustness of the results obtained in Sections 5.2-5.5. Section 5.7 investigates whether the relation between corporate governance mechanisms and firm value depends on the investment opportunities faced by the firm. Section 5.8 offers a conclusion.

## 5.2 Insider Equity Ownership

There is a relatively small number of studies devoted to examining how ownership structure is determined. Demsetz and Lehn (1983) posit that insider equity ownership is determined by risk, noise, firm size, and industry characteristics (for example, regulation and amenity potential). Hubbard et al. (1997) find that managerial equity ownership is inversely related to firm size, fixed capital intensity, R & D intensity and idiosyncratic risk, while advertising intensity, operating income and the investment rate are all positive determinants of insider ownership.

This section examines the determinants of insider equity ownership (OWN) and in particular analyses its interdependence with other governance mechanisms. Table 5.1 presents the regression of corporate governance (OUT and %ODIR), control variables

(DE, LS), systematic risk (Beta), and Tobin's Q on insider ownership (OWN). The regressions follow equation (1) specified in the system of equations (Section 2.14).

OWN = f(TQ, %ODIR, OUT, BETA, D/E, IND, LS)

In Column 1 the equation is estimated using Ordinary Least Squares, while in Column 2 it is estimated as part of the system of equations (Section 2.14), using Three Stage Least Square regressions. The results show that insider equity ownership (OWN) is determined by the attributes of the firm's monitors (namely, the size of blockholders and the number of outside directors), and the sensitivity of the firm to movements in the financial markets. There is little indication that increases in insider ownership are made with performance in mind, as OWN is not significantly related to Tobin's Q.

Consistent with the predicted relationships (Hyp. 1B) and specified equation (Section 2.14.2), outsider equity ownership (OUT), and the proportion of outside directors on the board (%ODIR) negatively affect insider ownership (OWN). The negative effect of outsider equity ownership on insider holdings indicates that the greater the number of shares held by outsiders, the fewer there will be available for insiders. These forms of ownership can also be seen as competing forms of governance, that is, there is less need for managerial incentives when outsiders own larger equity stakes. It is also likely that powerful outside shareholders can influence the manager's remuneration contract and thereby affect the amount of equity the manager holds. The proportion of outside directors on the board is negatively related to insider ownership. This can be explained as follows. First, it is possible that the number of outsiders on the board is an indication of the size and maturity of a firm, factors which are likely to restrict insider equity ownership. Second, if there is a greater proportion of non-executives on the board, it can be argued that the potential for increased monitoring by these directors means that there is less need to bind managers to the firm through equity ownership.

Systematic risk (Beta) exerts a negative but insignificant impact on OWN. This relation is to be expected if we consider that increased exposure to market forces will make risk averse executives less willing to hold shares. Managers hold shares in the firms they manage in order to reap the benefits of their own investment decisions. Nevertheless, a higher level of systematic risk (i.e. high Beta) will mean that the value of the firm is increasingly influenced by macro-economic forces and not by the strategy pursued by the manager. Consequently, the manager becomes increasingly under-diversified as a result of holding shares in a firm where the level of systematic risk is high, and will therefore prefer to reduce his holding, or will decline from purchasing additional shares.

There is a negative relation between firm size and ownership structure. The evidence indicates that it is more difficult (and costly) to build a significant stake in a large firm than a small one. As the size of the firm increases, a given sum of money will buy a smaller fraction of shares. In addition, the need of executives to diversify their personal wealth will mean that they are less willing to increase the proportion of shares they own as their firm grows.

The effects of performance (as represented by Tobin's Q and Return on Assets (not reported)) on ownership structure pose a number of problems. Despite the prediction of hypothesis 1A insider ownership does not appear to be determined by firm performance, even though it would be expected that performance influences ownership, as managers are rewarded for better performance and as they purchase shares ahead of good results. Indeed, the negative sign of the coefficient on Tobin's Q makes it difficult to propose a viable alternative explanation of this relation.

With the exception of Tobin's Q, the results obtained here are consistent with the predictions of the empirical model. The significant effects of outsider ownership, the composition of the board and firm size on insider ownership do not change depending on whether we employ Ordinary Least Squares analysis or Three Stage Least Squares. Furthermore, while the independent variables in Table 5.1 explain 16% of the variation in OWN, it is likely that other (unavailable) explanatory variables such as information relating to the wealth and risk preferences of executives could add considerably to the $R^2$.

Table 5.1: The Determinants of Insider Equity Ownership:
Regression analysis of insider equity ownership (OWN) on Tobin's Q, Beta, corporate governance (OUT, %ODIR) and firm structure (DE, LS) variables. Column 1 is calculated using Ordinary Least Squares while Column 2 is part of a system of equations estimated by Three Stage Least Squares. A cross-sectional sample of 1067 firms is used.

| | *Dependent variable: Insider Equity Ownership* | |
|---|---|---|
| | OLS | 3SLS[1] |
| Intercept | 80.964 | 79.56 |
| | (.00) | (.00) |
| TQ | -.4924 | -.3492 |
| | (.42) | (.57) |
| BETA | -4.026 | -3.983 |
| | (.09) | (.10) |
| OUT | -.2639 | -.2634 |
| | (.00) | (.00) |
| %ODIR | -10.136 | -10.042 |
| | (.00) | (.00) |
| LS | -2.766 | -2.776 |
| | (.00) | (.00) |
| DE | -.8473 | -1.009 |
| | (.61) | (.54) |
| IND. DUM. | *Yes* | *Yes* |
| $R^2$(%) | 16.46 | 15.6 |

[1] Instruments: MBV, DIR, COC

## 5.3 Directors' Remuneration

Recent corporate governance reports such as Cadbury and Greenbury, and commentary in the press regarding the high level of executive pay in the United Kingdom, have underlined the place of directors' remuneration as a central corporate governance issue. However, knowledge of the determinants of directors' pay remains limited, and as Main and Johnson (1995, p.351) state:

> *"in Britain there is a paucity of information in this area"*

and Mehran (1995, p. 163) declares that

> *"the relationships among executive compensation structure, ownership structure and control and firm performance are still little understood"*

This section aims to contribute empirical evidence on the issue of directors' pay by investigating the determinants of directors' remuneration. An important issue here is whether remuneration is driven by performance or by the structure of the organisation. If remuneration is driven by the performance of the firm, then directors' rewards are justified. In this instance, there are fewer "fat cats" and agency costs are reduced. On the other hand, if as the literature suggests, remuneration is determined by structural factors such as firm size, then managers are rewarding themselves with disregard for firm performance.

### 5.3.2 Determinants of Directors' Remuneration

The measure of directors' remuneration employed is composed of "the total of directors fees, emoluments for management services and pensions or pension fund contributions paid to or on behalf of directors" (Datastream company account code 126). Option based remuneration data was not available and is not included in the above figure. According to Chung and Pruitt (1995), there are at least two reasons why this should not have a material bearing on the regression results. The computation of the present value equivalent of other remuneration components is quite complex and far more prone to errors than salary and bonus figures. Moreover, remuneration measures based only on salary and bonus tend to be highly correlated with measures which encompass many forms of remuneration such as stock options.

Three forms of directors' remuneration are considered here. First, the absolute amount of remuneration paid to all directors (DR). Second, directors' remuneration is scaled by the number of directors on the board, to give a measure of remuneration per director (DR/D). Third, a similar measure to DR/D is constructed. It differs in that the denominator consists of "inside" directors as opposed to all of the company's directors (DR/ID). DR/ID best overcomes the problem of apportioning remuneration to the relevant directors (since insiders are much better paid than non-executive directors) and it is the measure of directors' remuneration employed in the regression equations.

The determinants of directors' remuneration are analysed according to equation (2) specified in Section 2.14.

$$DR/ID = f(ROA, OWN, \%ODIR, OUT, BETA, D/E, IND, LS) \qquad (2)$$

When the above equation is estimated the analysis shows that the structure of the firm determines approximately 46% of directors' remuneration (independently of which measure for remuneration is used). As expected, remuneration is significantly positively related to firm size. In addition, insider equity ownership and Beta exert significant negative and positive effects on directors' remuneration respectively. However, when we control for firm size the influence of these variables is insignificant. The industry dummy variables also increase the explanatory power of the regression.

Yet, some results contradict the predictions of the structural model and in fact all three hypotheses cannot be accepted. It would be expected that the profitability of the firm has a positive effect on directors' remuneration. However, return on assets (ROA) has a negative effect on DR/ID, regardless of whether the results are calculated by OLS or 3SLS regressions. This is a puzzling result and requires further analysis (Section 5.6). The positive effect of the proportion of outsiders on the board on directors' remuneration suggests that outsiders play no role in restricting levels of board room pay, indeed it is likely that these outsiders are not entirely independent. Conversely, outsider equity ownership has a negative effect on DR/ID, and although this effect is insignificant it suggests that powerful outsiders pay less than management controlled firms.

The effects of firm size, industry classification, debt to equity ratio and the composition of the board are consistent whether we employ Ordinary Least Squares or Three Stage Least Squares. The principle difference between Columns 1 and 2 is that the signs of the coefficients on OWN and OUT are positive in Column 1 but negative in Column 2. However, in both cases the relations are insignificant, and lead to the conclusion that the board of directors, equity ownership (inside and outside) and remuneration are not interdependent corporate governance variables. Indeed, the analysis of directors' remuneration so far prompts the conclusion that it is not a functioning incentive mechanism.

Although they run contrary to the hypotheses, the above findings concur with the evidence reported in previous work, and also provide evidence to support the suspicion that directors' salaries bear little (positive) relation to the performance of the firm. In accordance with the findings of Hambrick and Finkelstein (1995), it seems that firm size and industry sector are convenient benchmarks for managers who wish to increase their remuneration,

> *"another justification for a CEO pay increase is that the size of the firm has increased", and there is "a well lubricated mimetic process within industries" (p. 188).*

Where remuneration based on the size of the firm (for example, Sales or Market Value) is not an efficient form of pay in terms of the agency costs it produces, as there is a temptation for the manager to increase the size of the firm and not to increase shareholder wealth. Jensen (1986) illustrates this point with reference to the agency costs of free cash flow. He demonstrates how managers find it attractive to use free cash flow to invest in projects which increase the size of the firm at the expense of shareholder wealth. The executive's pay, prestige and power within the firm are enhanced when he expands the firm. Furthermore, to increase the firm's size is a less challenging and less risky objective for the manager to pursue than value creation.

Two possible conclusions emerge from this section. Either directors' remuneration does not operate as an incentive mechanism, or the relation between remuneration and the firm is not adequately captured by the data and methodology employed here. These possibilities are examined in a later section (Section 5.6).

Table 5.2 The Determinants of Remuneration per Inside Director.
Regression analysis of directors' remuneration on Beta, return on assets (ROA), corporate governance (OWN, OUT, %ODIR) and firm structure (DE, LS) variables. Column 1 is calculated using Ordinary Least Squares while Column 2 is part of a system of equations estimated by Three Stage Least Squares.

| | *Dependent Variable: Remuneration per Inside Director* | |
|---|---|---|
| | OLS | 3SLS[1] |
| Intercept | -779736 | -744904 |
| | (.00) | (.00) |
| OWN | 8.684 | -462.7 |
| | (.95) | (.10) |
| BETA | 10831 | 9585 |
| | (.46) | (.51) |
| OUT | 74.33 | -45.87 |
| | (.68) | (.81) |
| %ODIR | 194670 | 191343 |
| | (.00) | (.00) |
| ROA | -22575 | -24216 |
| | (.02) | (.01) |
| DE | 19455 | 18883 |
| | (.03) | (.04) |
| LS | 48580 | 47327 |
| | (.00) | (.00) |
| IND DUM | *Yes* | *Yes* |
| $R^2$(%) | 46.51 | 46 |

[1] Instruments: DIRB, DIRNONB, DIR

## 5.4 The Composition of the Board of Directors

### 5.4.1 The Role of the Board

The board of directors is the principle means of monitoring the investment decisions taken by managers, and it is formally charged with this governance responsibility. In particular, non-executive (outside) directors have a responsibility to ensure that managers act in shareholders' interests. However, in practice, the importance of the formal governance role of the board is undermined by the lack of active monitoring and intervention on shareholders' behalf. Jensen (1993) encapsulates this problem.

> *"The board at the apex of the internal control system has the final responsibility for the functioning of the firm .... Few boards in the past decades have done this job well in the absence of external crises" (p. 862).*

There is very little evidence to show that the board of directors, and specifically non-executive directors, have a positive effect on firm value by virtue of their role as monitors. For instance, Hermalin and Weisbach (1991) find no evidence of a relation between board composition and firm performance. Indeed, recent evidence (Yermack,1996) shows an inverse relation between board size and firm value, indicating that small boards of directors seem to be more effective than large ones. This leads to an examination of what can be considered as the outside directors' puzzle. This puzzle refers to the fact that increased numbers of non-executive directors on the board are associated with decreasing firm value. This phenomenon is unexpected, as the monitoring function performed by non-executive directors should reduce agency costs and enhance value as opposed to reducing it. The most likely conclusion to be drawn here is that outside directors are not appointed to the board for their monitoring abilities, and that the directors have little time and ability to monitor management. It seems that many outside directors serve the role of little more than prestigious corporate trophies that signal the success of a dominant firm. Or, as Mace (1971) would put it they are

> *"ornaments on the corporate Christmas tree" (Main, 1994, p. 167).*

In order to understand the workings of the board, this section examines how the composition of the board (the proportion of non-executives on the board) is affected by other governance and exogenous variables.

### 5.4.2 Preliminary Evidence

Tables 5.3 and 5.4 present summary data on corporate governance and firm structure variables which have been sorted according to the size of the board of directors and composition of the board of directors of each firm. The most striking feature of Table 5.3 is that the size of the board is strongly related to the size of the firm, and the mean values relating to the other corporate governance variables should be interpreted in this light. The highest levels of firm value (as represented by Tobin's Q) occur for firms with between six and twelve directors. It can be implied from the evidence in these tables that board size is a proxy for the life cycle of a firm. First, when the firm grows, the number of directors is small, as the founders and existing management covet the control that they have over the firm. It is also likely that non-executive directors are not attracted to low profile and relatively risky ventures; as a result, the board of young companies remains small. As the firm expands, it may diversify into new markets and business segments, necessitating the addition of directors with new expertise and knowledge. Further expansion will mean that outside directors representing market areas and new constituencies within the firm may join the board. When the firm reaches the mature stage in its life cycle, the size of the firm may contract, while the size of the board remains the same. It is likely that well established managers will entrench their positions by appointing sympathetic directors to the board. It is also relevant to point out that the larger the board, the more ineffectual it will become with respect to decision making, and therefore the more likely it is to be influenced by managers (Pfeffer,1981).

The life cycle theory of the board is underpinned by the frequency distribution (Figure 5.1) of the number of firms per category of outside directors on the board. It is apparent that the majority of firms have between 20% to 70% of their boards composed of non-executive directors. It would be expected, at least in theory, that this fact means that firms do not lack monitors. However, the distribution also underlines the fact that inferences about the characteristics of firms with a very large proportion of outside directors on the board, should be made cautiously. That is, only a relatively small number of boards are dominated (where %ODIR > 80%) by outsiders.

Table 5.4 augments the evidence in Table 5.3 in that it provides a picture of the contribution of outside directors to the firm. It presents mean data for study variables grouped according to the proportion of outsiders on the board (%ODIR). It seems that

20% is the optimum (as regards firm value) proportion of outsiders on the board. The relation of Tobin's Q to %ODIR is represented in Figure 5.2. The mean, median and trend lines in are decreasing, suggesting that firm value decreases as the proportion of insiders decreases. Finally, Figure 5.3 highlights the strong downward trend in directors' equity holdings as %ODIR rises.

Table 5.3: Summary data (mean and median) for study variables ranked by the number of directors on the board (DIR).

| DIR | Number<br>1 | TQ<br>2 | OWN<br>3 | OUT<br>4 | NB<br>5 | D/E<br>6 | CAP<br>7 |
|---|---|---|---|---|---|---|---|
| | Mean | Mean | Mean | Mean | Mean | Mean | Mean |
| *0* | 7 | 1.89 | 6.60 | 47.83 | 4.86 | 0.28 | 7.0E+07 |
| *1* | | | | | | | |
| *2* | 3 | 1.49 | 25.40 | 11.47 | 1.33 | 0.00 | 2.8E+06 |
| *3* | 29 | 1.46 | 20.21 | 38.65 | 4.45 | 0.23 | 1.0E+08 |
| *4* | 79 | 2.00 | 20.37 | 29.00 | 3.85 | 0.28 | 2.0E+07 |
| *5* | 184 | 1.89 | 17.44 | 33.67 | 4.35 | 0.27 | 3.5E+07 |
| *6* | 210 | 2.00 | 17.52 | 32.33 | 4.49 | 0.36 | 6.3E+07 |
| *7* | 175 | 1.95 | 17.15 | 33.65 | 4.33 | 0.24 | 1.1E+08 |
| *8* | 156 | 1.98 | 16.17 | 31.37 | 4.09 | 0.28 | 1.6E+08 |
| *9* | 83 | 1.94 | 9.21 | 28.58 | 3.43 | 0.25 | 4.0E+08 |
| *10* | 68 | 1.99 | 11.72 | 26.84 | 3.90 | 0.23 | 7.9E+08 |
| *11* | 48 | 1.98 | 13.20 | 24.55 | 2.85 | 0.26 | 1.9E+09 |
| *12* | 30 | 1.84 | 14.65 | 28.53 | 3.70 | 0.25 | 9.4E+08 |
| *13* | 16 | 2.01 | 4.16 | 23.94 | 3.81 | 0.35 | 1.5E+09 |
| *14* | 9 | 2.18 | 12.59 | 29.47 | 4.44 | 0.32 | 1.6E+09 |
| *15* | 5 | 1.23 | 16.98 | 52.28 | 5.80 | 0.31 | 3.1E+09 |
| *16* | | | | | | | |
| *17* | 5 | 1.53 | 15.32 | 34.98 | 2.40 | 0.51 | 5.1E+09 |

Table 5.4: Summary data for study variables ranked by the proportion of outsiders on the board (%ODIR).

| %ODIR | No.<br>1 | TQ<br>2 | OWN<br>3 | OUT<br>4 | CAP<br>5 | D/E<br>6 | ROA<br>7 | CoC<br>8 |
|---|---|---|---|---|---|---|---|---|
| | | Mean | Mean | Mean | Mean | Mean | Mean | Mean |
| *0%-10%* | 76 | 1.64 | 19.69 | 33.26 | 1.E+08 | 0.21 | 10.99 | 9.20 |
| *10%-20%* | 63 | 2.25 | 20.22 | 28.94 | 1.E+08 | 0.37 | 12.68 | 9.38 |
| *20%-30%* | 194 | 2.06 | 20.42 | 29.53 | 1.E+08 | 0.25 | 11.82 | 9.72 |
| *30%-40%* | 183 | 2.03 | 17.45 | 28.38 | 3.E+08 | 0.29 | 10.99 | 9.99 |
| *40%-50%* | 217 | 1.90 | 13.13 | 31.30 | 5.E+08 | 0.26 | 11.29 | 10.10 |
| *50%-60%* | 231 | 1.93 | 13.57 | 33.56 | 5.E+08 | 0.31 | 9.39 | 10.05 |
| *60%-70%* | 114 | 1.77 | 13.66 | 34.09 | 3.E+08 | 0.28 | 6.36 | 9.70 |
| *70%-80%* | 22 | 1.88 | 4.84 | 37.05 | 5.E+08 | 0.23 | 12.69 | 9.60 |
| *80%-90%* | 10 | 1.51 | 8.01 | 43.29 | 4.E+07 | 0.46 | 7.78 | 9.08 |
| *90%-100%* | 1 | 1.53 | 0.50 | 28.80 | 8.E+06 | 0.23 | 0.00 | 9.82 |

Figure 5.1: Distribution of firms per % Outsiders on the Board

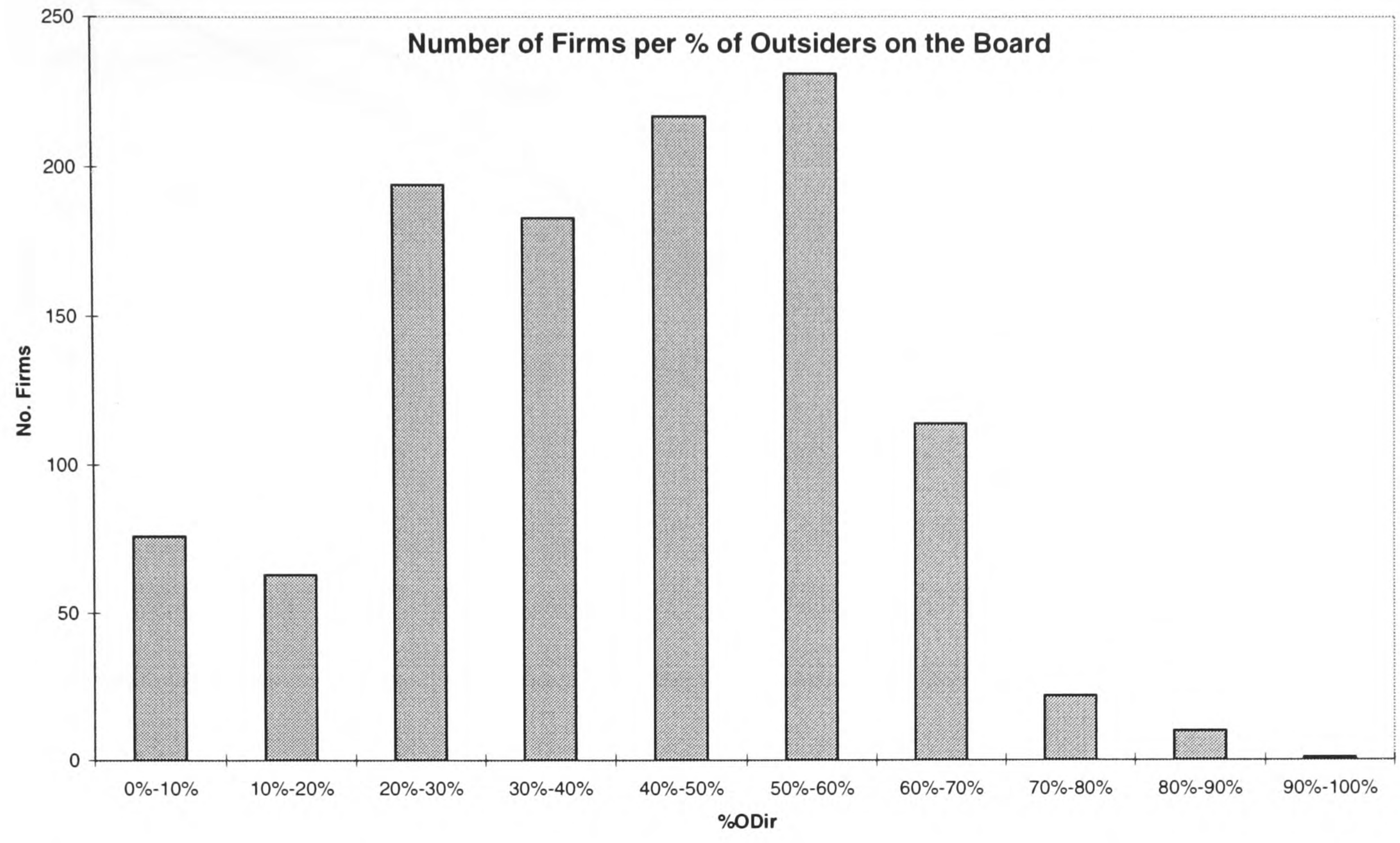


Figure 5.2: Board Outsiders (%) and Tobin's Q

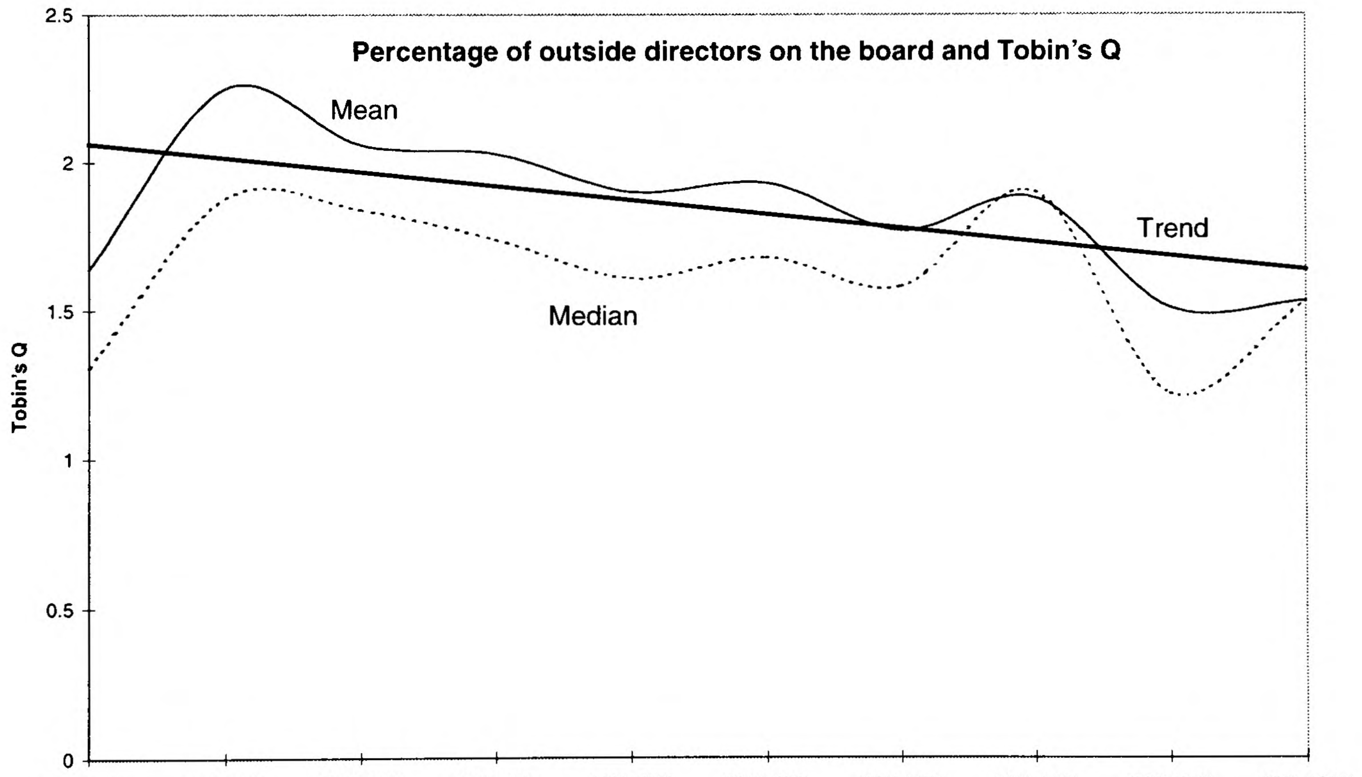


Figure 5.3: Percentage of Outsiders on the Board and Insider Equity Ownership

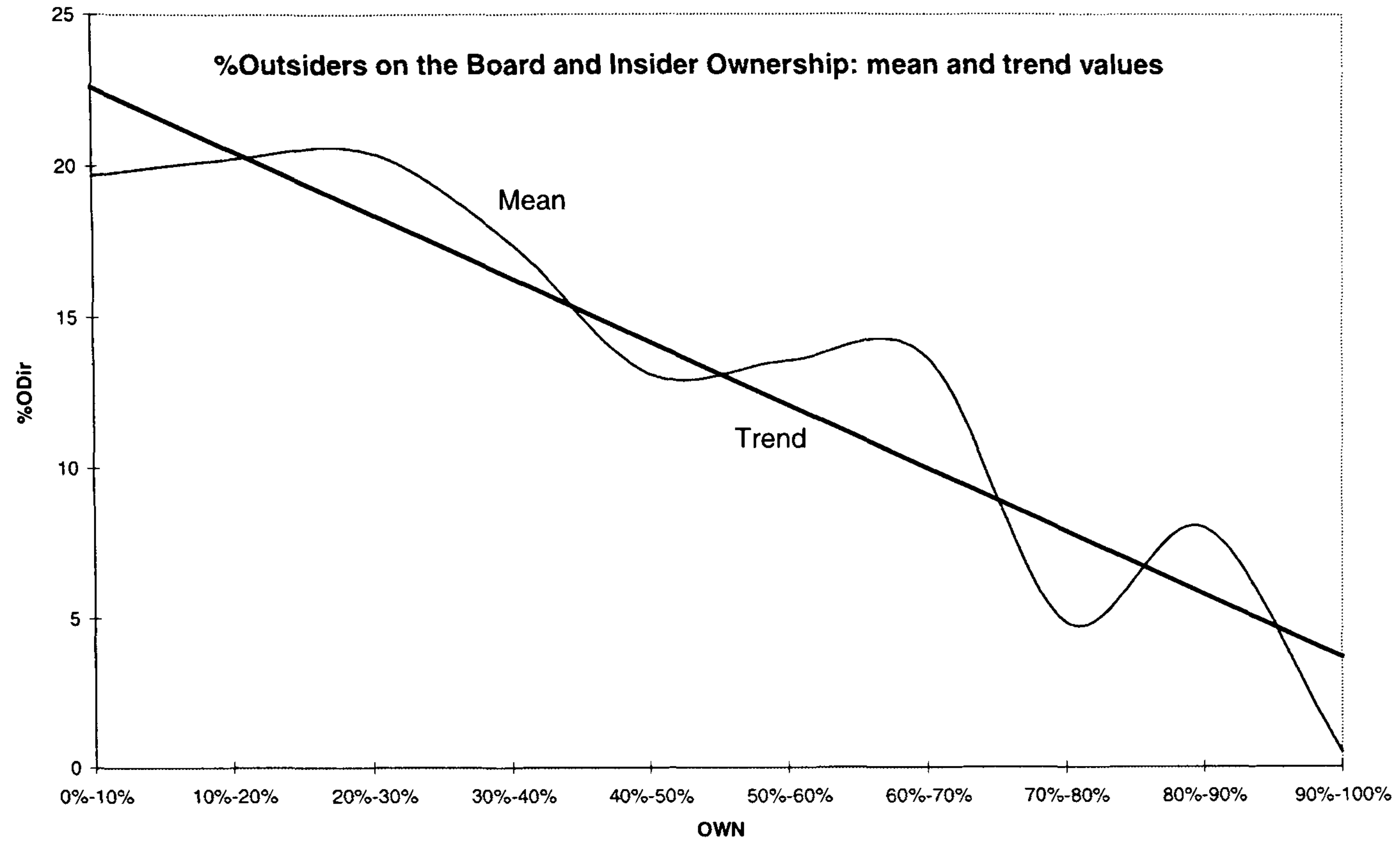


Table 5.5 illustrates the effects of corporate governance mechanisms and firm performance on the composition of the board. The equation estimated here is based on equation (3) in the structural model proposed in Section 2.14.

$$\%ODIR = f(TQ, OWN, OUT, D/E, IND, LS) \qquad (3)$$

With the exception of the influence of firm performance (Tobin's Q) on %ODIR, the results are virtually unchanged whether we employ ordinary least squares or simultaneous equations (3SLS). It appears that the composition of the board is particularly strongly determined by the structure of the firm. As mentioned in the previous section, and consistent with the structural model, there is a negative relation between the composition of the board and the level of equity held by insiders (Hyp. 3A). This suggests that the more powerful insiders are (the more equity that they hold), and possibly the more entrenched that they become, the fewer independent directors they will appoint to the board of directors. Thus, the exercise of managerial power is easier with greater ownership and fewer outside directors.

On the other hand, the larger the amount (OUT) of significant outside shareholders, the greater the number of outsiders on the board. This seems to indicate that influential outsiders use their large equity stakes in the firm to gain seats at the board. Nevertheless, if this is the case, it seems that as the large shareholder has a voice within the firm, then he has no excuse for not performing his monitoring function, assuming of course that shareholder wealth maximisation is his goal. Alternatively, the evidence may point to the fact that boards with a greater proportion of outsiders are perceived by large shareholders to be better monitors of management. Therefore, large shareholders may feel more inclined to increase their stake in the firm, without the responsibility of additional monitoring. It is also worth mentioning here that the negative relation between large shareholders and firm value (Chapter 6), suggests that outsiders appoint their representatives to the board in order to further entrench their interests.

As predicted, the higher the debt to equity ratio of the firm, the more outsiders appointed to the board. This can be explained as the addition of bankers or banker's representatives to the board, as firm's take on more debt, and also by the general requirement for monitoring to increase as the firm increases its leverage. The size of the firm also affects the composition of the board. The positive effect of firm size and industry grouping (dummy variables) on the composition of the board can be explained by the addition of outsiders to the board as the firm grows in size and develops into new industries. This could be interpreted as evidence that outsiders are appointed to the board for business, and not governance reasons. Hence, the composition of the board appears to be determined by other corporate governance mechanisms (for example, managerial equity ownership) and the structure of the firm. Consistent with the hypothesis (Hyp. 3B), there is a negative relation evident between the composition of the board and firm performance, although the significance of this diminishes when the specified equation is included in a system (Column 2, Table 5.5). The negative sign on the Tobin's Q coefficient suggests that poor performance leads to restructuring of the board where additional non-executives are appointed to the board.

In summary, with the notable exception of directors' remuneration, the results obtained here conform to the predictions generated in the empirical framework. They suggest that there is considerable interdependence among corporate governance mechanisms within and outside the firm. Ownership structure (inside and outside) and the composition of the board are strongly related and are also significantly influenced by attributes of the firm's structure (firm size and debt to equity ratio). Directors' remuneration does not appear to be in any way dependent on equity ownership, suggesting that it may not be part of an internally determined governance system, and that instead levels of directors' pay are decided on with reference to the size of the firm and the industry it operates in. Alternatively, the data employed here may not accurately reflect the incentive contract of individual executives over time. The performance of the firm does not appear to have any significant bearing on the composition of any of the corporate governance variables. These results are generally consistent across changes in methodology, although there are some indications that OLS regressions may provide misleading results.

Table 5.5 The Determinants of the Composition of the Board (%ODIR): Regression analysis of proportion of non-executives on the board (%ODIR) on Tobin's Q, corporate governance (OWN, OUT) and firm structure (DE, LS) variables. Column 1 is calculated using Ordinary Least Squares while Column 2 is part of a system of equations estimated by Three Stage Least Squares.

| | *Dependent Variable: Composition of the Board* | |
|---|---|---|
| | OLS | 3SLS[1] |
| Intercept | .26643 | .1642 |
| | (.00) | (.01) |
| TQ | -.00897 | -.00806 |
| | (.05) | (.08) |
| OWN | -.00083 | -.00081 |
| | (.00) | (.00) |
| OUT | .0009 | .00094 |
| | (.02) | (.02) |
| DE | (.031) | .02724 |
| | (.06) | (.06) |
| LS | .0130 | .0133 |
| | (.00) | (.00) |
| IND. DUM. | *Yes* | *Yes* |
| $R^2$(%) | 9.55 | 9.07 |

[1] Instruments: DIRB, MBV, DRD

## 5.5 Corporate Governance and the Value of the Firm

This section investigates the combined effect of corporate governance on firm value (Tobin's Q). If these mechanisms are optimally chosen to maximise value within the firm, then we should observe no cross-sectional relation between these mechanisms and firm value, although we should observe a significant relation between exogenous variables such as outsider equity ownership, and firm value. Table 5.6 presents the regression of firm structure and corporate governance mechanisms on the value of the firm, based on the equation below.

$$TQ = f(OWN, OWN^2, \%ODIR, DR/ID, OUT, LS, IND., D/E) \quad (4)$$

The contribution of the systems approach is seen most clearly in the case of insider ownership structure. While the evidence from studies relating the composition of the board of directors and directors' remuneration to firm value has generally proved inconclusive, previous work shows that there is a non-monotonic relation between the level of insider equity ownership and firm value. When a similar specification is applied to the data employed in this study (using Ordinary Least Squares analysis, Column 1, Table 5.6), a non-linear relation between firm value and insider equity ownership is evident. Figure 5.4 illustrates this relation between firm value and insider ownership.

In its quadratic form, insider equity ownership could be inferred to produce a convergence and entrenchment effects on the value of the firm. The literature explains these effects as follows. In general, firm performance seems to rise as insider ownership increases from 0% to 30%. This highlights the process of convergence of managerial interests with those of shareholders. Where managerial equity holdings are in the lower part of the 0%-5% range, and managers are encouraged to act in shareholder's interests; in doing so, they will increase their own wealth (it is worth noting that the upward slope of the curve is at its steepest for the 0%-5% ownership range). In addition, insiders with equity holdings in the 5%-30% range have the potential to significantly influence the strategy of the organisation. When managers own a significant proportion of the shares in the firm, they have the power to influence the composition and the decisions of the board. Moreover, they possess the power to implement the corporate strategy which they regard as appropriate. However, when manager's holdings rise above the 30% (approximately) level, managers may become under-diversified and the entrenchment effect begins to set in. They are more risk averse as their ownership stake increases, and begin to behave more like bondholders than equityholders. This relation between performance and insider ownership is curvilinear, with Q rising until insider ownership reaches the 30% mark and then falling off from there. This relation is very similar to that depicted by McConnell and Servaes (Fig. 1, p. 604, 1991), and that postulated by Stulz (1990). The remarkable feature of these graphs is the rapid deterioration in Q as insider ownership tends towards levels where overall control of the corporation is gained (that is, >50%).

However, in the context of a systems model, where other corporate governance variables are included, insider equity ownership has no significant effect on firm value. (This result holds whether OWN is modelled as having a linear or non-linear effect on Tobin's Q). This evidence must therefore lead to a reassessment of previous work which has so far avoided the issue of causality, for example,

> *"we have trodden carefully around the question of causality", (McConnell and Servaes, p.154, 1995).*

Within the systems framework, neither insider ownership structure nor the composition of the board exert a significant influence on the value of the firm. This confirms hypothesis 4 and suggests that these corporate governance mechanisms are optimally chosen within the firm in order to maximise shareholder wealth. The results are similar to recent results obtained by Hubbard et al. (1998), and Agrawal and Knoeber (1997). These are important results as managerial ownership and the board of directors are the primary incentive and monitoring mechanisms within the firm. The evidence implies that these two critical governance mechanisms are carefully balanced to maximise firm value.

Column 2 of Table 5.6 indicates a puzzling negative relation between directors' compensation and firm value. Although consistent with the negative effect of return on assets (ROA) on directors' remuneration (DR/ID) evident in Table 5.2, this result is inconsistent with theoretical predictions. Based on agency theory and previous evidence we would expect that in this case there would be a positive but insignificant relation between DR/ID and TQ. This is indeed the case when the control variable LS is excluded from the equation, suggesting that the negative effect of DR/ID is driven by firm size, in particular by the effect of small firms. In order to resolve this puzzle, the effect of firm size on corporate governance is analysed in more detail in Section 5.6. In addition, the relation between directors' remuneration and firm value is reappraised using a set of panel data, also in Section 5.6.

The results in Table 5.6 demonstrate that very different conclusions can be reached about the relation between corporate governance and firm value, depending on whether we employ Ordinary Least Squares regressions or simultaneous equations (3SLS). It shows that isolating the effects of single governance mechanisms will not give a true picture of their contribution to the network of mechanisms that governs the firm. Overall, the evidence suggests that at least two corporate governance mechanisms (OWN and %ODIR) are optimally chosen within firms, although there remain a number of methodological issues which are so far unresolved. These are addressed in the following section.

Figure 5.4: Tobin's Q as a function of Ownership Structure

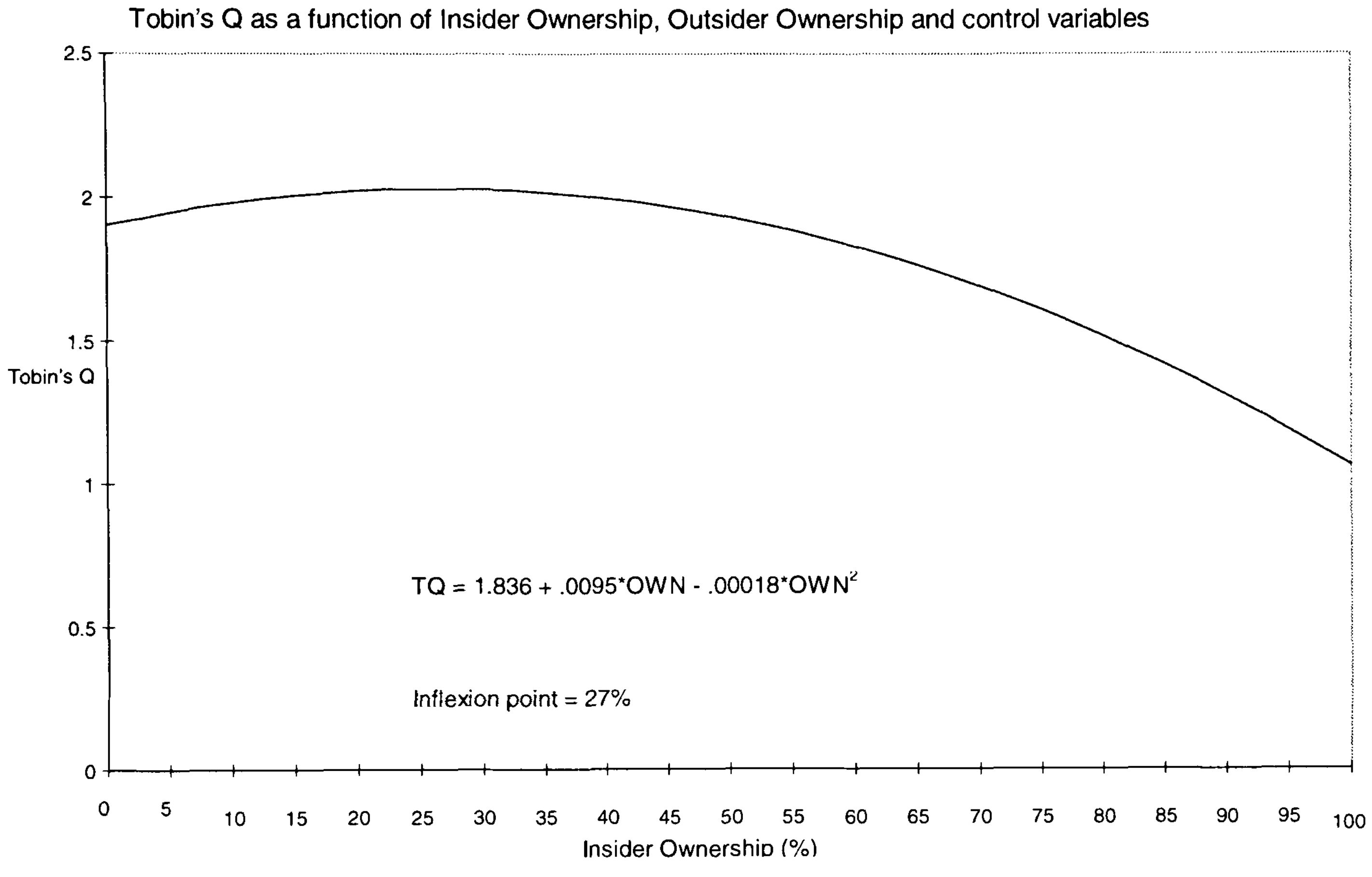


Table 5.6: Firm Value and Corporate Governance.
Regression analysis of Tobin's Q on Beta, corporate governance ($OWN$, $OWN^2$, OUT, %ODIR, DR/ID) and firm structure (DE, LS) variables. Column 1 is calculated using Ordinary Least Squares while Column 2 is part of a system of equations estimated by Three Stage Least Squares. A cross-sectional sample of 1067 is used.

| | *Dependent Variable: Tobin's Q* | |
|---|---|---|
| | OLS | 3SLS[1] |
| Intercept | .8107 | -.29071 |
| | (.09) | (.59) |
| OWN | .0079 | .01638 |
| | (.06) | (.26) |
| $OWN^2$ | -.00014 | -.00024 |
| | (.01) | (.21) |
| %ODIR | -.0745 | -.00529 |
| | (.67) | (.79) |
| DR/ID | -1.08E-9 | -1.06E-6 |
| | (.00) | (.00) |
| OUT | -.0044 | -.00479 |
| | (.00) | (.00) |
| LS | .1292 | .1340 |
| | (.00) | (.00) |
| DE | .8302 | .7909 |
| | (.00) | (.00) |
| IND. DUM. | *Yes* | *Yes* |
| $R^2$(%) | 20.7 | 19.3 |

[1] Instruments: DIRB, $DIRB^2$, DRD, DIR

## 5.6 Methodological issues

### 5.6.1 Heteroskedasticity

To further analyse the robustness of the above results, a number of methodological issues are considered. The sample of firms studied here represents almost the entire cross-section of UK firm's for the year 1995. As a consequence, a number of biases can occur. First, in order to correct for any heteroskedasticity[8] the White covariance estimator is employed in each regression equation to provide correct estimates of the coefficient covariances in the presence of heteroskedasticity. In addition, the log of firm size (LS) is used as a control variable to control for possible heteroskedasiticty across the size of firms studied. Finally, the sample of 1067 firms is sorted according to the log of firm size and the system of equations is then estimated for the first and last 350 firms. Tables 5.9 and 5.10 (Appendix) present the results.

---

[8] The econometrics package employed here (Eviews 3) also detects colinearity in regression equations.

Table 5.9 illustrates the specified system of equations for the smallest 350 firms in the sample. In this case, the effect of systematic risk (Beta) on both insider equity ownership and directors' remuneration increases in significance, suggesting that executives in small firms are more sensitive to external risks. Therefore, they will prefer to have less of their compensation composed of equity and more of cash, as the results in Table 5.9 suggest. In addition, the effects of outsider ownership and the composition of the board are stronger here than in Table 5.6. There are two possible reasons for this. First, smaller firms are generally less well monitored (i.e. by market analysts) and therefore require increased vigilance by outside investors and directors. Second, it is also possible that the type of large investor and non-executive directors who exist in smaller firms are different to those in larger firms. For instance, blockholders in large firms are likely to be passive institutional investors whereas founders, or founder's families are more likely to own significant stakes in small firms. In addition, it is more likely that non-executive "trophy" directors will be appointed to the boards of large firms, whereas it is also easier for associates of the chief executive to gain a place on the board of a smaller firm.

In general, the effects of the control variables (DE, LS and industry dummy variables) are diminished. For example, the $R^2$ in Column 3 (Table 5.9) falls by 20% compared to the corresponding figure in Table 5.6. With regard to Column 4, with the exception of the sign of the coefficient of composition of the board of directors, the results are similar to those in Table 5.6. The results in Table 5.10 are more comparable to those in Table 5.6, and would suggest that corporate governance mechanisms are more stable and developed for large firms than for smaller ones. In this case, the influence of outsider equity owners appears to weaken, suggesting that investors in large firms are more passive than active. Again, Column 4 of Table 5.10 indicates that in large firms, corporate governance mechanisms are optimally chosen to maximise firm value.

## 5.6.2 Control Variables

Overall, the $R^2$ values in Tables 5.1, 5.2, 5.5 and 5.6 are high. In the systems model, the independent variables explain 20% of Tobin's Q, 46% of directors' remuneration, 9.5% of %ODIR and over 16% of OWN. As mentioned earlier, a number of control variables are included in order to account for the effects of firm structure on the dependent variables. The regressions reported here account for industry effects through twenty one industry dummy variables formed on the basis of 1992 Standard Industrial Classification codes. As the Lindenberg and Ross (1981) study demonstrates, industry grouping is an important determinant of the Tobin's Q ratio. This is evident here, where the inclusion of industry dummies increases the $R^2$ on the equation where Tobin's Q (Table 5.6) is the dependent variable from 8.2% to 20.8%. In addition, the inclusion of industry dummies increase the significance of the insider ownership equation by 2%, the directors' pay equation by 3% and the composition of the board equation by almost 4%.

The effects of the debt to equity ratio are also accounted for, with the inclusion of D/E adding 5.4% to the Tobin's Q equation and less than 1% to the other equations. As mentioned above, the log of firm size (LS) is also included as a control variable, in order to account for the variation in corporate governance and its effects across firms of different sizes. Specifically, it adds almost 2% to each of the %ODIR and TQ equations, but contributes 25.6% and 5.6% to the DR/ID and OWN equations, suggesting that a substantial amount of directors' compensation is related to the size of the firm.

The sensitivity of the analysis to changes in the dependent and independent variables is examined. In Table 5.11 (Appendix) the variables OWNB and MBV are substituted for the endogenous variables OWN and TQ, respectively. OWNB represents directors' beneficial holdings and is very similar to the original variable OWN which is composed of directors' total holdings (beneficial and non-beneficial). Market to Book Value (MBV) is used in place of Tobin's Q, and as Chapter 4 illustrates, is measured in a similar manner. There is very little difference between the alternative and original measures, and the regression results in Table 5.11 are very similar to those in Table 5.6. In addition, the Blundell (1991) Q estimator is also substituted for Tobin's Q (not reported), with little difference to the results obtained in Table 5.6. The results in both tables confirm that the relation between firm value and corporate governance, is not sensitive to changes in the dependent variable. This finding would also suggest that "easy to construct" estimates of Tobin's Q, and related measures such as MBV, offer accurate and reliable approximations of firm value.

In order to ensure that the results obtained so far are not driven by outliers, the sample is alternately ranked according to Tobin's Q and OWN. In each case, the sample then has the observations in the 0%-5% and 95%-100% percentile ranges removed. The equations below show the relation between the dependent variable Tobin's Q and corporate governance mechanisms (with control variables) for truncated samples ranked according to Tobin's Q and OWN. This equation is estimated as part of the specified system of equations. The results continue to suggest that the apparent optimal choice of corporate governance mechanisms is not attributable to extreme observations.

Sample ranked by Tobin's Q and truncated at the 0%-5% and 95%-100% ranges:

$$
\begin{array}{lllllll}
TQ = & -.1932 & + .0252*OWN & - .0004OWN^2 & - .0991*\%ODIR & - 9E\text{-}7*DR/ID & - .0024*OUT + \\
 & (.63) & (.07) & (.04) & (.58) & (.00) & (.00) \\
 .598*DE & + .124*LS & & & & & \\
 (.00) & (.00) & & & & &
\end{array}
$$

$$R^2(\%) = 13.56$$

Sample ranked by insider ownership and truncated at the 0%-5% and 95%-100% ranges:

$$
\begin{array}{lllllll}
TQ = & -.1035 & + .0023*OWN & - .0005OWN^2 & - .0944*\%ODIR & - 1E\text{-}6*DR/ID & - .0029*OUT + \\
 & (.84) & (.95) & (.93) & (.65) & (.00) & (.00) \\
 .807*DE & + .127*LS & & & & & \\
 (.00) & (.00) & & & & &
\end{array}
$$

$$R^2(\%) = 19.2$$

## 5.6.3 Instrumental Variables

The limitations on available UK company account data means that the choice of useful instrumental variables for the simultaneous equations is also constrained. This problem is further exacerbated by the fact that variables which would make useful instruments are already included in the specified system as exogenous variables. Effective instrumental variables are chosen on the basis of how highly they are correlated with the endogenous variable, but are not correlated with the error terms (although in practice this is difficult to determine). For example, (based on the correlation matrix in Section 3.8) in the case of the endogenous variable OWN, regressed on TQ, variables such as OWNB and OWNNB are likely to make strong instrumental variables because they are strongly correlated with OWN and not TQ.

Different instrumental variables are used for each endogenous variable and each equation is specified to meet the identification order condition. In addition, the econometrics package employed here detects and controls for collinearity and heteroskedasticity in the instruments.

The lack of a range of strong instrumental variables is a common problem in related studies (e.g. Hubbard,1998). In this case, few of the range of available instruments prove to be useful instruments, and this problem is exacerbated by the limited selection of company account data for U.K firms. This shortcoming restricts the scope of the systems of equations, and leaves some doubt as to whether the results obtained from the system of equations can be regarded as conclusive.

### 5.6.4 Stability over time

One limitation of this study is that it uses cross-sectional data from only one year (1995). As a result, it can merely provide a "snapshot" of the relation between corporate governance and performance at a particular point in time and in the business cycle. A particular concern that arises is that the corporate governance/performance relation may not be stable over time, especially in the case of growing firms. McConnell and Servaes test the relation between ownership structure and performance for the years 1976 and 1988, and their results are generally consistent for both years. Furthermore, Chen, Huxter and Hu investigate the relation between management ownership and corporate value for the years 1976, 1980 and 1984 and their results indicate that the equity ownership/corporate value relation is again stable over time. Therefore, on this basis it would appear that the empirically documented relationship between insider equity and firm value is stable over time. Indeed, a recent study has shown that levels of managerial equity ownership have risen over the long term, and it also holds that this has not resulted in substitution away from other governance mechanisms.

Holderness, Sheehan and Kroszner (1998) document the fact that ownership by officers and directors is higher today than earlier in the century. Insider ownership rises from 13% in 1935 to 21% in 1995. This increase in managerial ownership appears to have been facilitated by lower volatility and greater hedging opportunities. In addition, the increase in ownership is not restricted to specific industries but occurs across all industry categories. However, they also find that higher managerial ownership has not substituted for alternative corporate governance mechanisms such as incentive based pay, monitoring by the board, the market for corporate control or product market competition. These mechanisms all appear to be used at similar or greater levels of intensity today as 60 years ago. This evidence supports the view of the firm, emphasised in the multi-task principal-agent literature, that alternative incentive devices must be balanced and will tend to increase or decrease in intensity simultaneously.

This recent evidence would suggest the relation between the system of corporate governance options and firm value is stable over time. Nonetheless, two smaller sets of panel data are employed to investigate this. In particular, these pooled data sets should shed some light on the puzzling significant negative effect of directors' remuneration on firm value. The first set of panel data comprises corporate governance and firm value data for 182 firms for the years 1996-1997. Summary data for this sample is presented below in Table 5.7. Data for these 182 firms has been gathered from an original sample of the 350 largest firms listed on the London Stock Exchange (using Datastream). That the original sample (of 350 firms) is almost twice the size of the final sample illustrates the difficulty in collecting time series corporate governance data for U.K firms. The 182 firms studied here are large firms, and we would therefore expect that the governance systems in these firms are stable and sophisticated. Summary data for the pooled sample of 182 firms shows that the levels of insider and outsider ownership in this panel are much lower than in the main sample (of 1067 firms), most likely because it is more costly for executives or investors to build stakes in large firms.

In addition, a second panel provides firm value and directors' remuneration data for 120 U.K firms for the years 1993-1997. Again, this panel is based on an original list of the 350 largest firms on the London Stock Exchange. This panel should also promote a better understanding of the relation between directors' remuneration and firm value, than is already evident in Tables 5.2 and 5.6. Mean directors' remuneration figures for this sub-sample (Table 5.8) are similar to those in Table 5.7, although average Tobin's Q figures are somewhat lower. A comparison of Table 3.2 (Chapter 3) with Tables 5.7 and 5.8 shows that the firms in the sub-samples have higher performance, lower managerial equity ownership and a higher number of outsiders on the board than the firms in the cross-sectional sample. In addition, the firms comprising these sub-samples are on average twice as large than those in the cross-sectional sample.

Figure 5.4 illustrates the changes in highest directors' pay and Tobin's Q in this sample, over the period 1993-1997. A more extensive dataset was restricted by a lack of time series ownership structure data for this period. However, a crucial improvement in these data sets over the cross-sectional sample is that directors' remuneration is represented by the variable HIDIR, the remuneration of the highest paid director. Compared to the variables DR/ID, DR/D and DR, HIDIR should give a much more accurate account of the executive's compensation contract.

Table 5.7: Average values for pooled data set of 182 firms for the years 1996-1997.

| *Year* | *96* | *97* |
|---|---|---|
| Q | 2.98 | 2.71 |
| DE | .27 | .31 |
| HIDIR | 567 | 604 |
| DR | 2101 | 2298 |
| %ODIR | 3.11 | 2.77 |
| OWN | 3.62 | 3.24 |
| OUT | 23.94 | 25.05 |

Table 5.8: Average values for pooled data set of 120 firms for years 1993-1997.

| *Year* | *93* | *94* | *95* | *96* | *97* |
|---|---|---|---|---|---|
| Q | 2.13 | 1.91 | 2.05 | 2.31 | 2.11 |
| LS | 14.55 | 14.57 | 14.66 | 14.8 | 14.82 |
| DE | 0.405 | 0.362 | 0.415 | 0.395 | 0.43 |
| DR/ID | 196 | 90 | 229 | 249 | 264 |
| %ODIR | 0.42 | 0.27 | 0.44 | 0.47 | 0.48 |
| HIDIR | 435 | 209 | 559 | 717 | 725 |

Figure 5.4 Firm Value (Tobin's Q) and Directors' Pay

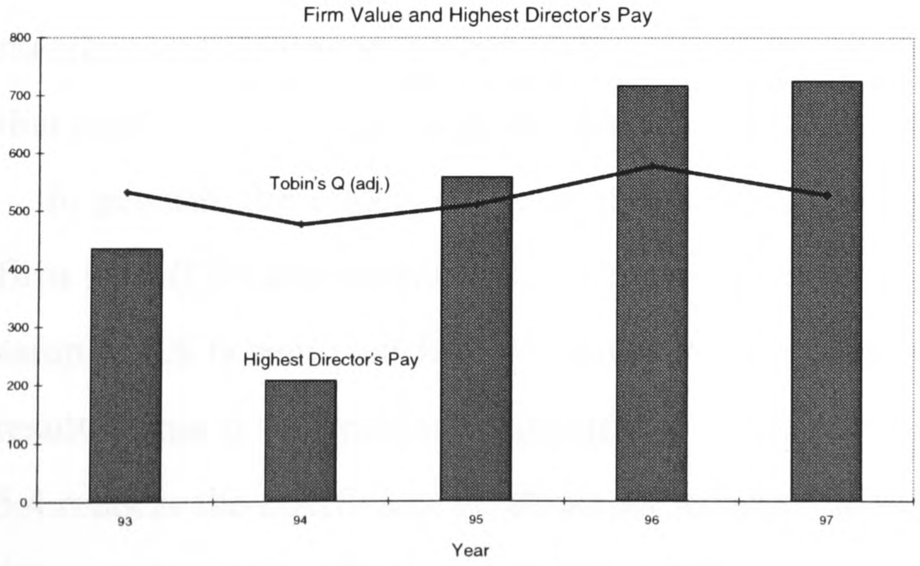


Table 5.12 (Appendix) presents regressions of corporate governance mechanisms and control variables on firm value for a pooled sample of 182 firms for the years 1996-1997. The firms in this sample are large and generally successful ones (as summary data in Table 5.7 shows). Column 1 differs from Columns 2 and 3 in that a different measure for remuneration is used. In Column 1 remuneration per director (DR/ID) is the independent variable, whereas in Columns 2 and 3 the remuneration of the highest paid director (HIDIR) is employed. This variable is useful for comparison with other studies that employ the pay of the CEO (Mehran, 1995) or highest paid director (Conyon and Leech, 1994). The control variable for firm size (LS) is excluded from Column 2 in order to show its effect on the specified equation, because the inclusion of this variable in Column 4 of Table 5.4 causes the coefficient on DR/ID to be negative.

The regression results show an insignificant non-linear relation between insider ownership and firm value, while outsider equity ownership (OUT), the composition of the board (%ODIR), and directors' remuneration (DR/ID and HIDIR) are positively related to Tobin's Q. These positive relations are in contrast to the negative ones evident in Tables 5.2 and 5.6. It is therefore possible that at least in the case of remuneration, that anomalous results can be produced by large cross-sectional data samples. The results also suggest that corporate governance mechanisms operate differently in large multinational firms than in smaller ones. For instance, in the case of larger firms, the corporate governance variables studied here operate in conjunction with other monitoring mechanisms such as stock market analysts, and expert bankers. Furthermore, institutional investors may have different motives for investing in large firms than small ones. Nonetheless, it is important to note that corporate governance mechanisms appear to be optimally chosen to maximise firm value, again implying that cross-sectional OLS regressions can be misleading.

In general, the effects of the control variables for the debt to equity ratio (DE) and firm size (LS) are diminished, when compared to those for the cross-sectional data sample. LS is removed from Column 2 in order to show its effect on the regression results. This is an important adjustment as the inclusion of LS in Column 4 of Table 5.4 renders the coefficient on directors' remuneration negative. The inclusion of LS in this case has little effect, save on the coefficient of the intercept. This is to be expected as the sample of firms considered here is composed of large companies, so there is unlikely to be much variation in the results attributable to size.

The effect of the remuneration paid to directors on the performance of the firm is interesting, in part because of the negative effect of remuneration on value evident in the cross-sectional sample. The variable HIDIR, remuneration of the highest paid director, is employed to represent remuneration in Columns 2-3, not least because it is similar to the type of variable used in other studies. For instance, Jensen and Murphy (1990), Conyon and Leech (1994), Garen (1994), and Mehran (1995) all use a form of CEO or highest paid directors' remuneration. Indeed, although the dependent variable and other independent variables in Table 5.12 are different to those used in similar work, the coefficient of the effect of HIDIR on Tobin's Q is on average .0038, which resembles the results of previous work (Jensen and Murphy). However, the effect of pay on performance is weak in Columns 1-3. This suggests a number of effects. First, it provides evidence to confirm previous work which holds that the link between remuneration and pay is not as strong as theory suggests. Second, it appears that the cash remuneration paid to directors contains little element of incentive, and is more likely to be based on the size of the firm, and the standard remuneration in similar industries. Finally, it indicates that the anomalous results obtained in Section 5.3 are possibly misleading.

In order to gain further knowledge of the determinants of directors' remuneration, Table 5.13 presents the regression of corporate governance and firm structure variables on the remuneration of the highest paid director. Altogether, these independent variables explain over 55% of HIDIR. However, three variables, firm size, return on assets and the industry control variables account for almost all of this. (Regressions based on the second sample of panel data (1993-1997) produced similar results). Based on the pooled sample regressions with the full complement of control variables, the corporate governance variables appear to have little impact on the pay of the highest paid director. This suggests that, similar to previous work, agency theory does not offer an accurate description of directors' pay.

We can use the results obtained from the pooled sample to reinterpret the negative relation between inside directors' remuneration and firm value evident in Tables 5.2 and 5.6. This relation is unusual, although Mehran does find a similar pattern:

*"I also find that both Q and ROA are inversely related to the percentage of CEO's total compensation in cash" (1995, p.177).*

In addition, Conyon and Leech (1994) find that the relation between remuneration and performance is weak. Furthermore, Jensen and Murphy (1990) and Garen (1994) find that the coefficient on this relation differs greatly across companies. Thus, while the negative effect of remuneration on performance is puzzling, it is not unprecedented. More importantly, consideration of the data used here and the dynamics of pay suggest that this negative relation does not persist over time. Indeed, the evidence in Tables 5.12 and 5.13 shows that when pooled data for large firms is employed, the effect is positive. This suggests a number of factors. First, as Conyon (p. 244, 1994) suggests "one potential reason for this anomaly… is that the study examines a cross-section of firms". Indeed, as the graph in Figure 5.4 demonstrates, results based on one year of data (e.g 1994) could provide a misleading representation of the relation between remuneration and performance.

Finally, the results obtained here suggest that the anomalous results obtained in Section 5.3 are misleading. This appears a more likely conclusion if we compare the results of Tables 5.9 and 5.10 with Tables 5.12 – 5.13. As discussed in the previous section, Tables 5.9 – 5.10 present the results of the system of equations calculated for the smallest and largest 350 firms in the cross-sectional sample. Considering that Table 5.10 is based on the largest 350 firms, it should be more comparable to the pooled samples than the entire cross-sectional sample. Indeed, the negative effect of remuneration on performance is insignificant in Table 5.10 (significant in Table 5.9), and the explanatory power of the regression of corporate governance and firm structure variables on remuneration is higher in Table 5.10. In general, the results obtained for the largest 350 firms in the cross-sectional sample are more comparable to those in the pooled sample. This strengthens the suggestion that either cross-sectional data on smaller firms is not entirely reliable or that corporate governance systems operate differently (and perhaps less well) for small firms as compared to large ones.

## 5.7 Corporate Governance and Investment Opportunities

In order to assess whether the interdependence between corporate governance mechanisms and their effects on firm value change when the firm faces either very few or very many investment opportunities, this section estimates the specified system of equations for subsets of the sample, ranked according to the difference of their return on capital and cost of capital.

The original sample of 1067 firms is sorted on the basis of the spread between the return on capital and the cost of capital ($r$ - $c$). The sample is then divided into three equally sized sub-samples which broadly reflect value destruction ($r < c$), value creation ($r > c$) and "super" value creation ($r >> c$). This approach is similar to that adopted by McConnell and Servaes (1995), who use the price-earnings (P/E) ratio as their main measure of investment opportunities. The spread between the return on capital and the cost of capital offers a better proxy for investment opportunities than the P/E ratio because it explicitly considers both the cost and the benefit of an investment. Furthermore, although the return and cost of capital figures are themselves subject to error, the P/E ratio can be distorted by accounting policies and market based data. We estimate the system of equations for two sub-samples where firms destroy value (r < c), and super value creation (r >> c).

Table 5.14 presents the system of equations for firms who face few investment opportunities (r < c), and Table 5.15 illustrates the results for a sub-sample based on firms with many investment opportunities (r>>c). While the interdependence amongst the corporate governance mechanisms weakens in Table 5.14, the results are generally unchanged when compared to Table 5.6. This suggests that the combination of corporate governance mechanisms is optimally chosen, given the set of investment opportunities faced by the firm.

## 5.8 Conclusion

Recent research relating corporate governance to the value of the firm has provided some interesting and puzzling results. For instance, a number of studies (Morck, Shleifer and Vishny, 1989, McConnell and Servaes, 1990, 1995, Chen, Huxter and Hu, 1995) have presented evidence of a non-linear relation between insider equity ownership and of the value of the firm. More recently, Yermack (1996) demonstrates that the proportion of outsiders on the board of directors has a negative effect on the value of the firm.

However, the results of these studies can be misleading. By analysing single corporate governance mechanisms in isolation they fail to acknowledge the network of relationships between governance mechanisms and the firm. Further, given the methodology employed in previous work, these studies cannot determine whether corporate governance mechanisms are optimally chosen within the firm, in order to maximise the value of the firm.

This chapter addresses these issues and finds that as hypothesised, interdependent corporate governance mechanisms (insider ownership structure (OWN) and the composition of the board (%ODIR)) are optimally chosen to maximise the value of the firm. This result holds for cross-sectional and pooled data samples. Another governance variable, directors' remuneration, was also modelled as an interdependent corporate governance variable within of the governance system. Yet, the results show that OWN and %ODIR have little significant relation to DR/ID, and more importantly that DR/ID has a significant negative effect on Tobin's Q. When a pooled data set is employed, this effect disappears and the role of remuneration appears more straightforward.

In the model employed here, it is assumed that the variables, OWN, %ODIR and DR/ID are determined within the firm. Another governance mechanism, the significant holdings of outsiders is assumed to be determined outside the firm and is modelled as an exogenous variable in the system of equations. Outsider equity ownership exerts a negative effect on Tobin's Q, and this puzzling relation provides the basis for the next chapter.

The structure of the firm as represented by the debt to equity ratio, the log of firm size and industry dummy variables, has a strong effect on both the corporate governance mechanisms and the value of the firm. This illustrates that decisions made within the firm regarding optimal corporate governance arrangements are influenced by the firm's environment. In particular, the choice and effectiveness of corporate governance mechanisms appears to vary with the size of the firm. Decisions regarding corporate governance seem more straightforward in large developed corporations than for small growing ones. However, there is no evidence that the level of investment opportunities faced by the firm effects the relation between corporate governance and firm value.

The important contribution of this chapter is to model corporate governance mechanisms and firm value as a simultaneous system whereas previous studies have focused on individual governance mechanisms and have ignored the issue of causality. However, while the results obtained here have proved robust enough to suggest that OLS regression results can be misleading, the application of a system of equations to UK data is hampered by a lack of data, in particular a lack of suitable instrumental variables. This shortcoming restricts the scope of the systems of equations, and leaves some doubt as to whether the results obtained from the system of equations can be regarded as conclusive.

# Appendix

Table 5.9: System of equations estimated by Three Stage Least Squares for the smallest 350 firms in the cross-sectional sample of 1067.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | OWN | %ODIR | DR/ID | TQ |
| Intercept | 84.76 | .1434 | -271871 | -1.864 |
| | (.00) | (.37) | (.00) | (.04) |
| TQ | -1.3400 | -.00705 | | |
| | (.13) | (.40) | | |
| BETA | -7.162 | | 20618 | |
| | (.037) | | (.04) | |
| OUT | -.3138 | .001148 | 134.0 | -.00144 |
| | (.00) | (.04) | (.35) | (.62) |
| %ODIR | -16.986 | | 129720 | .0587 |
| | (.00) | | (.00) | (.82) |
| DE | .2418 | .02728 | 8515 | .9369 |
| | (.92) | (.27) | (.24) | (.00) |
| LS | -2.508 | .01593 | 18654 | .234 |
| | (.01) | (.11) | (.00) | (.00) |
| OWN | | -.001478 | -47.82 | .01217 |
| | | (.00) | (.85) | (.59) |
| OWN$^2$ | | | | -.000246 |
| | | | | (.48) |
| DR/ID | | | | -1.5E-06 |
| | | | | (.048) |
| IND | *Yes* | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 18.1 | 10 | 26.8 | 22.71 |

Table 5.10: System of equations estimated by Three Stage Least Squares for the largest 350 firms in the cross-sectional sample of 1067.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | OWN | %ODIR | DR/ID | TQ |
| Intercept | 67.09 | .1839 | -1318711 | 1.912 |
| | (.00) | (.07) | (.00) | (.02) |
| TQ | 1.650 | -.0275 | | |
| | (.03) | (.00) | | |
| BETA | -1.418 | | -1274 | |
| | (.11) | | (.23) | |
| OUT | -.1835 | .00036 | 237.7 | -.00417 |
| | (.00) | (.03) | (.46) | (.00) |
| %ODIR | -16.37 | | 307457 | -1.069 |
| | (.00) | | (.00) | (.11) |
| DE | -3.385 | .0483 | 41781 | .6839 |
| | (.180 | (.02) | (.04) | (.00) |
| LS | -2.390 | .01458 | 74462 | .0386 |
| | (.00) | (.00) | (.00) | (.35) |
| OWN | | -.0012 | -1063 | .0219 |
| | | (.00) | (.08) | (.27) |
| OWN2 | | | | -.00027 |
| | | | | (.38) |
| DR/ID | | | | -5.03E-07 |
| | | | | (.09) |
| IND | *Yes* | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 10.5 | 9.2 | 44.7 | 20.3 |

Table 11: System of equations estimated by Three Stage Least Squares for a cross-sectional sample of 1067 firms with the variables OWN and Tobin's Q replaced by DIRB and MBV, respectively.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | DIRB | %ODIR | DR/ID | MBV |
| Intercept | 66.345 | 0.1634 | -621717 | -0.200 |
| | (.00) | (.01) | (.00) | (.64) |
| MBV | -.3293 | -.0091 | | |
| | (.52) | (.05) | | |
| BETA | -2.184 | | 8135 | |
| | (.24) | | (.60) | |
| OUT | -.1966 | .00093 | -377.2 | -.00395 |
| | (.00) | (.02) | (.33) | (.00) |
| %ODIR | -7.904 | | 177967 | -.1007 |
| | (.00) | | (.00) | (.57) |
| DE | -.0882 | .02214 | 22488 | -.2776 |
| | (.54) | (.17) | (.02) | (.00) |
| LS | -2.454 | .0128 | 42305 | .1328 |
| | (.00) | (.00) | (.00) | (.00) |
| DIRB | | -.0010 | -2450 | .00423 |
| | | (.00) | (.14) | (.18) |
| DIRB2 | | | | -.00007 |
| | | | | (.09) |
| DR/ID | | | | -1.15E-6 |
| | | | | (.00) |
| IND | *Yes* | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 14.98 | 8.8 | 38.8 | 15.4 |

Table 5.12: Regression analysis of Tobin's Q on corporate governance (OWN, OWN2, OUT, %ODIR, DR/ID, HIDIR) and firm structure (DE, LS) variables for a pooled sample of 182 firms (1996-1997).

| | *Dependent Variable: Tobin's Q* | | |
|---|---|---|---|
| Intercept | -2.700 | -.3883 | -.2511 |
| | (.56) | (.85) | (.88) |
| OWN | 0.1601 | .1842 | .1204 |
| | (.18) | (.15) | (.34) |
| OWN$^2$ | -.00235 | -.0027 | -.0015 |
| | (.30) | (.26) | (.58) |
| OUT | .0473 | .0496 | .0544 |
| | (.06) | (.16) | (.18) |
| %ODIR | 3.493 | 3.293 | 3.389 |
| | (.09) | (.09) | (.09) |
| DE | -.3731 | -.2678 | -.2801 |
| | (.22) | (.13) | (.16) |
| LS | .512 | | -.19115 |
| | (.30) | | (.37) |
| DR/ID | .00283 | | |
| | (.27) | | |
| HIDIR | | .0038 | .00343 |
| | | (.03) | (.09) |
| IND | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 19.6 | 32.3 | 31 |

Table 5.13: Regression analysis of remuneration of the highest paid director (HIDIR) on ROA, corporate governance (OWN, %ODIR, OUT) and firm structure (DE, LS), for a pooled data set of 182 firms (1996-1997).

| | *Dependent Variable* |
|---|---|
| | HIDIR |
| Intercept | -1602 |
| | (.00) |
| OWN | -3.49 |
| | (.32) |
| ROA | 842 |
| | (.00) |
| %ODIR | -227 |
| | (.29) |
| OUT | -.8802 |
| | (.56) |
| DE | -18.12 |
| | (.19) |
| LS | 203 |
| | (.00) |
| IND | *Yes* |
| $R^2$(%) | 55 |

Table 5.14: System of equations estimated by Three Stage Least Squares for the lowest 350 firms in the cross-sectional sample of 1067, ranked according to return on capital less cost of capital.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | OWN | %ODIR | DR/ID | TQ |
| Intercept | 79.44 | .19933 | -565621 | .9014 |
| | (.00) | (.01) | (.00) | (.57) |
| TQ | -1.6292 | -.017 | | |
| | (.14) | (.06) | | |
| BETA | -4.1542 | | 12761 | |
| | (.19) | | (.43) | |
| OUT | -.3114 | .00049 | -447 | -.000138 |
| | (.00) | (.29) | (.057) | (.40) |
| %ODIR | -17.25 | | 185680 | -.1100 |
| | (.00) | | (.00) | (.62) |
| DE | 1.083 | .0353 | 35720 | 1.080 |
| | (.67) | (.12) | (.00) | (.00) |
| LS | -2.401 | .0138 | 39838 | .0398 |
| | (.00) | (.00) | (.00) | (.11) |
| OWN | | -.0014 | -1279 | .0054 |
| | | (.00) | (.00) | (.82) |
| $OWN^2$ | | | | -.00013 |
| | | | | (.70) |
| DR/ID | | | | -8.85E-07 |
| | | | | (.01) |
| IND | *Yes* | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 17.3 | 10.4 | 52.3 | 29.8 |

Table 5.15: System of equations estimated by Three Stage Least Squares for the highest 350 firms in the cross-sectional sample of 1067, ranked according to return on capital less cost of capital.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | OWN | %ODIR | DR/ID | TQ |
| Intercept | 87.12 | .3530 | -837486 | -1.276 |
| | (.00) | (.00) | (.00) | (.056) |
| TQ | 1.6381 | -.0052 | | |
| | (.03) | (.46) | | |
| BETA | -3.0544 | | 2394 | |
| | (.33) | | (.91) | |
| OUT | -.1783 | .001026 | 96.41 | -.001357 |
| | (.00) | (.057) | (.75) | (.68) |
| %ODIR | -25.46 | | 178515 | .0599 |
| | (.00) | | (.00) | (.82) |
| DE | -2.160 | .02251 | -14467 | .4350 |
| | (.50) | (.45) | (.53) | (.02) |
| LS | -3.302 | .00318 | 51823 | .2120 |
| | (.00) | (.49) | (.00) | (.00) |
| OWN | | -.002212 | -1076 | .0286 |
| | | (.00) | (.05) | (.08) |
| $OWN^2$ | | | | -.0004 |
| | | | | (.14) |
| DR/ID | | | | -1.15E-06 |
| | | | | (.00) |
| IND | *Yes* | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 20.7 | 9.8 | 41.62 | 18.31 |

# Chapter 6 Outsider Ownership Structure

## 6.1 Introduction

The framework under which corporate governance is analysed in this study is based around four monitoring/incentive mechanisms: the board of directors, directors' equity holdings, directors' remuneration and significant equity holdings by outsiders. It is assumed that the first three of these are determined within the firm, and as the evidence in Chapter 5 illustrates, at least two of these (OWN and %ODIR) are optimally determined to maximise the value of the firm. The fourth governance mechanism, significant outsider equity holdings, is largely determined outside the firm and it is therefore excluded (as a dependent variable) from the system of equations estimated in Chapter 5. However, as an exogenous variable it has a significant effect on a number of the other corporate governance mechanisms and in particular on firm value. Specifically, there is evidence of a significant negative relation between Tobin's Q and outsider equity ownership.

Although recent work (Jensen,1993, Shleifer and Vishny,1997) underlines the problem of the failure of large shareholders to effectively monitor managerial investment decisions, it would be expected (Shleifer and Vishny,1986) that the presence of a blockholder would have a positive effect on firm value. It is in the blockholder's interest to expend resources to monitor executives, and it seems unlikely that a large investor would maintain, or even build, a stake in a poorly performing firm. Therefore, the negative relation between firm value and outsider ownership presented in Chapter 5, appears to contradict agency theory. While we would expect that the cross-section of investors would choose their larger investments carefully, the evidence does not seem to support the view that blockholders exert the positive influence on the firm predicted by theory. In reality, it is likely that blockholders are motivated to hold large stakes by a variety of factors, the least of which is to monitor executives.

This result is more difficult to explain because of the lack of research on the effect of large investors on firm value. While the relation between insider ownership and the value of the firm has been reasonably well researched, relatively little is known about the interaction between outside shareholders and the firm. As McConnell and Servaes (1990, p.579) state that

> *"the relationship between corporate value and institutional ownership is as yet relatively unexplored terrain".*

In addition, the limited knowledge on the impact of outside investors on firm value, is so far inconclusive. McConnell and Servaes (1990) again find that

> *"the few studies that do exist appear to provide contradictory evidence on the effect of institutional investors on the firm's activities" (p. 598).*
>
> *"the evidence on the role of block ownership is more ambiguous....consistent with the evidence of Holderness and Sheehan who do not find a significant relation between corporate performance and the presence of a single dominant shareholder"(p. 604).*

Similarly, Mehran (p. 181, 1995) declares

> *"I find no support for a relationship between firm performance and blockholders' stockholdings. Similarly, I find no support for a relationship between firm performance and the percentage of shares held by different groups of outside blockholders".*

Finally, with regard to the private sale of equity stakes, Wruck (1989, p.4) suggests

> *"in the middle range of ownership concentration (5% to 25%) however, this relation is negative. In this range the ability of incumbent shareholders to become entrenched outweighs any benefits of having a blockholder in place".*

It appears that the relation between outsider ownership and the value of the firm, has so far been generally under-researched. Therefore, it seems that additional work is required to illuminate the role that the outside blockholder plays in monitoring the actions of managers. In particular, little effort has so far been made to determine whether outsider equity ownership and firm value are simultaneously determined. This chapter investigates the effect that outsider blockholders have on firm value in a more rigorous manner than previous work has allowed for.

The determinants of outsider ownership are first examined, and then the relation between outsider equity ownership and firm value is analysed. Basic theory provides two central null hypotheses to direct this analysis (rejection of these hypotheses leads to discussion of a number of alternative hypotheses). The null hypotheses are,

*Hyp 6A: Outsider equity ownership is a positive function of Tobin's Q*

*Hyp 6B: Tobin's Q is a positive function of outsider ownership.*

The analysis begins with Section 6.2 where the determinants of outside ownership are analysed. Section 6.3 investigates the relation between outsider equity holdings and firm value, employing OLS, simultaneous equation and panel data methodologies. Section 6.4 adds detail to the regression results in the previous section by analysing the composition of the ownership structure of firms where very large blockholders are present. Section 6.5 offers a conclusion.

## 6.2 The Determinants of Outsider Equity Ownership

In the system of equations appearing in Chapter 5, outsider equity ownership is defined as an exogenous variable, and is therefore not included as a dependent variable in the system of equations. Yet, it is shown that OUT has a significant negative effect on insider ownership (OWN), and on firm value (Tobin's Q). In addition, OUT has a positive effect on the composition of the board (%ODIR). However, it is also possible that outside equity ownership may itself be influenced by some of these variables, although the reasoning behind these effects is more tenuous than that behind the effects induced by outsider ownership as an exogenous variable.

Based on agency theory, and prior research in this area, we can propose a number of possible effects. First, in common with other measures of ownership structure, it is likely that there will be a negative relation between firm size and the size of equity blocks held by outsiders. It is more costly financially and in terms of risk, to acquire a significant equity stake in a large firm as opposed to a small one. Second, investors will prefer profitable firms, so we expect a positive relation between return on capital (ROA) and the total size of significant outside equity holdings. We would also predict that as very large stakeholders have alternative reasons to profitability for holding large stakes, that any positive relation between return on capital and the size of the largest blockholder (LB1) would be weaker than that between return on capital and total outsider equity holdings (OUT).

The relation between insider equity ownership and outsider ownership is more difficult to predict. It would be expected that small amounts of managerial equity ownership should have no bearing on holdings by outsiders, and should perhaps induce outsiders to invest in firms they perceive to have value maximising incentive contracts. On the other hand, where an insider holds a significant block of equity, this may diminish the ability of an outsider to gain control of the firm by acquiring a large stake. In this case, we would expect a negative relation between outsider equity holdings and large insider holdings. Similarly, the there is a weak possibility that the composition of the board will exert any influence on the type or size of outsider holdings. If it does, we expect a positive relation between %ODIR and OUT, as an increased number of non-executives on the board increases transparency and signals improved monitoring to outside shareholders.

Finally, we would in general expect investors to be averse to risk, and therefore expect a firm's debt to equity ratio to have a negative effect on the level of significant outside shareholdings. The effects of systematic risk on outside blockholdings are more ambiguous, although we would predict a positive relation because larger holdings will be susceptible to less firm specific risk where Beta is relatively higher. The above predictions lead to the equation below which proposes the following determinants of outsider ownership.

OUT = f(OWN, %ODIR, BETA, ROA, TQ, IND, D/E, LS)

The independent variables mentioned above are the factors (from within the firm) which are predicted to influence the level of significant outside equity holdings. However, we do not expect that the combined effect of these variables will determine a substantial amount of the variation in OUT, as we assume that it is largely determined outside of the firm. Investors will settle the composition of their investment portfolio to maximise their own wealth, and not that of particular firms. Thus, it is more likely that OUT will be determined by a range of variables which are beyond the scope and measurement of this study. For instance, the identity and motivation of the investor, his risk profile, his total wealth, the composition of his investment portfolio and his association with particular firms/industries are among the factors which will determine the level of outsider equity ownership (OUT).

However, although it is difficult to predict the interaction between corporate governance variables and OUT, and their combined effects on Tobin's Q, these are important research questions nonetheless. This section examines the influence of corporate governance and firm structure variables on outsider ownership, using two data samples.

In Table 6.1, the main cross-sectional sample of 1069 firms is employed, while in Table 6.2 the analysis is based on a pooled sample of 182 firms for the years 1996-1997. In order to account for the identity and composition of large investors, three forms of outsider ownership are employed as the dependent variable: the total amount of significant equity holdings by outsiders (OUT), the holding of the largest outsider (LB1), and the number of significant blockholders (NB).

As predicted, the results show that insider equity ownership has a negative effect on outsider ownership, both cross-sectionally and over time. This suggests that substantial insider equity holdings deter outside investors from building a significant equity stake. It is likely that the benefits of control and monitoring associated with large outside stakes would be more difficult to attain in the presence of a powerful insider. There is a positive relation between the composition of the board of directors and outsider ownership, suggesting that greater independence at the level of the board acts as a positive signal to investors and reassures them that monitoring is already being undertaken. Thus, investors should feel it is less risky to invest more capital in firms with a higher proportion of non-executives on the board.

In line with expectations, the size of the firm exerts a negative influence on outsider ownership, implying that equity stakes are more costly to build in large firms. In the cross-sectional sample of 1067 firms, the debt to equity ratio has a negative effect on both OUT and NB, suggesting that investors will hold smaller stakes in financially risky firms. The absence of a significant relation between the level of debt and the level of outsider holdings in the pooled sample can be explained by the fact that the pooled sample is made up of large stable firms which are unlikely to experience cashflow problems and have had stable debt to equity ratios over the last couple of years. In addition, as Table 5.8 demonstrated, the average size of OUT is much lower in the pooled sample than in the cross-sectional one, indicating that investors have less to lose in the event of financing problems. Further, systematic risk does not appear to have a significant bearing on the type and size of outsider holdings, suggesting that many investors are well diversified. Contrary to hypothesis 6A, Tobin's Q does not have a significant effect on outsider ownership. The direction of its effect is negative, which confirms the unexpected result obtained in Chapter Five. There is an interesting contrast between the effects of the return on capital on outsider holdings for the cross-sectional sample and the pooled sample. In Table 6.1, return on capital has a puzzling negative effect on OUT, similar to the negative effect which OUT has on firm performance (Table 5.6), while in Table 6.2 the sign on the coefficient of ROA is positive. This suggests that in general performance is may not be a primary concern for the blockholder, and that they hold equity blocks for reasons (i.e. control) other than wealth maximisation. Further, cross-sectional data does not allow the opportunity to determine whether investors buy into poorly performing firms in order to turn them around, or because they regard them as bargains. On the other hand, the pooled sample is comprised mainly of large firms, and we can expect that many of the large blockholders in these firms are institutional investors who value financial performance. Thus, institutional stakes are most likely in profitable large firms.

Overall, the results for both samples are similar, although those in Table 6.2 are specific to large multinational (i.e. FT350 firms). The results are generally consistent according to which measure of outsider ownership is used. There are discrepancies however, in particular with the debt to equity ratio and return on assets not having as strong an effect on LB1 and NB, as it does on OUT. This suggests that risk and return are not as important to very large blockholders as they are to the wider community of investors. Again, it is possible that very large investors have reasons other than wealth maximisation for building large stakes.

Table 6.1: Regression analysis of outsider ownership (OUT, LB1, NB) on return on assets (ROA), Beta, corporate governance (OWN, %ODIR) and firm structure (DE, LS) for a cross-sectional sample of 1067 firms.

| | *Dependent Variable:* | | |
|---|---|---|---|
| | OUT | LB1 | NB |
| Intercept | 83.69 | 31.14 | 9.089 |
| | (.00) | (.00) | (.00) |
| OWN | -.2646 | -.0768 | -.0199 |
| | (.00) | (.00) | (.00) |
| %ODIR | 9.204 | 8.146 | .3411 |
| | (.02) | (.00) | (.46) |
| BETA | -1.504 | 0.103 | -.4162 |
| | (.53) | (.94) | (.19) |
| DE | -4.306 | -.8065 | -.5969 |
| | (.01) | (.47) | (.00) |
| LS | -2.743 | -1.0092 | -.2100 |
| | (.00) | (.00) | (.00) |
| ROA | -6.505 | -2.467 | -.5882 |
| | (.00) | (.09) | (.78) |
| IND. DUM. | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 13.6 | 6.4 | 8.7 |

Table 6.2: Regression analysis of outsider ownership (OUT, LB1, NB) on return on assets (ROA), Beta, corporate governance (OWN, %ODIR) and firm structure (DE, LS) for a pooled data sample of 182 firms (1996-1997).

| | *Dependent Variable:* | | |
|---|---|---|---|
| | OUT | LB1 | NB |
| Intercept | 119.63 | 44.36 | 15.98 |
| | (.00) | (.00) | (.00) |
| OWN | -.4585 | -.2320 | -.0509 |
| | (.00) | (.00) | (.00) |
| %ODIR | 20.64 | 12.206 | .2289 |
| | (.00) | (.00) | (.71) |
| DE | -.3796 | -.2055 | -.0299 |
| | (.52) | (.64) | (.51) |
| LS | -6.2603 | -1.7278 | -.9010 |
| | (.00) | (.00) | (.00) |
| ROA | 5.757 | .8892 | .5539 |
| | (.01) | (.65) | (.00) |
| IND DUM | *Yes* | *Yes* | *Yes* |
| $R^2$(%) | 33.5 | 24.1 | 32.82 |

## 6.3 Outside Ownership and Firm Value

As mentioned in the previous section the system of equations estimated in Chapter 5 provides evidence that outsider equity ownership has a negative effect on the value of the firm (illustrated in Figure 6.1 below). The negative relation between outside ownership and firm value is puzzling, as it would be expected that a rational investor would not make large investments in poorly performing corporate assets. While it has already been stated that this relation is not yet particularly well understood or researched, there are some hypotheses which seek to explain how large blockholders can affect the value of the firm.

The chief hypothesis provided by agency theory states that it is in the interests of large blockholders to monitor management, and that this monitoring role increases the value of the firm by reducing agency costs. Recall for example, that the Huddart principal-agent model predicts that firm value rises as the holding of the large shareholder increases. Nevertheless, the empirical results show that large shareholders do not seem to perform a monitoring function in the U.K. Indeed, the evidence reflects the common perception of Anglo-Saxon corporate governance that "long-term stakeholding" is not profitable and is therefore not widely practised. There are a number of reasons why large shareholders do not perform a monitoring role, even though it may be beneficial for them to do so. One explanation is that their investment in the firm may be passive, in the sense that they will hold their stake over the long-term and may not consider the maximisation of shareholder wealth to be their overriding objective. For example, the founder of a firm may be reluctant to sell his stake in the firm he once founded. Similarly, institutional investors may adopt passive investment strategies such as indexing on an increasing scale (Chan and Lakonishok,1993), and may not wish to devote resources to monitoring management, apart from in times of crisis. Additional institutional factors are cited by Mehran (p.181, 1995).

> *"Another possibility is that some of the institutional investors may not monitor the management team because they transact business with the firm. Finally, Barclay and Holderness have shown that the effect of large blockholders on firm value also depends on the specific skills the blockholders bring to the firm".*

However, the failure of large shareholders to engage in active governance does not fully explain why large investors have a negative impact on the value of the firm. The most popular explanation in the literature for this is Weston's (1979) entrenchment hypothesis. In brief, it suggests that corporate assets are less valuable when an individual who is free from checks on his authority controls them. Associated with this hypothesis is the notion that large blockholders are free to pursue objectives other than shareholder wealth maximisation (for example, "Amenity Potential" as discussed in Demsetz and Lehn). This would be a logical explanation for the apparently illogical fact that where large blockholders increase their holdings in a firm, the value of that firm decreases. For example, the case of Lonrho presents an excellent example of a dominant owner (Tiny Rowland) who used a firm to pursue his own personal objectives rather than that of shareholder wealth creation. Moreover, Holderness and Sheehan (1991) provide an interesting account of the detrimental effect that Ted Turner had on the value of Turner Broadcasting Corporation.

Furthermore, where an investor holds a substantial stake in the firm (for example, >25%), the prospect of entrenchment increases while the possibility of a take-over decreases. Thus, the firm is no longer subject to monitoring by the market for corporate control, and decreasing firm value reflects the loss of the take-over premium. This is the basis which Stulz (1990) uses to illustrate a curvilinear relation between firm value and increasing levels of managerial ownership.

In addition, Pound proposes two hypotheses that predict a negative relation between institutional ownership and the value of the firm. First, the "conflict of interest" hypothesis states that large investors who enjoy other profitable business relationships with the firm, are consequently reluctant to monitor management and are easily coerced into voting with management. Second, the "strategic alignment" hypothesis proposes that management and large investors find mutually beneficial reasons to co-operate, thereby losing the benefits to the firm of being monitored by blockholders.

Finally, a number of data and methodological issues may also contribute to the negative relation between outsider ownership and firm value. For example, Mehran (p.181) states that

> *"One explanation for the lack of correlation between performance and the percentage of shares held by institutional investors could be that this study does not distinguish between institutions which buy and sell securities for short-term profit and those which hold shares for a long period".*

McConnell and Servaes (p. 601) also mention a data related problem.

> *"It is worth noting that the Value Line identification does not distinguish among the different types of blockholders. For example, a blockholder may hold the shares purely as a passive investment, taking little interest in corporate activities".*

These hypotheses provide a basis on which to investigate the puzzling nature of the relation between outsider ownership and firm value. This research question is further complicated when we consider the possibility that firm value and outsider equity ownership are simultaneously determined.

While the issue of causality is beginning to emerge as a key question in the literature on managerial ownership and firm value (for example, Kole,1994), this is not yet the case in the relatively limited group of studies on outside ownership structure. Indeed, the fact that causality has not yet been fully examined in the literature can be taken as a sign that this area of research is underdeveloped. The case for investigating a simultaneous relation between outside ownership structure and firm value is an attractive one for a number of reasons. The argument for firm value determining outsider equity ownership is at least as plausible as the view that large outside blockholdings have a negative effect on the value of the firm. Restructuring of poorly performing firms, or investors building stakes in the hope of a "turnaround", are two examples of how poor performance can lead to increased outsider ownership. While there are convincing arguments for modelling the relationship between Tobin's

Q and OUT as a simultaneous one, these can also appear somewhat tenuous. It is logical that investors will wish to buy shares in firms which perform well, and therefore outsider ownership would be expected to be positively related to the value of the firm. At the same time, the literature on outside shareholders suggests that it is less clear why investors are motivated to hold significant blocks of equity. Indeed, it seems that their reasons for doing so are complex and varied. However, having purchased a large block of equity we can expect that it is in the interest of blockholders to monitor executives and to ensure value maximisation. In summary, it is possible that the relation between outsider ownership and performance is simultaneous as the level of performance (Tobin's Q) can influence the size of significant outside shareholdings, while large blockholdings may motivate investors to monitor executives.

Thus far, preliminary results show a negative relation between firm value and outsider ownership and a number of plausible explanations have been put forward to explain this. However, this section proceeds with a further analysis of the relation between firm value and outsider ownership by continuing to test the basic null hypotheses below with additional data and a more sophisticated regression technique. Again, the two main hypotheses here are,

*Hyp 6A: Outsider equity ownership is a positive function of Tobin's Q*

*Hyp 6B: Tobin's Q is a positive function of outsider ownership.*

Tables 6.3 and 6.4 present evidence on the relation between firm value (Tobin's Q) and outsider equity ownership (OUT). Table 6.3 examines the relation between firm value and outsider ownership using both Ordinary Least Squares and Three Stage Least Squares regressions. Columns 1 and 2 present the regression (Ordinary Least Squares (OLS)) of outsider ownership on Tobin's Q with control variables and corporate governance variables (Column 2 only). These results confirm those obtained in Chapter 5, and show that outsider ownership has a puzzling negative effect on firm value. This effect holds when we control for firm size, debt to equity, industry classification and other corporate governance variables (Column 2). Columns 3 and 4 (Table 6.3) estimate the above relation as a simultaneous equation (3SLS). The specified hypotheses are not confirmed. The negative effect of outsider equity ownership on Tobin's Q persists for the cross-sectional sample, as does the negative effect of performance (TQ) on outsider equity ownership. In addition, the effects of OWN, %ODIR and ROA on OUT persist when we estimate them using 3SLS.

In Table 6.4 the equations are estimated using a pooled sample of 182 firms for the years 1996-1997. When the equations are estimated for the pooled sample, there is no significant relation between firm value and outsider ownership. This relation is positive in direction, and the significantly negative effect of ROA on OUT evident in Table 6.3, disappears in Table 6.4. The above results suggest that the behaviour and identity of large investors differs according to the size of firms, and over time.

First, it suggests that a different range of investor holds significant equity stakes in large firms (pooled sample) than in medium and small firms. Investors in large firms appear to be motivated by performance, hence the positive (but insignificant) relation between OUT and TQ in Columns 3 and 4. Moreover, investors in large firms are likely to be passive institutional investors, and we are therefore unlikely to observe a significant relation between OUT and Tobin's Q in this case. However, it appears that investors are motivated to build stakes in poorly performing firms for a variety of reasons other than value maximisation. In a given year where investors build a stake in a poorly performing firm with the intention of "buying cheap" or of a "turnaround" this may show up as a negative effect of performance on outsider ownership in the cross-sectional regressions. Thus, the use of the pooled sample highlights the fact that over time a potentially misleading negative relation between Tobin's Q and OUT, becomes positive.

The explanatory power of the regressions is high, with 19.5% of Tobin's Q explained by the specified independent variables and between 13% and 33% of outsider ownership explained by corporate governance and control variables. A number of useful instrumental variables were available here, owing to alternative measures of outside ownership such as the size of the largest blockholder, LB1, and the number of blockholders, NB.

Table 6.3: Outsider Ownership and Firm Value: Regression analysis of the relation between outsider equity ownership and firm value. In Columns 1 and 2 the effect of OUT on Tobin's Q is analysed (without and with other corporate governance variables). Columns 3 and 4 use Three Stage Least Squares analysis to assess the relation between OUT and Tobin's Q. A cross-sectional sample of 1067 firms is employed.

| | *Dependent Variable:* | | | |
|---|---|---|---|---|
| | Tobin's Q<br>OLS | Tobin's Q<br>OLS | Tobin's Q<br>3SLS | OUT<br>3SLS |
| Intercept | .8611 | .0663 | .1364 | 85.31 |
| | (.01) | (.87) | (.76) | (.00) |
| OUT | -.00373 | -.0044 | -.00599 | |
| | (.01) | (.00) | (.01) | |
| OWN | | .0145 | .0097 | -.2647 |
| | | (.01) | (.08) | (.00) |
| $OWN^2$ | | -.00023 | -.00017 | |
| | | (.00) | (.02) | |
| %ODIR | | -.0294 | -.01736 | 8.126 |
| | | (.87) | (.92) | (.04) |
| DR/ID | | -1.06E-6 | -1.06E-6 | |
| | | (.00) | (.00) | |
| DE | .776 | .7998 | .1271 | -3.079 |
| | (.00) | (.00) | (.00) | (.10) |
| LS | .0734 | .1336 | -.6906 | -2.536 |
| | (.00) | (.00) | (.00) | (.00) |
| TQ | | | | -1.359 |
| | | | | (.02) |
| ROA | | | | -5.123 |
| | | | | (.01) |
| IND DUM | Yes | Yes | *Yes* | *Yes* |
| $R^2$(%) | 18.2 | 19.42 | 18.7 | 13.95 |

Figure 6.1: Tobin's Q and Outsider Ownership

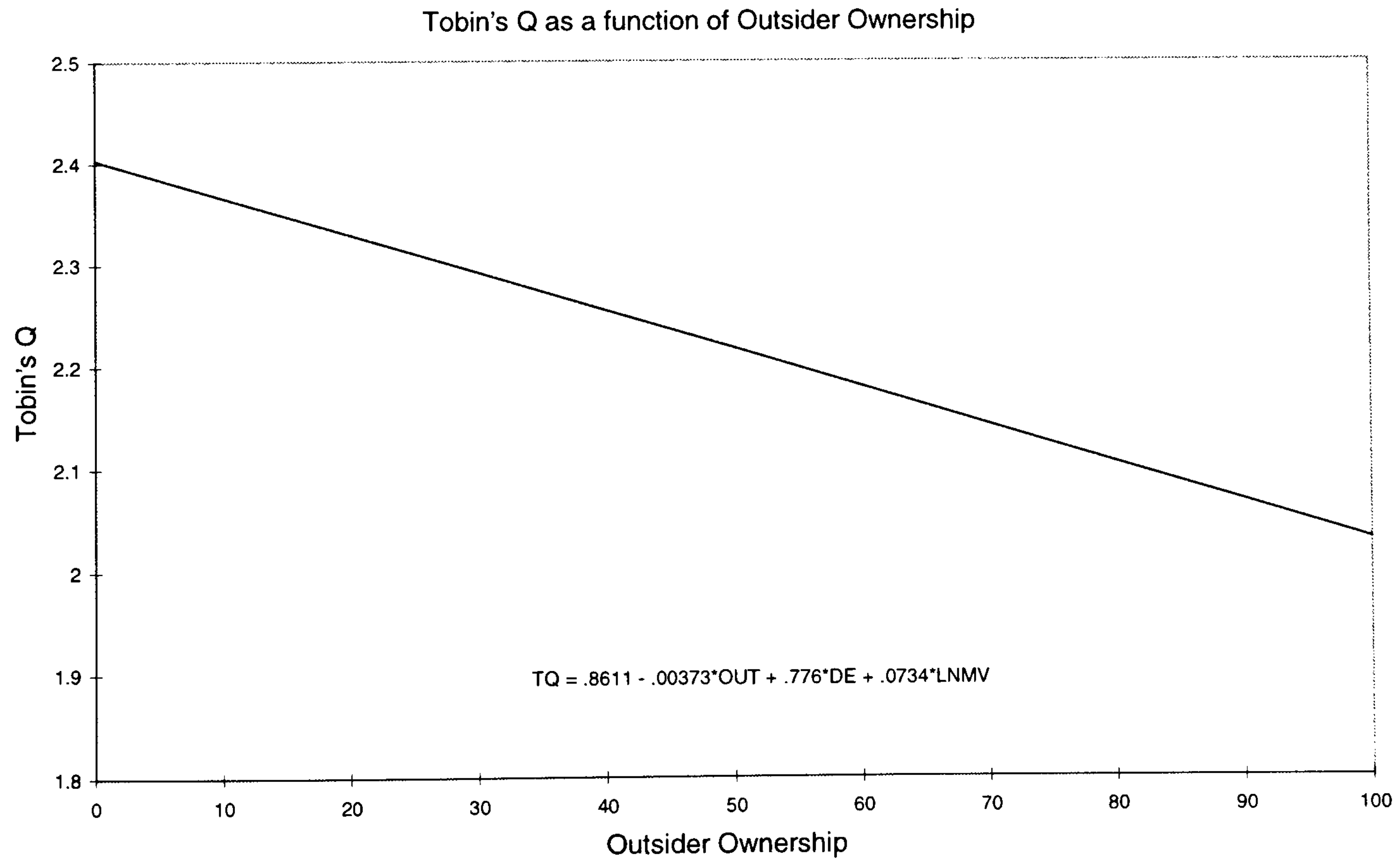


Table 6.4: Regression analysis of equations where the dependent variables are Tobin's Q and outsider equity ownership, with corporate governance (OWN, $OWN^2$, %ODIR, DR/ID) and firm structure (ROA, DE, LS) variables, for a pooled data sample.

| | *Dependent Variable:*<br>TQ | OUT |
|---|---|---|
| Intercept | -2.183 | 119.86 |
| | (.67) | (.00) |
| OUT | .0458 | |
| | (.13) | |
| TQ | | .4570 |
| | | (.20) |
| OWN | .1093 | -.5386 |
| | (.34) | (.00) |
| $OWN^2$ | -.00117 | |
| | (.66) | |
| %ODIR | 3.464 | 19.860 |
| | (.09) | (.00) |
| DR/ID | .00281 | |
| | (.18) | |
| ROA | | -.2508 |
| | | (.97) |
| DE | .4827 | -.4246 |
| | (.29) | (.46) |
| LS | -7.442 | -6.316 |
| | (.09) | (.00) |
| IND DUM | *Yes* | *Yes* |
| R2(%) | 19.5 | 33.79 |

## 6.4 The Identity of Large Shareholders

We have so far established that a number of forms of outside equity ownership are negatively related to the value of the firm, and a number of theories have been put forward to explain this relation. Yet, the use of a pooled sample has highlighted several possibilities. First, that different types of investor exist, second, that these investors have varying motivations, and finally that a cross-sectional data sample is insufficient to capture the motives of investors. With these factors in mind, this section considers the possibility that the negative relation between outside ownership and firm value could be attributed to the influence of a small number of vary large outsider shareholders in the sample. The average holdings of significant outsiders is 31.4%, the average size of the largest blockholder is 14.27%, and the average number of blockholders is 4.10. Yet, as Figures 6.2 and 6.3 show, these averages (particularly the average for LB1), are skewed by a relatively small number of large ownership stakes. The majority of total significant outside holdings (Figure 6.3) are less than 30% in size, and only approximately sixty firms have outside shareholders who hold more than 70% of the ownership structure. Figure 6.4 illustrates the fact that only a small number of blockholders have holdings greater than 30% of the firm's equity, but the distribution of firms according to LB1 is skewed by this small number of very large blockholdings.

Figure 6.2: Distribution of Firms in each Outside Ownership percentile

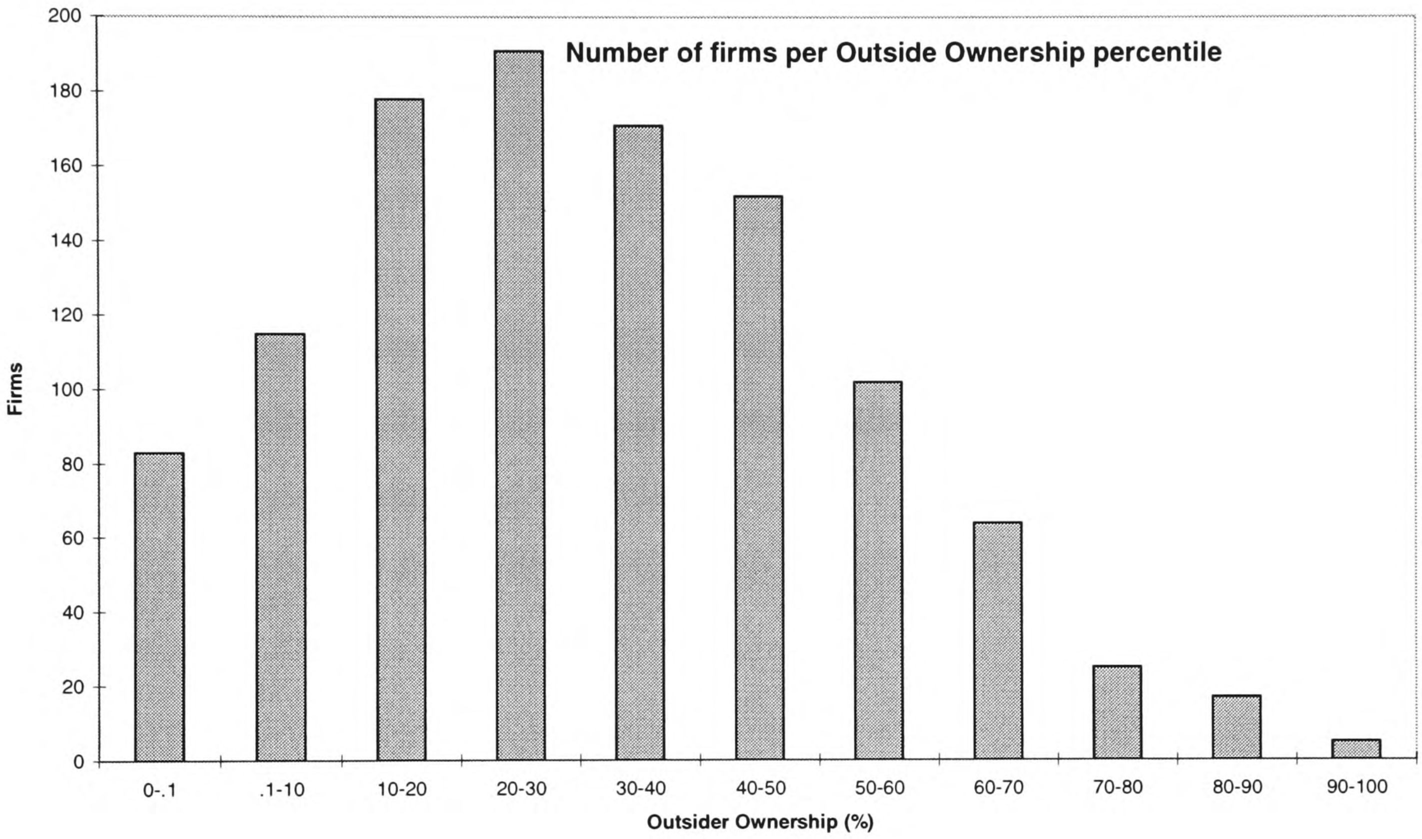
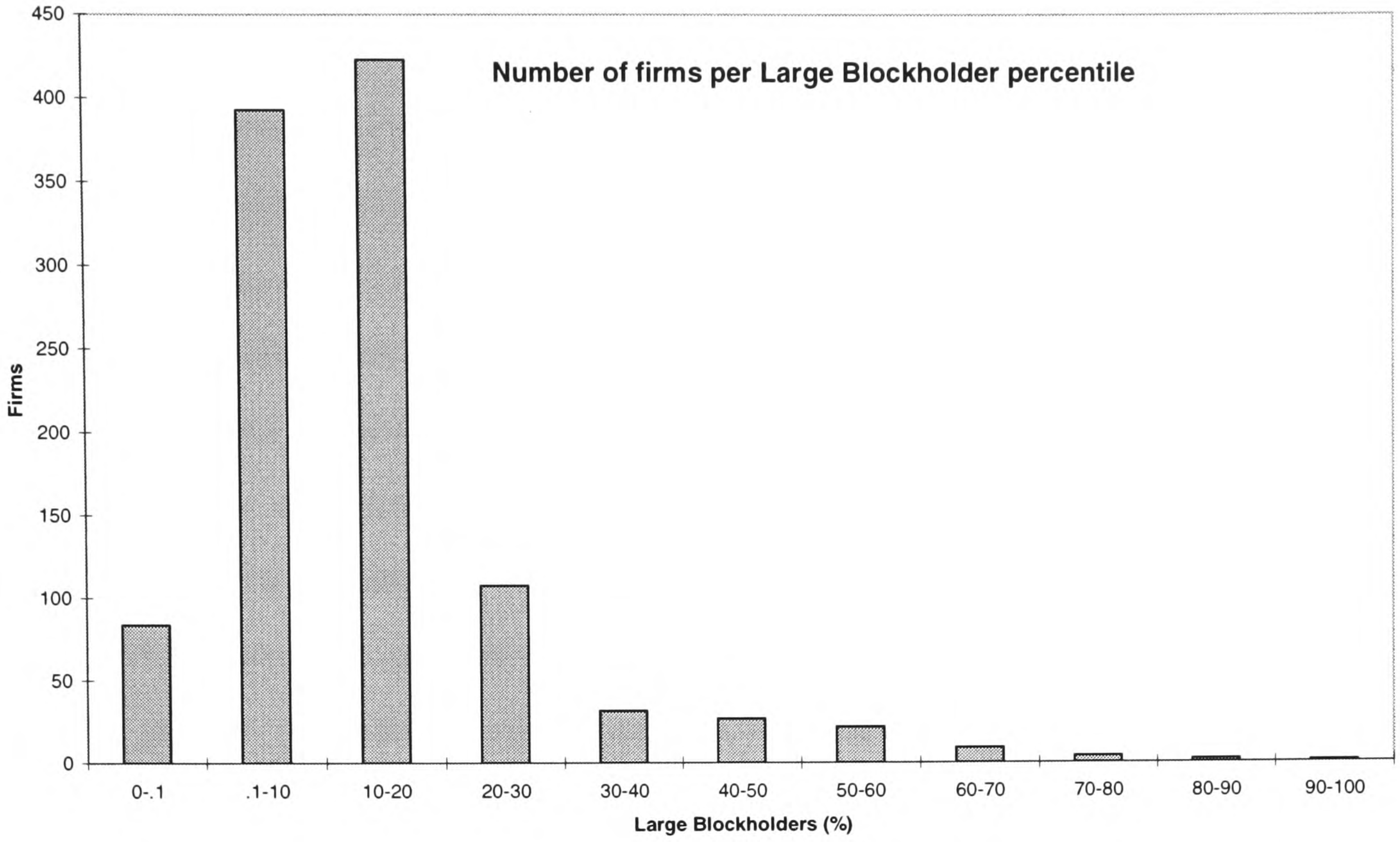


Figure 6.3: Distribution of Firms in each Large Blockholder percentile



Indeed, if we regress ownership structure on firm value (as part of the system in Table 6.4), for a sub-sample of the 600 firms with outside ownership in the 0%-30% range, then the following equation is produced:

$$\begin{array}{llllll} TQ = -.1662 & -.0038*OUT & +.0123*OWN & -.0001*OWN^2 & -.130*\%ODIR & - -1.4E\text{-}6*DR/ID + \\ (.76) & (.47) & (.11) & (.09) & (.61) & (.00) \end{array}$$

$$\begin{array}{ll} .762*DE & + .147*LS \\ (.76) & (.15) \end{array}$$

$$R^2(\%) = 20.6$$

The results show that the relation between outsider ownership and firm value is insignificant (although still negative). While this test proves that sub-samples can provide different results to full samples, and that extreme results could prove to be misleading, it does provide direction for the analysis which follows.

In order to add insight to the complex picture of the identities and motivations of large shareholders, the outside ownership structure of twenty firms with high values of OUT and LB1, is examined more closely. Table 6.5 (Appendix) lists the twenty firms, the details of their ownership structure and relative share price changes for the years 1994 to 1996. While no assertions can be formed on the basis of this data, it helps to explain the results of the regression analysis.

Overall, many types of investor (for example, institutions, individuals, employee ownership schemes, trusts and holding companies) hold large and apparently long-term investments, despite the fact that the performance of the firms surveyed here is poor and volatile. It seems that there is a great possibility for both entrenchment and collective monitoring by blockholders, although it is more probable that entrenchment rather than monitoring takes place.

The variety of investors who are prepared to hold large stakes in firms can be classified according to the following categories: strong institutions, dominant holding companies/trusts, dominant individuals and employee ownership schemes. Of these groups, institutional investors have the most liquid holdings. Individuals, trusts, holding companies and employee/pension schemes are unable to easily dispose of their holdings for a number of reasons, such as legislation and strategic alliances. Therefore, it is easier to understand the continued presence of these investors as owners of poorly performing corporate assets. Indeed, many of these types of shareholder are powerful enough to become entrenched (an example is provided by Carl Fischer who holds 48% of Boosey and Hawkes). The cases of Andrew Sykes and Clarke (T), demonstrate the possibility that industrial holding companies such as European Fire Protection BV, may manage small firms as part of their wider organisation, and in doing so they may accrue benefits to the organisation as a whole at the expense of losses to the particular firm (for example, Andrew Sykes) and its other shareholders. Institutional investors aside, the investments of other classes of investor appear to be specific to a particular firm. For example, a large blockholder may be a founder of the firm or a partner in a strategic alliance. These blockholders, while not immune to the consequences of value destruction, hold large blocks of equity for reasons other than wealth maximisation. Therefore, the theories of diversification and monitoring should be applied less stringently here, and it can be expected that the value of the firm is not the only concern of non-institutional investors, who can have different time horizons and risk preferences to institutions.

Yet, there is a strong institutional presence in the firms surveyed here. Furthermore, the investment in large equity stakes by powerful funds such as Prudential, Mercury Asset Management (MAM), and Phillips and Drew Fund Management (PDFM), seems to have occurred in spite of the performance of these investments. For example, Beale Hunter, in which ten institutions have invested significant stakes (PDFM, for example, owns 10%), shows a relative stock price decline of 27.8% from 1994 to 1995, and 32.8% from 1995 to 1996. This is an excellent example of continued poor performance in the presence of a large number of significant, professional investors and an apparent failure to monitor management. However, even where a group of institutions exists within the ownership structure, it is not in the interests of the institutions to become involved in restructuring these investments because they are small and few in comparison to the total capital invested by these funds. For instance, Black and Coffee state that

> *"the largest British institutions hold very diversified portfolios - Prudential, for example, estimates holding 900 U.K stocks at any one time" (p. 2047).*

Indeed, most of the firms surveyed in this section are very small by comparison to the constituents of the FT100 index, which form the bulk of equity holdings of U.K investors. Therefore, the poor performance of these investments will not have a great impact on the wealth of institutional shareholders.

Nevertheless, although sixteen out of the twenty firms surveyed show negative relative (to the FTAllshare Index) returns for 1994-1995, this figure drops to eight out of twenty in the year 1995-1996. This suggests that investors use poor performance as an opportunity to increase their stakes, and that, in fact, firm value is a determinant of outside ownership structure. Further, the turnaround in the performance of ten firms who had negative relative returns in 1994-1995, suggests that large investors are capable of identifying attractive investments. For example, Harry Ramsden, Laser Scan Holdings and Triplex Lloyd perform worse that the FTAllshare index in the year 1994-1995, despite the fact that there is a strong institutional presence in their ownership structures. However, each of these firms dramatically outperforms the market in the following year (by 47%, 57% and 35%, respectively). In these cases, institutional investors use poor performance as an opportunity to buy shares in firms which they believe will perform well in the medium to long-term. The regression results from the pooled data sample appear to support this view, as does evidence from work by Bethel and Liebeskind 1993) and Liebeskind and Opler (1998), who illustrate the positive influence of blockholders on underperforming firms.

Nonetheless, the picture which emerges of the governance role of the large shareholder is that U.K investors are reluctant monitors. The above evidence reflects the assessments of a number of qualitative studies (for example, Charkham,1994, Black and Coffee,1994). These accounts show the U.K institutional investor to be influential compared to his U.S. counterpart, but isolated compared to his German and Japanese colleagues. When he does act, it requires a crisis to motivate him.

> *"U.K institutions typically act behind closed doors. They act jointly and quietly", "the world of the British institutional investor is close knit", "only a handful of cases degenerate into a public battle" (Black and Coffee, p. 2002).*

Institutional investors engage executives through umbrella groups and industry associations, institutions which help to lower the costs of activism and make communication easier and more discreet. As a consequence, any governance activity on behalf of investors should be difficult to detect. Nonetheless, it remains difficult to explain why different types of investors, institutions in particular, appear content to allow poor performance to go unchecked. It seems that Coffee's (1991) phrase "rationally apathetic" best explains the behaviour of investors in the U.K.

> *"Put simply money managers are rationally apathetic because the expected gains from most such governance issues are small, deferred and received by investors, while the costs are potentially large, immediate and borne by money managers" (p. 1328).*

In the U.K, institutions such as pension funds and insurers own up to 60% of the London equity market, and these institutions tend to hold large equity stakes over a medium to long time horizon. Given their power and interest in investment performance, they have many reasons to be active investors. Nonetheless, there are a number of barriers in the way of active governance.

Monitoring a firm's management generates significant costs for large shareholders and the firms in which they hold shares. Where shareholders have significant holdings, they are likely to be under-diversified; as a consequence, they will avoid further entrenchment by engaging management in governance disputes. Where large shareholders do become entrenched, they may wish to pursue goals other than the maximisation of shareholder wealth and they can often stand in the way of restructuring. Shleifer and Vishny (1997, p. 759) reflect an aspect of this problem.

> *"As ownership gets beyond a certain point the large owners gain nearly full control and are wealthy enough to prefer to use firms to generate private benefits of control that are not shared by minority shareholders. Thus there are costs associated with high ownership and entrenchment, as well as with exceptionally dispersed ownership".*

They (Shleifer and Vishny, p.758) also state that

> *"there are several potential costs of having large investors; straightforward expropriation of other investors, managers and employees; inefficient expropriation through pursuit of personal objectives, and finally the incentive effects of expropriation on the other stakeholders".*

While the blockholder imposes costs on the organisation, he also faces cost barriers in exercising voice. Exercising voice may lead to conflicts of interest for fund managers, as the firm's management may subsequently cut them off from other financial services contracts and from the flow of "soft" information. Furthermore, damage to the reputation of the investor, and fear of political retaliation will diminish the rewards of activism.

There remain other barriers to active corporate governance. Legal barriers, and constraints on organizational capability (such as lack of research staff, scarce time) are among the direct and indirect costs of initiating and co-ordinating governance action. Once this action has begun, other large shareholders may rush to exit, for fear of a stock overhang effect. Institutions prefer to avoid public battles with management teams, because

> *"institutional investors are worried about the political consequences of an exercise of power. They eschew public criticism and fear public intervention" (Black and Coffee, p.2054)*

> *"in its Institutional Investor Study, the SEC attributed the Wall Street Rule to the institutions sense that they ought to make only investment decisions. Moreover an effort to (influence management) would subject them to criticism" (Roe, p.18)*

An additional factor is the changing nature of institutional investing. A growing number of funds no longer try to outperform the market, but merely to follow it. These passive investors should have little interest in governance issues, and as they compete on cost, do not have the resources to take an interest in governance. Moreover, most of these funds, together with many active ones, are so diversified that they are unable to evaluate the management of individual firms. Coffee concludes that

> *"at bottom, institutional passivity is primarily a product of a preference for liquidity over control and agency problems that leave money managers without sufficient incentives to be concerned with voting" (p.1251).*

In summary, there are good reasons why shareholders seem apathetic. It is much easier for them to exit from a problematic situation, than to take the difficult and costly option of exercising voice. The fund managers are not qualified to manage corporations, and they suffer from their own agency problems. The U.K market is now pre-dominantly owned by passive funds (Walton,1997), whose mobility is limited by their huge size, and a home market bias. Consequently, the potential power to influence corporate investment decisions is not exercised because of the high costs of governance.

## 6.5 Conclusion

The relation between firm value and outside ownership structure is not a well researched one, and the evidence that does exist is inconclusive. This chapter adds depth and detail to the sparse literature on the interaction between outside equity owners and the firm. The initial analysis performed here employs three measures of outside equity ownership. In addition, the relationship between OUT and Tobin's Q is modelled as a simultaneous one. The results obtained using this approach are very similar to those obtained from OLS analysis, namely that we continue to observe a negative relation between firm value and outsider equity holdings. However, this approach (3SLS) enables a better understanding of the above result. That is, this negative relation is more plausible if it if it can be seen in terms of poor performance presenting investors with a buying opportunity, in addition to entrenchment on the part of investors negatively affecting firm value.

However, a number of important differences emerge when we compare cross-sectional and pooled data samples. This comparison leads to a number of conclusions. Namely, that there exist different types of investor, who have different motivations. Moreover, cross-sectional data does not fully capture the reasons investors build large equity stakes. These conclusions are supported by indepth examination of outside equity ownership.

A detailed survey of twenty firms with large outside blockholdings reveals that large investors have firm specific reasons for investing in particular firms (for example, strategic alliances, founder members). Therefore, these investors may not be inclined to sell their holdings, or to act in order to maximise shareholder wealth. Furthermore, poorly performing firms, who have large shareholders present in their ownership structure appear to be small and are inconsequential to the wealth of large investors, particularly institutional investors. Therefore, the behaviour of U.K investors (in particular institutions) can be described as "rationally apathetic", as it does not benefit them to actively govern most of the firms they hold stakes in. Finally, there is some indication that poor performance allows investors the opportunity to buy shares more cheaply.

## Appendix

Table 6.5: Outside Ownership Structure details for 20 U.K firms.

| Company | Ownership Details (1995) | Share Ret.[a] | Share Ret.[b] |
|---|---|---|---|
| | | % | % |
| **Firms** | **Strong institutional presence** | | |
| 1. Arcadian | 10 significant institutional shareholders<br>e.g. PDFM 14% (’95), 21% (’96)<br>Mercury Asset Management 10% | 17 | -33.75 |
| 2. Beale Hunter | 10 significant institutional shareholders<br>e.g. PDFM 10% | -27.83 | -32.87 |
| 3. Harry Ramsden | e.g. Chase Nominees 14.4%,<br>MAM 16.3%,<br>Caledonian Investments 18.1%. | -18.8 | 47.63 |
| 4. Kode | 6 large institutions<br>e.g. Henderson 16.2%<br>M & G 13.6%, Scottish Amic. 12.4% | 68 | -5.4 |
| 5. Laser Scan Holdings. | Dominant institutions<br>e.g. Causeway Smaller QTD Fund 40%, and 3I 23.7%. | -4.52 | 57.2 |
| 6. Triplex Lloyd | 6 significant institutions<br>e.g. M & G 14.9%<br>Capital Group 10.6% | -10.3 | 34.89 |
| 7. Watts, Blake, B | One dominant blockholder, and two significant institutions.<br>i.e. SCR Sibelco SA 49.5%<br>Prudential 5.8%, M & G 7.5% | -20.43 | -28.45 |
| | **Dominant Holding Company/Trust** | | |
| 8. Acatos & Hutchinson | Two dominant shareholders<br>i.e. Archer Daniel Midland 28%<br>Spread Trustess Co. 15.9% | -22.15 | -4.44 |
| 9. Amber Industrial | One dominant trust held by Caledonian Investments of 75% for Cayzer Trust Ltd. | -11.33 | -50.6 |

| | | | |
|---|---|---|---|
| 10. Andrew Sykes | Dominant industrial shareholder European Fire Protection BV 58.5% | 74.5 | 83.78 |
| 11. Clarke (T) | Dominant holding (53%) held by Elektrowatt AG for the Swiss Credit Bank | -32.28 | 14.66 |
| 12. Jack (Williams) | Single dominant owner<br>Jack's Int'l 57.1% | -10.83 | -24 |
| 13. Linton Park | Dominant holding company, Lawrie Group 65%, in which Camellia Plc. Have an interest. | -28.11 | 9.05 |
| 14. TDS | Dominant holding firm, Zincocelere SRL, 61%. | -49.57 | 211 |
| | **Dominant Individuals** | | |
| 15. Antofangasta | Dominant individual, Dolberg Finance holds 62.3%, and is wholly owned by Mr. Luksic and his family | -24.98 | 5.19 |
| 16. Boosey & Hawkes | Dominant individual and four institutional blockholders<br>e.g. Carl Fischer 48.2%, | 25.54 | 59.39 |
| 17. Care UK | Dominant Trust/Owner<br>i.e. Nash, Sells & Partners 61% | -3.71 | 27.2 |
| 18. Dyson | Company pension fund and three dominant individuals<br>e.g. Dyson Pension Trustees 16.5%<br>Lomas M 12.5%. | | |
| 19. Fisher James | Dominant individual with six institutional blockholders<br>e.g. RF Jackson 35.4%. | -20.89 | 112 |
| | **Employee share ownership** | | |
| 20. BLP | Employee Ownership Scheme 23% | -51.55 | 14.7 |

[a] Share return is calculated relative to the return on the FTAllshare index (18.5%), from 30/12/94 - 30/12/95.

[b] Share return is calculated relative to the return on the FTAllshare index (11.5%), from 30/12/95 - 30/12/96.

# Chapter 7 Conclusion

## 7.1 Summary of Principal Findings

The aim of this study was to investigate the determinants of four principal corporate governance mechanisms and to assess their relation to the value of the firm. The view of corporate governance that emerges from this study is that firm structure and corporate governance are interdependent characteristics of the organisation. Moreover, two important incentive and monitoring mechanisms, managerial equity ownership and the board of directors, appear to be optimally chosen to maximise firm value. In general, the results are similar to the findings of recent U.S based studies, and some of the limited empirical work carried out in the U.K. However, because the methodological approach in this study differs from earlier research into Anglo-Saxon capital markets, different insights into corporate governance emerge from this project. In particular, this study seeks to add detail and scope to existing work by employing a more comprehensive set of variables, advancing existing methodology, using a larger sample and incorporating the simultaneous nature of the relation between corporate governance and firm value into the analysis.

This study had two primary objectives. First, to analyse the interdependence between corporate governance mechanisms, and their relation to other observable firm characteristics. Second, to assess the effect of corporate governance variables on the value of the firm, and to determine whether these governance mechanisms are optimally chosen to maximise firm value. The empirical analysis points to strong interdependence amongst insider and outsider equity ownership, and the composition of the board of directors. As predicted by the empirical model, there is an inverse relation between insider ownership and outsider ownership, essentially implying that greater insider holdings lead to lower holdings by blockholders, and vice versa. There is also a negative relation between insider equity ownership and the composition of the board, suggesting that the power of insiders and the independence of the board are competing forces. The empirical analysis also demonstrated that the firm's corporate governance structure is considerably influenced by the structure of the firm as measured by its size, risk and industry grouping. This is an important issue as it suggests that corporate governance structures may be specific to different industries and the size of the firm.

When firm structure and other governance factors are controlled for, it appears that the two governance mechanisms of central importance, managerial equity ownership and the board of directors, are optimally chosen to maximise the value of the firm. The use of a system of equations to analyse the above relation casts a new light on previous research where the use of Ordinary Least Squares regressions most probably produced misleading accounts of the effects of managerial equity ownership and the board of directors on the firm. While the evidence obtained here is encouraging from the point of view of the governance of the corporation, two results appear anomalous and require further in-depth investigation.

The first of these is the negative relation observed between directors' remuneration and firm performance, where theory and some previous evidence would indicate that this relation should be positive. However, the consideration of pooled (time series and cross-sectional) data eliminates much of the confusion surrounding the results obtained when the cross-sectional sample was employed. Nonetheless, the evidence confirms previous findings that the link between directors' remuneration and firm performance is not as strong as theory suggests, and that remuneration may be substantially determined by the size of the firm and the industry in which it operates.

The second anomaly is the observed negative relation between outsider equity ownership and the value of the firm. It would be expected that investors would invest in profitable firms, and where the size of their equity holdings is substantial, that they would monitor the activities of the firm's executives. Much of this puzzle is again resolved by a more careful look at both cross-sectional and time series data. This reveals that there are different types of large outside investor, who have different motivations. Indeed, the phrase "rationally apathetic" would seem to describe much of the behaviour of U.K investors. That is, shareholders of varying identities, such as trust funds or founder members, have firm specific reasons for owning large blocks of equity, and can therefore appear apathetic to factors such as portfolio diversification or wealth creation. For example, an individual may hold a large stake in a firm (this was the case with Lonrho) with a view to consolidating his own personal authority and influence within the firm, at the expense of the wealth of its shareholders. Large institutions are rationally apathetic because the poorly performing firms in which they hold stakes are not worth the cost of monitoring or intervention; as a result, active governance is not a rational choice for institutions in many cases. Again, the negative effect of outside ownership on firm value is better understood when simultaneous equations analysis is employed. It is shown that the effect of performance on outside ownership is stronger than the effect of ownership on performance, suggesting that large investors use poor performance to build significant equity stakes in firms.

Finally, the results obtained here are robust to the use of a range of different methodological approaches. The methodology employed here incorporates the simultaneity of the relation between corporate governance and firm value into the analysis, thereby avoiding the shortcomings of Ordinary Least Squares (OLS) regressions. A number of controls are applied to adjust for possible biases arising from the distribution of the sample across industry and firm size groupings. In addition, the use of different estimates of firm value and alternate measures of corporate governance variables does not produce different results. Finally, pooled data samples are employed in case study and regression analysis in order to provide an additional perspective to the study.

## 7.2 Contribution and Relevance

This study has contributed in a number of ways to existing research. First, it has added to a very limited base of empirical work in the U.K. In comparison to previous research, the thesis explicitly investigates the influence of corporate governance on firm value and examines whether these variables are simultaneously determined. The approach employed here, in examining the relation between corporate governance and firm value, is comprehensive in that it investigates several corporate governance mechanisms. Moreover, the fact that the database compiled here is larger than those employed in related papers has facilitated a rich analysis of the relation between corporate governance and firm value. Furthermore, there are very few U.K based empirical studies which have to date considered applying the methodologies and findings of U.S. based work to U.K firms. This is an important omission as firms in the U.K and in the U.S. share a common corporate governance structure. Finally, this study presents evidence on some issues which have yet to be addressed in U.K based work, for example, the causality of the relation between ownership structure and firm value.

Most finance research on the relation between corporate governance and firm value has been carried out in the United States. This research has so far failed to reach empirical closure on the questions it originally posed, and has opened up a range of new research issues. This study investigates a number of these new questions. It illustrates the complexity of the relation between corporate governance and firm performance, and proceeds to analyse the cause(s) of this complexity. In addition, previous research has produced some limited evidence of the negligible and negative effects of monitors (that is, large shareholders and non-executive directors) on firm value. This project investigates these puzzling effects in detail (Chapter 6). Finally, the important issue of causality is incorporated into the study's methodology, although this is an issue that many researchers in the U.S. are only beginning to consider, for example:

> *"we have trodden carefully around the issue of causality" (McConnell and Servaes, 1995, p.154).*

As has been suggested earlier, there has been relatively little research carried out in the U.K on the link between corporate governance and firm performance. At the same time, corporate governance issues have acquired considerable importance in the work of academics, policy makers and financiers in Anglo-Saxon capital markets. In the light of these considerations, the thesis is of growing relevance to a number of parties. First of all, and as mentioned above, it adds knowledge to the sparse empirical work undertaken to date; it is therefore of great use to U.K academics who have to rely on U.S. empirical work to make inferences about corporate governance in the U.K. In addition, it can be of use to those considering a number of policy issues such as the composition of the directors' remuneration package (Greenbury), or the role of the non-executive director (Cadbury). Third, the evidence in this study relating to the effect of firm risk on managerial decision making can help the manager to better understand his own environment, and to identify the forces acting on his investment decisions. Similarly, the fact that directors' remuneration is more strongly influenced by the structure of the firm, than by its performance may prove of particular relevance to shareholders and other stakeholders in the firm. Finally, academic research on corporate governance and corporate governance provides a foundation for the consideration of these issues both in the financial press and by financial analysts (for example, Walton,1997).

## 7.3 Issues for Further Study

With regard to corporate governance in general, and the relation between ownership structure and firm value in particular, new research questions emerge from two areas. The first area comprises the evidence and problems uncovered by current research, and the second area relates to the changing nature of both the firm and corporate governance.

From the seminal paper by Jensen and Meckling (1976) onwards, current empirical research has discovered more corporate governance problems than it has resolved. At present, the debate on ownership structure and firm value seems to be returning to the hypothesis of one of the earlier empirical papers (Demsetz and Lehn,1983), who suggest that ownership is endogenously determined within the firm. Other researchers (for example, Jensen, Zorn, and Solberg,1993, Chung and Pruitt,1995) are now beginning to test the causality of the relation between ownership structure and firm value. Thus, as evidence of interdependence among governance mechanisms (Agrawal and Knoeber,1995) emerges, it seems that a systems view of corporate governance mechanisms will prevail. As a consequence, it would be expected that empirical methodologies will become more sophisticated and rigorous than the Ordinary Least Squares (OLS) regressions which have been employed so far. An important development on the causality hypothesis will be to use a wider range of panel data to examine the relation between ownership structure and firm value, and its causality, over a period of time. This has been attempted very recently by Hubbard et al. (1997), but their results have been weakened by the same problems found in Section 5.6 of this study (i.e. poor instrumental variables). They state that

> *"we find evidence to support a causal link from ownership to performance, but this evidence is tentative because of the weakness of our instruments" (p6).*

A particular aid to research in the United Kingdom would be a comprehensive ownership structure database, comprising at least all of the constituents of the FT350 index, and ranging over a number of years. This database should also include important information on the identity of large shareholders and on the board of directors. While such a database was not available when this study was undertaken, services such as CityWatch are beginning to collect detailed data on equity ownership. Further research problems would be resolved if reliable company account data was obtainable. In particular, accounting data such as current cost estimates of capital stock and research and development costs would be very helpful, given the use of Tobin's Q by academics. However, these data problems can be related, to a certain extent, to U.K reporting requirements.

Recent research (Yermack,1996, for example) has underlined the fact that corporate monitors (outside directors and large shareholders) do not have a positive effect on the value of the firm. It appears that monitors are prepared to accept the value decreasing activities of executives, rather than redress this destruction of shareholder wealth. Therefore, additional research is required to investigate the reasons why monitors do not appear to actively govern management. It may also be the case that policy makers need to undertake further analysis of this problem, or possibly change their perception of monitors to fit the evidence obtained. For example, corporate governance policy makers may need to recognise the fact that outside directors are appointed to the board for their business knowledge, and not for their monitoring ability. Of course, if this is the case, new forms of monitoring must be developed.

Furthermore, it seems that the mechanisms which are designed to reduce agency costs do not create the sufficient motives for agents to do so. For example, large shareholders will prefer to sell shares in poorly performing firms rather than exercise voice. The fact that governance action needs to be motivated by a crisis (for example, bankruptcy or long-term poor performance) further prompts the argument that managers, owners and markets are not greatly concerned with corporate governance issues. This lack of concern may underline the fact that the losses to firm value from agency costs are insignificant, or indeed as Hermalin and Weisbach suggest, firms tend to reduce agency costs to residual levels, where governance mechanisms have little impact. Therefore, the motivation of equityholders to engage in corporate governance, needs to be further examined.

Finance theory analyses investments from the point of view of investors and not managers. In general, it appears that insufficient attention is given to the fact that managers and investors have distinctly different risk preferences, and consequently have divergent perspectives on investment appraisal. An equity holding executive with firm/industry specific experience will be more risk averse than the shareholder on whose behalf he makes investment decisions. Therefore, it is not surprising that Dixit and Pindyck (1994) report that investment hurdle rates set by managers are approximately three times higher than the cost of capital derived from the Capital Asset Pricing Model (CAPM). Consequently, further research is required on two fronts. First, the influence of various types of risk (systematic, unsystematic, total risk) on managerial decision making needs to be better understood and further examined. Second, this knowledge then needs to be applied to understanding the actions of the manager within the firm, and towards the firm (regarding, for example, capital structure changes).

In general, the capital structure of the firm is comprised of either equity-holders or debt-holders. This study has only considered the effects of equity ownership structure on firm value, and it appears that there is relatively little research (mainly in the work of Bagnani et al.) on the influence of debt ownership structure on the value of the firm. This is an important issue as debt-holders are required to monitor against wealth transfers from equity-holders, and also against (debt-holders') wealth reduction by managers.

In considering corporate governance monitors, the model of the firm employed here focuses predominantly on those who either own the firm (such as institutions, large blockholders) or those who are part of the firm (for example, non-executive directors). Little attention is given to those who make up the firm's environment, particularly its financial environment (for example, auditors, financial analysts). Although much work has already been undertaken (Foster,1986) regarding the role of financial analysts in capital markets, future research could possibly combine the issue of investor apathy towards corporate governance, with the role of the analyst and market efficiency. For instance, it has been suggested that a large quantity of high quality financial analysts can add to the efficiency and liquidity of an equity market, and, in turn, increase the shareholders' incentive to exit rather than exercise voice (Bhide,1993, Coffee,1991). Thus, the integration of market based accounting research and current research on ownership may provide an interesting avenue for new work.

Furthermore, developments in the way equity-holders invest their capital will also necessitate new research. For example, indexing by investors will mean that they become less involved in governance issues, and possibly that managers become more powerful (by gaining an increased number of proxy votes at their disposal, for example). Changes in the nature of the firm may also affect the debate on governance. Integration of financial markets, the increasingly international (or global) nature of many firms, and the dominance of American investment banks in world markets, all suggest that the Anglo-Saxon form of corporate governance is likely to spread across world economies. For example, large European firms such as Shell (FT 16/12/97, p.18) and Daimler-Benz are now reporting earnings and listing their shares in the United States. American investment banks are introducing restructuring transactions such as the hostile take-over to markets where the domestic governance structures once prevented them from doing so (this is, for example, the case in Germany, Franks and Mayer,1990). The trend towards Anglo-Saxon corporate governance will inevitably bring conflicts with domestic governance and economic systems, and should also produce some interesting corporate hybrids.

In Chapter 4 of this study, a number of economic value based performance measures were presented; it was argued that these performance measures were the best indicators of how shareholders' capital is invested by management. Accurate and reliable performance measures are of critical importance to corporate governance, as our ability to monitor management depends on the quality of the information we receive regarding their investment decisions. Economic value based measures are becoming more widespread following the growth of popularised measures such as Economic Value Added (EVA). However, academic work will need to explore a number of areas. For example, substantial work remains to be carried out on determining which performance measures yield the best information on managerial investment decisions, and these performance measures need to be conceptually related to the theory of the firm.

The development of the modern firm from a capital intensive manufacturing company to a service based firm, whose key success factors are based on research and development and human capital, will present researchers with a new set of corporate governance problems. High technology firms, and firms whose assets are primarily intangible will be more difficult to monitor than low technology firms. New industries such as biotechnology and the Internet present even greater problems. Firms in these industries are undertaking new and complex research projects, and have yet to generate a return on these projects. Not only are their investment projects difficult to monitor, but the performance of these investments is also difficult to measure accurately. As a result, higher levels of managerial equity ownership than usual may be required to bind managers to this type of firm. In many firms in high technology industries such as computer software, the original innovator/entrepreneur is still involved with the firm as both an owner and a manager. These entrepreneurs may be more devoted to personal goals or product development than to shareholder wealth maximisation. In consequence, the corporate governance mechanism operating in "conventional" firms may not succeed here. By implication, performance measures will need to develop to meet the changes in industrial structure. Finally, this type of high technology firm may have a relatively high amount of employee owned shares, creating a new constituent of the ownership structure. To conclude, the changing nature of the firm will make the existing prescriptions on the monitoring and bonding of managers more difficult to apply.

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