

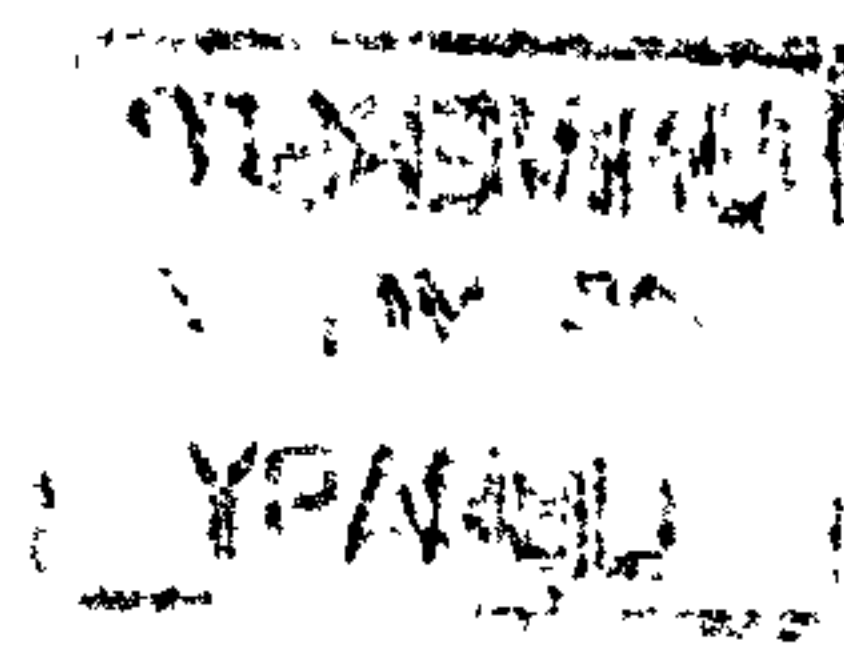
**Internal Governance Mechanisms, Corporate Policy
Decisions and Performance in UK Companies**

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DECLARATION

Refereed Publications:

A version of Chapter 2 has now been published in *Applied Financial Economics Letters*, 2005, Vol. 1, pp. 211-216 (*sole authored*)

Chapter 3 has now been *revised and resubmitted* for publication in *Corporate Governance: An International Review* (*joint with Aydin Ozkan*)

A version of Chapter 4 is forthcoming in the *International Journal of Managerial Finance* (*sole authored*)

Chapter 5 has now been *revised and resubmitted* for publication in *European Financial Management*. A version of this chapter has also been circulated as a discussion paper (Department of Economics and Related Studies, Discussion Paper No. 06/03) (*joint with Aydin Ozkan*)

Conference Presentations:

A version of Chapter 4 was presented at the European Financial Management Association (EFMA) Doctoral Program in Basel, Switzerland (July 2004). It was also presented at the EFMA's symposium on Corporate Governance in Leeds, United Kingdom (May 2005).

A version of Chapter 5 was presented at annual meeting of the Multinational Finance Society in Athens, Greece (July 2005). It was also presented at the ASSET annual meeting in Crete, Greece (October 2005).

ABSTRACT

The main agency problem within modern corporations relates to the conflicts between managers and shareholders. In an attempt to maximize their own welfare, managers build empires, collect private benefits, undertake risky investment projects and entrench themselves, usually at the expense of shareholders. This study focuses on this type of conflict in corporations. There are two main objectives of this study. First, it explores the consequences of the principal-agent problem between managers and shareholders for main corporate decisions and value. Second, it investigates potential mechanisms of corporate governance and discusses their role in mitigating the manager-shareholder conflict. Using an original and very detailed dataset for a large sample of UK listed firms, we show that firms that operate under a weak corporate governance regime, and those run by entrenched managers, adopt suboptimal capital structure policies, indicate low asset utilization ratios and subsequently under-perform. Several aspects of corporate ownership structure, financial structure and managerial compensation structure are suggested as potential governance mechanisms or devices that can help firms resolve agency issues. It seems, however, that the various corporate governance mechanisms do not work in isolation but interact in complicated ways with each other and with other firm-specific characteristics (e.g. the nature of growth options). An important point that emerges from these findings is that the conventional method of treating governance mechanisms as exogenous variables in empirical models may lead to misleading inferences regarding their effectiveness. The use of corporate governance indexes that combine a wide set of governance attributes is proposed as a more appropriate way to measure corporate governance effectiveness.

Chapter 1

Introduction

The premise behind modern corporate finance is that the separation of ownership and control, which characterizes most medium and large corporations produces a setting where the interests of managers and shareholders often diverge. In the presence of asymmetric information and imperfect contractual relations between managers and shareholders, for example, managers may have incentives to pursue their own interests, usually at the expense of shareholders. These incentives can take several forms including insufficient effort (e.g. over-committing to external activities and accepting over-staffing), extravagant investment (e.g. engagement in pet projects and build of empires to the detriment of shareholders), entrenchment strategies (e.g. investing in lines of activities that makes managers indispensable and consistently resisting hostile takeovers) and self-dealing (e.g. increasing managerial private benefits through consuming perks).¹

Modern scholars refer to the consequences of these divergences as agency costs, which are conventionally defined as the costs of structuring, bonding and monitoring an incentive contract between the principal (shareholder) and the agent (manager). Following Jensen and Meckling (1976), a substantial body of empirical work focuses on the adverse effect of agency costs on a wide range of corporate policy decisions and firm value. It is well documented in the literature, for instance, that firms in which the interests of managers and shareholders are not perfectly aligned prefer lower than optimal leverage, choose longer maturity debt, hold large amounts of cash, pay lower dividends, over-invest and exhibit significant underperformance.²

¹ See Shleifer and Vishny (1997) and Tirole (2006) for an analytical discussion on the various ways in which management may not act in the firm's best interest.

² See, for example, Berger *et al.* (1997), Brounen *et al.* (2006) and Datta *et al.* (2006) for evidence on the capital structure decision, Ozkan and Ozkan (2004) for the cash-holdings decision, Hu and Kumar (2004) for the dividend decision, Pawlina and Renneboog (2005) for the investment decision and Gompers *et al.* (2003), Davies *et al.* (2005) and Core *et al.* (2006) for accounting and stock price performance.

Corporate governance, which deals with identifying potential mechanisms by which shareholders of a corporation exercise control over management such that their interests are protected, has recently attracted the keen interest of academics and policy makers around the world. The increasing globalization, the deregulation and integration of capital markets, the recent financial crisis in Asia and elsewhere, and the spectacular corporate failures (e.g. Enron, WorldCom, Xerox and Parmalat) have fuelled the already vigorous debate on how to minimize the manager-shareholder conflict and design an effective corporate governance system that will promote sustainable economic efficiency and growth. In this regard, several elements of firm ownership structure (e.g. managerial ownership, ownership concentration, owner type), board structure (e.g. proportion of non-executive directors on the board, board size, CEO duality) and financial structure (e.g. leverage and dividend) have been suggested as potential mechanisms that can help align the interests of managers with those of shareholders.³

Despite the substantial evidence on these issues, it has nevertheless been difficult to conduct irrefutable tests of the effects of corporate governance mechanisms on corporate policy decisions and firm value.⁴ One explanation of the lack of consensus might be the difficulties entailed in modelling potential interactions among governance mechanisms. Existing studies usually treat several ownership, board and financial structure characteristics as independent mechanisms or devices for resolving agency issues. There might be substitute or complementary ways, however, of reducing agency costs such that the impact of one mechanism may depend on the chosen level of the other. For instance,

³ See Gillan, 2006 for a survey of recent research.

⁴ The lack of consensus regarding the governance role of several firm specific characteristics is clearly expressed in a number of survey papers on corporate governance (see, for example, Shleifer and Vishny, 1997; John and Senbet, 1998; Denis, 2001; Gillan, 2006).

if a certain combination of non-executive directors on the board (which reduces agency costs through monitoring) and managerial ownership (which reduces agency costs through providing incentives to managers) has the best aggregate impact on value creation, providing more holdings to managers may be costly when the proportion of non-executive directors on the board is already high. This is because very high levels of managerial ownership may lead to managerial entrenchment. In a similar spirit, debt and managerial ownership may work independently as effective instruments that reduce the level of agency costs, though the use of high levels of debt may crowd out the effectiveness of managerial ownership. This can be attributed to the fact that diversification considerations prevent managers from accumulating too much stock.

Another problem relates to the measurement issue of agency costs. The majority of empirical studies on corporate governance focus on the implicit assumption that better governance delivers better firm value through reducing the agency costs that arise due to the misaligned interests between managers and shareholders.⁵ However, these studies do not tackle the measurement issue of the principal variable of interest, namely agency costs, but instead agency costs are only inferred. An obvious explanation, as Ang *et al.* (2000) point out, is that the Jensen and Meckling's zero agency cost base cannot be found among the sample of publicly traded corporations. Recent studies attempt to fill the gap in the existing literature on corporate governance by proposing several absolute and relative proxies for agency costs. Ang *et al.* (2003), for example, look at firms that are not

⁵ Although the primary agency relationship in large corporations is between managers and shareholders, a similar agency relationship exists between shareholders and debt-holders. Simply put, debt-holders suffer economic loss if the debtor attempts further borrowing (or in the worse case goes bankrupt) (see Shleifer and Vishny, 1997). The analysis of this study and the corporate governance mechanisms suggested as partial solutions to the agency problem refer mainly the managerial-shareholder conflict. As explained later in the study, however, we do not rule out the possibility that some of these mechanisms may also influence the debt-holder-shareholder conflict.

publicly traded so as to identify the no-agency-cost benchmark. They then measure agency costs as the difference in the efficiency ratio (sales to total assets) and expense ratio (expenses to sales) between a firm whose manager is the sole owner (no-agency-costs benchmark) and a firm whose manager owns less than 100 per cent of equity. Similar proxies are used in more recent studies by Singh and Davidson (2003) and Flemming *et al.* (2005). Despite the valuable insights provided by these studies, clearly more research is required on the determinants on agency costs in order to identify which specific mechanisms are most effective in improving governance.

The main objective of this thesis is to investigate the extent to which the manager-shareholders conflict can be costly, in terms of underperformance and sub-optimal capital structure choice, and also identify those mechanisms and devices that can help firm attenuate such a conflict. Three important aspects of our study, which differentiate it from previous research, are the following. First, we attempt to take into consideration the complicated ways in which corporate governance mechanisms interact with each other and with other firm-specific characteristics, e.g. the nature of growth opportunities. In doing so, we construct several indexes (governance and entrenchment indexes) that are based on a wide set of corporate governance attributes and measure managerial ability and incentives to use their discretion and expropriate wealth from shareholders. This approach extends earlier studies that have mainly focused on only a few governance variables ignoring the cumulative impact of these influences on agency costs, corporate policy decisions and corporate performance.

Second, we attempt to establish a direct link between corporate governance and agency costs by investigating the empirical determinants of agency costs, rather than

focusing solely on capital structure and corporate performance. In the spirit of Ang et al. (2000), we hypothesize that focusing on agency costs directly rather than looking only at corporate policy decisions or performance is likely to provide useful insights into our understanding of the extent of agency conflicts inside large corporations, and also help identify those firm-characteristics that can work as effective governance mechanisms or devices.

Finally, to conduct our empirical investigation, we put forward sophisticated cross-sectional and panel data methodologies that help control for the endogeneity problem, which can arise in this context for several reasons (e.g. reverse causality, unobserved heterogeneity). In particular, we use the average cross-sectional regression approach suggested by Ragan and Zingales (1995) and the Generalised Method of Moments (GMM) estimation procedure suggested by Arellano and Bond (1992) and Blundell and Bond, 1998). We believe that these two methods will provide us with accurate and robust empirical results.

Our study uses a uniquely constructed dataset that includes detailed and up-to-date information on the ownership structure, board structure and managerial compensation structure of a large sample of UK listed companies. Several factors combine to make UK a particularly interesting environment to study. First, ownership in the UK is quite dispersed. This is mainly due to the existing takeover code and the favourable law to minority shareholders, which both discourage capital accumulation. Financial institutions are the most significant equity holders in the UK but there is a great deal of evidence that some types financial institutions are preoccupied by short-termism and, therefore, they do not add much in corporate governance (Black and Coffee, 1994; Short and Keasey, 1997;

Franks et al., 2001). Second, UK boards of directors are generally characterized as corporate devices that provide weak disciplinary function mainly due to weak powers that enforce fiduciary responsibilities on directors. Third, following several corporate scandals that took place in the 1980s and early 1990s, the UK witnessed an intensive discussion of corporate governance issues and several reports in the form of “codes of best practice” (Cadbury, 1992; Greenbury, 1995; Hampel, 1998 and Higgs, 2003). Consequently, the investigation of agency issues and the effectiveness of the alternative governance mechanisms in the UK, in a period that has witnessed an intensive discussion of corporate governance issues, would be of considerable importance.

The thesis is organized as follows. Chapter 2 investigates the relationship between internal corporate governance and corporate performance using a sample of 932 UK listed companies over the period 1999-2003. While there is a large body of literature on the governance-performance relationship, considerable confusion still exists as to whether specific governance mechanisms can provide adequate safeguards for investors’ wealth. There is no consensus, for example, on the exact type of relationship between managerial ownership and firm value.⁶ Prior studies also ignore important aspects of the capital and compensation structure, namely short-term debt and managerial compensation, which can potentially work as important governance devices. Chapter 2 aims to address this gap in the literature by providing a detailed investigation of the

⁶ It has been shown, for example, that managerial ownership can help align the interests of managers with those of shareholders by constraining the consumption of perks and the engagement in sub-optimal investment policies (*incentive-alignment effect*). However, managerial ownership is not always a safe bet for resolving agency issues. Several studies demonstrate that at higher levels of managerial ownership managers exert insufficient effort, collect private benefits and entrench themselves, leading to a negative relationship between managerial ownership and performance (*entrenchment effect*). Existing empirical research on the subject, however, does not shed much light on the exact nature of the relationship between the two and, hence, we do not know which of the effects (alignment and entrenchment) will dominate the other and at what levels of managerial ownership.

impact of ownership, board structures and compensation structures on corporate performance. More specifically, this chapter attempts to provide new insights on the subject by empirically investigating the role of debt-maturity structure of firms and managerial compensation in affecting corporate performance. Potential interaction effects among several corporate governance mechanisms are also considered.

The results in chapter 2 support that managerial ownership can be treated as an important device for providing managers with incentives to maximize the value of the firm, though the relationship between managerial ownership and corporate performance is non-monotonic (managers move from alignment to entrenchment and then to alignment again as their holdings increase). Short-term debt and managerial compensation company performance are also found to be significantly related to performance. Finally, there is strong evidence that managerial ownership and managerial compensation work as substitute mechanisms in mitigating agency problems and, therefore, generating good performance.

Chapter 3 attempts to establish a link between internal corporate governance and one of the most important corporate policy decisions, namely capital structure. The capital structure is important in the context of our analysis mainly for two reasons. First, leverage itself can play the role of strong corporate governance tool. For example, as Harvey et al. (2004) point out, the use of debt directly reduces overinvestment or allows firms to signal that they do not or will not over-invest. Second, the empirical literature on capital structure has identified strong links between leverage and several firm-specific characteristics such as size, growth opportunities, profitability and asset tangibility, though, relatively little is known on the impact of corporate governance on the capital

structure decision. The main theme in this chapter then is to empirically investigate the relationship between corporate governance and leverage and provide insights into the following research questions: Do well-governed firms adopt different financial policies from poorly-governed firms? If yes, which are the factors that can explain such a discrepancy?

To conduct our empirical investigation, we construct a “governance index” for 946 UK listed companies over the period 1999-2003, which represents a score based on the existence of perceived good governance attributes, such as ownership concentration, existence of non-executive directors and board size. The empirical findings, which are based on both average cross-sectional and dynamic panel data estimation techniques, indicate that well-governed firms indicate much higher leverage ratios. A potential explanation of this finding is that well-governed firms have a better reputation, easier access to capital and other markets and, in general, suffer from lower agency costs of debt. This leads to a lower cost of external finance and a relatively higher level of leverage in their capital structure.

The results also point to an indirect effect of governance on leverage. In particular, it seems that managers, depending on their equity holdings, have incentives to adjust to or deviate from an optimal leverage ratio but the exact impact of these incentives on leverage are likely to be determined by firm-specific governance characteristics. There is evidence, for example, that managerial incentives to choose a low leverage ratio that serves their needs (e.g. insulates them from the disciplinary role of debt) but does not maximize the value of the firm are weaker in firms that operate under a strong corporate governance environment. Finally, consistent with the results reported in recent capital

structure studies, our dynamic panel data regressions show that UK firms adjust partially towards a target leverage ratio.

Following the lead of a few influential papers written recently (in particular Ang *et al.*, 2000 and Singh and Davidson, 2003) chapters 4 and 5 concentrate on the empirical determinants of agency costs rather than focusing on a particular corporate policy decision or firm value. In particular, Chapter 4, which is an extension of the study by Singh and Davidson (2003), empirically investigates the impact of capital structure, ownership, board composition and managerial compensation on two specific proxies for agency costs, namely asset turnover and expense ratio. A key aspect of this study is the analysis of the role of growth opportunities in influencing the effectiveness of internal governance mechanisms in reducing agency costs. We hypothesize that if agency problems are associated with greater information asymmetry, a common problem in high-growth firms, the corporate governance mechanisms that are likely to mitigate such problems are expected to be more effective for high-growth firms. Likewise, if agency costs are due to the use of free-cash flow, a common problem in low-growth firms, the corporate governance mechanisms that are likely to mitigate such problems are expected to be more effective for low-growth firms

The empirical results in chapter 4 indicate that in addition to managerial ownership and ownership concentration, which have been widely suggested as potential corporate governance mechanisms, debt maturity and managerial compensation also play an important role in mitigating agency related problems for UK firms. Furthermore, there is strong evidence that specific governance mechanisms are not homogeneous but vary with growth opportunities. For instance, we find that the alignment effect of managerial

ownership is more pronounced in high-growth firms. This finding complements earlier research by Smith and Watts (1992), Gaver and Gaver (1993) and Lafer (2002) showing that high-growth firms are likely to prefer incentive mechanisms (e.g. managerial ownership) whereas low-growth firms mainly focus on monitoring mechanisms (e.g. short-term debt) for mitigating agency problems.

Chapter 5 builds on the analysis of Chapter 4 to investigate the impact of managerial entrenchment on agency costs. This chapter contributes to the existing literature on agency costs in two important ways. First, a uniquely constructed proxy for managerial entrenchment is put forward, which is based on a set of variables that are likely to affect managerial ability and incentives to use their discretion and expropriate wealth from shareholders. This variable is then regressed against asset turnover to analyze whether the level of agency costs changes with managerial entrenchment. Second, the analysis is based on a dynamic panel data empirical model, which is estimated using the GMM methodology (Arellano and Bond, 1992). Such an approach helps control for the potential endogeneity problem that is likely to arise if *a*) observable as well as unobservable shocks affecting agency costs can also affect managerial entrenchment as well as other firm characteristics used in the agency model, including dividend payouts, leverage, and market-to-book ratio *b*) observed relations between agency costs and its determinants reflect the effects of agency costs on the latter rather than *vice versa* (see also Cho, 1998; Himmelberg, 1999; and Lemmons and Lins, 2003).

The dynamic model also allows us to study whether agency costs are persistent over time and, most importantly, whether there is a level of agency costs that is perceived by managers as an equilibrium level of agency costs. It is argued that this equilibrium, if

any, is implied by a trade-off between the (private) benefits of expropriation (e.g. managers may garner overcompensation) and the expected (private) costs of such actions to managers (e.g. the cost that is borne to managers after the reduction in the value of the firm). Tackling such a question is important because if there is indeed an *optimal* level of expropriation from managers' point of view, this may partly explain why many firms deliberately practice bad governance.

The empirical findings in chapter 5 show that there is a strong negative relationship between managerial entrenchment and our inverse proxy for agency costs, namely asset turnover ratio. There is also evidence that short-term debt and dividend payments work as effective corporate governance mechanisms or devices for UK firms. Finally, the findings reveal that agency costs are persistent over time and that there is a level of agency costs is perceived by managers as an equilibrium level of agency costs. The results are robust to a number of alternative specifications, including varying measures of managerial entrenchment and agency costs.

Chapter 6 presents the main conclusions of this work. In particular, we emphasize how moral hazard problems within an agency framework can lead to underperformance and sub-optimal corporate policy decisions. We also suggest potential corporate governance mechanism or devices that can help firms mitigate agency related problems. Finally, in this chapter we discuss several promising avenues for future research.

Chapter 2

Internal corporate governance mechanisms and corporate performance: Evidence for UK firms

2.1 Introduction

The relation between corporate governance and firm value is a subject of an important and continuous debate in the corporate finance literature. The current study provides a detailed examination of the impact of managerial ownership and several other potential corporate governance mechanisms on corporate performance. This study makes two contributions to the literature. First, it explores the roles of debt maturity structure and managerial compensation in controlling agency costs. It is widely acknowledged that short-term debt may be more effective than long-term debt in reducing the expected costs of the underinvestment problem of Myers (1977).⁷ Additionally, short-term debt may be more useful in reducing free-cash-flow problems and in signalling high quality to outsiders (Flannery, 1986; Diamond, 1991). Accordingly, in our analysis, we consider the maturity structure of debt as a potential governance device that can help attenuate the agency related costs.

Managerial compensation can also work as an effective corporate governance mechanism. As noted in Core et al. (2001) and Murphy (1999), managerial compensation can attract, retain and motivate management and, therefore, improve the long-term performance of the firm. Put differently, a manager that receives an attractive compensation package will presumably be less likely, *ceteris paribus*, to exert insufficient effort and risk the loss of his job. Despite the apparent importance of these issues, the number of empirical studies that emphasize on them is very restricted.

⁷ It is argued that firm with greater growth opportunities should have more short-term debt because shortening debt maturity would make it more likely that debt will mature before any opportunity to exercise the growth options. Consistent with this prediction, there are several empirical debt maturity studies that find a negative relation between maturity and growth opportunities (see, e.g., Barclay and Smith, 1995; Guedes and Opler, 1996; and Ozkan, 2000 among others).

The second contribution of this chapter concerns the examination of potential interaction effects between managerial ownership and other governance mechanisms available to firms. Most of the existing studies on the subject describe how each mechanism works in isolation but there is very little evidence on how these mechanisms interact. There are substitute and complementary ways of reducing agency costs, for example, such that the impact of one mechanism on firm value depends on the chosen level of the other. The main question we address in this chapter is whether governance mechanisms work as substitutes or complements in mitigating agency problems and, hence generating higher firm value. In particular, we examine whether board structure, debt maturity and managerial compensation can work as substitutes for managerial ownership in their control role.⁸

To conduct our empirical investigation, we use a unique dataset that includes, among others, detailed information on the ownership structure, board structure and managerial concentration structure for 962 UK listed companies. Our results support the existence of a non-linear impact of both executive ownership and executive compensation on company performance. Specifically, we find that executive management move from alignment, to entrenchment, to alignment as their ownership stakes and compensation increase. Debt-maturity structure is also found to be significantly associated with performance. Finally, there is strong evidence that executive ownership and executive compensation work as substitute mechanisms in mitigating

⁸On this point, our paper is similar to the study by Klapper and Love (2003) who consider interaction effects between internal and external governance mechanisms. In particular, Klapper and Love (2003) look at potential interaction between firm-level governance and country-level investor protection and conclude that firm-level governance matters more in countries with weak shareholder protection and poor judicial efficiency. Similar ideas are also employed in Both et al. (2000) who investigate whether regulation can be used to substitute internal governance mechanisms.

agency problems and, therefore, generating good performance. The rest of our results are in line with those reported by other studies for UK firms.⁹

The remainder of the chapter is organized as follows: In section 2.2 we review the related literature and establish our empirical hypotheses. Section 2.3 describes the data and the variables used in our analysis. Section 2.4 presents our empirical results. Finally section 2.5 concludes.

2.2 Related Literature and Hypotheses

In what follows, we discuss the potential interaction between internal corporate governance mechanisms and corporate performance. In addition to the usual suspects, namely managerial ownership, ownership concentration and board structure, we emphasize on the potential impact of debt financing (in particular short-term debt) and managerial compensation on corporate performance.

2.2.1 Managerial Ownership

Managerial ownership has been suggested as a potential incentive mechanism that helps align the interests of managers with those of shareholders. Based on the convergence of interest hypothesis, Jensen and Meckling (1976) propose a positive and linear relationship between managerial ownership and corporate performance. Subsequent studies extend Jensen and Meckling's idea and suggest that the relationship between managerial ownership and agency costs is non-monotonic (see, for example, Morck et al., 1988; McConnell and Servaes, 1990, 1995). In particular, it has been shown that, at low

⁹ For example, we find that non-executive directors have a significant positive effect on corporate performance. Furthermore, we find a negative relationship between board size and firm performance, indicating that small boards are more efficient than large boards

levels of managerial ownership, managerial ownership aligns managers' and outside shareholders' interests by reducing managerial incentives for perk consumption, utilization of insufficient effort and engagement in non-maximizing projects (*alignment effect*). However, after some level of managerial ownership, managers exert insufficient effort, collect private benefits and entrench themselves at the expense of other investors (*entrenchment effect*).

In the context of our analysis we propose a non-linear relationship between managerial ownership and corporate performance. However, theory does not shed much light on the exact nature of the relationship between the two and, hence, we do not know which of the effects (alignment and entrenchment) will dominate the other and at what levels of managerial ownership. We, therefore, carry out a preliminary investigation about the pattern of the relationship between managerial ownership and agency costs. Figure 1 presents the way in which the two variables are associated. It seems that at low levels of managerial ownership, Tobin's Q (our proxy for corporate performance) and managerial ownership are positively related. However, after managerial ownership exceeds the 10 per cent level, the relationship turns from positive to negative. Another turning point is observed at around 20 per cent of managerial ownership.

To control for the non-linear aspect of managerial ownership, we include the level, the square and the cube of managerial ownership in our empirical model as predictors of corporate performance.

2.2.2 Ownership Concentration

Another alternative for alleviating agency problems is through concentrated ownership. This rests on the idea that shareholders should take an active role themselves in

monitoring management. However, given that the monitoring benefits for shareholders are proportionate to their equity stakes (see, for example, Grossman and Hart, 1988), a small or average shareholder has little or no incentive to exert monitoring behaviour. In contrast, shareholders with substantial stakes have more incentive to supervise management and can do so more effectively (see Shleifer and Vishny, 1986; Shleifer and Vishny, 1997).

However, there are also several costs of holding a large stake, such as the potential agency problems between large and minority shareholders. Such problems mainly arise when large shareholders gain nearly full control of a corporation and engage themselves in self-dealing expropriation procedures at the expense of minority shareholders (Shleifer and Vishny, 1997).¹⁰ Other problems associated with large stakes include the decrease in a firm's diversification, market liquidation and stock's ability to grow.

In order to analyze the impact of ownership concentration on corporate performance, we include a variable that refers to the sum of stakes of shareholders with equity stake greater than 3 per cent in our regression equation.¹¹

2.2.3 Board of Directors

The effectiveness of a board as a corporate governance mechanism depends on its size and composition. Large boards are usually more powerful than small boards and, hence, are considered necessary for organizational effectiveness. As Pearce and Zahra (1991) points out, large powerful boards help strengthen the link between corporations and their

¹⁰ As Gomez (2000) points out, these expropriation incentives are stronger when corporate governance of public companies insulates large shareholders from takeover threats and the legal system does not protect minority shareholders because of either poor laws or poor enforcement of laws.

¹¹ Or empirical findings are qualitative similar when 5 per cent and 10 per cent thresholds are used.

environments, provide counsel and advice regarding strategic options for the firm and play a crucial role in creating corporate identity. Other studies, however, question the effectiveness of large boards and show that small boards are more effective. The premise underlying this argument is that large boards make coordination, communication and decision-making more cumbersome than it is in smaller boards. Recent studies by Yermack (1996), Eisenberg et al. (1998) and Beiner et al. (2004) support such a view empirically.

In addition to board size, the effectiveness of a board may also depend on its composition. One hypothesis, for example, is that boards with a significant proportion of non-executive directors are more effective in monitoring management and, therefore, they can limit the exercise of managerial discretion. Consistent with this view, Byrd and Hickman (1992) and Rosenstein and Wyatt (1990) find a positive relationship between the percentage of non-executive directors on the board and corporate performance.¹² The opposite hypothesis assumes that boards dominated by non-executive directors are not effective. This rests on the view that non-executive directors are usually characterized by lack of information about the firm, do not bring the requisite skills to the job and, hence, prefer to play a less confrontational role rather than a more critical monitoring one (see, for example, Agrawal and Knoeker, 1996 and Franks et al., 2001).¹³

¹² The existence of non-executive directors on the board may also lead to better stock price performance and turnover of inefficient management. Lin et al. (2003) propose a positive share price reaction to the appointment of outside directors, especially when board ownership is low and the appointee possesses strong ex ante monitoring incentives. Dahya et al. (2002) find that top-manager turnover increases as the fraction of outside directors increases.

¹³ Such an argument is likely to be consistent with the governance system prevailing in the UK market given that UK legislation encourages non-executive directors to be inactive by imposing no fiduciary obligations on them. Franks et al. (2001) confirm this view by providing evidence on the non-disciplinary role of non-executive directors in the UK.

The separated or not roles of chief executive officer (CEO) and chairman of the board (COB) also affect the degree independency of a board of directors. It is argued that separated roles of CEO and COB can lead to better board performance and, hence, fewer agency conflicts. The Cadbury (1992) report on corporate governance stresses this issue and recommends that CEO and COB should be two distinct jobs. However, empirical studies by Vafeas and Theodorou (1998) and Weir et al. (2002), do not indicate any significant association between CEO – COB duality and corporate performance in the UK.

To test the effectiveness of the board of directors in mitigating agency problems and, therefore, generating better performance we include three variables in our empirical model: a) the total number of directors (board size), b) the ratio of the number of non-executive directors to the number of total directors and c) a dummy variable which takes the value of 1 when the roles of CEO and COB are not separated and 0 otherwise.

2.2.4 Debt Financing

Agency problems within a firm are usually related to free cash-flow and asymmetric information problems.¹⁴ It is widely acknowledged that debt servicing obligations, especially those that are privately placed (e.g. bank debt), can help reduce agency problems of this sort (Jensen, 1986; Stulz, 1990; and Ross, 1977). The announcement of a bank credit agreement, for example, conveys positive news to the stock market about a borrower's worthiness and, therefore, decreases the asymmetric information between borrowers and investors. Moreover, it is argued that bank debt has an advantage in comparison to publicly traded debt in monitoring a firm's activities and in collecting and

¹⁴ See, for example, Jensen (1986) and Myers and Majluf (1984).

processing information. Accordingly, Fama (1985) finds that bank lenders have a comparative advantage in minimizing information costs and getting access to information not otherwise publicly available.

In addition to debt source, the maturity structure of debt may also influence agency costs. Short-term debt may be more useful than long-term debt in reducing free cash flow problems and signalling high quality to outsiders. As Myers (1977) suggests, agency conflicts such as the underinvestment problem can be curtailed with short-term debt. Flannery (1986) argues that firms with large potential information asymmetries are likely to issue short-term debt because of the larger information costs associated with long-term debt. Short-term debt can also be advantageous especially for high-quality companies due to its low refinancing risk (Diamond, 1991).

We include the ratio of bank debt to total debt and the ratio of short-term debt to total debt in our empirical model so as to approximate the lender's ability to mitigate agency problems. Also, we include the ratio of total debt to total assets (leverage) to approximate the lender's incentive to monitor. In general, as leverage increases, so does the risk of default by the firm and, hence, the lenders' incentive to monitor the firm.

2.2.5 Managerial Compensation

Recent studies by Core et al. (2003) and Murphy (1999) suggest that compensation contracts can motivate managers to take actions that maximize shareholders' wealth. In the absence of asymmetric information, shareholders would be able to directly observe managers' actions and, therefore, no incentive mechanisms would be required to align the interests of managers with those of shareholders. However, in a real life framework firms are subject to severe asymmetric information and managerial agency costs, which lead to

the need of both equity and compensation related incentives. An increase in managerial compensation may reduce managerial agency costs in the sense that satisfied managers will be less likely, *ceteris paribus*, to exert insufficient effort, expropriate wealth and, in this way, risk the loss of their job. Consistent with this view Jensen and Murthy (1990) and Mehran (1995) report a statistically significant relationship between managerial pay and corporate performance. In a similar spirit, Hutchinson and Gul (2004) show that managerial compensation moderate the negative association between growth opportunities and firm value and Chen (2003) finds the annual stock bonus is strongly associated with the firm's contemporaneous but not future performance.

Another approach to studying managerial compensation is to consider it as part of the agency problem rather than as an instrument for addressing the agency problem (see, for example, Bebchuk and Fried, 2003). That is, despite its potentially positive impact on firm value, compensation may also work as "infectious greed" that creates an environment ripe for abuse, especially when it reaches significantly high levels. For example, remuneration packages usually include extreme benefits for managers such as the use of a private jet, golf club membership, entertainment and other expenses and apartment purchases, which may inflate agency conflicts between managers and shareholders. Concerns about excessive compensation packages and their negative impact on corporate performance have lead to the establishment of basic recommendations in the form of "best practices" with which firms should comply to reduce the problem with excessive compensation.¹⁵

¹⁵ In the case of the UK market, for example, one of the basic recommendations of the Cadbury (1992) report was the establishment of an independent compensation committee. Also, in a later report, the Greenbury (1995) report, specific proposal about remuneration issues were made. For example, an issue that was stressed relates to the recent rate of increase in managerial compensation. In the case of the US

To capture both the alignment and the entrenchment effects of managerial compensation we allow for a non-linear relationship between managerial compensation and agency costs in our model. Similar to the case of managerial ownership, we carry out a preliminary investigation about the pattern of the relationship between salary and Tobin's Q. The results of such a task, as shown in Figure 2, point to a non-monotonic relationship.¹⁶ We measure salary as the ratio of the total salary paid to executive directors to total assets. We also include a dummy variable, which takes the value of 1 when a firm pays options or bonuses to managers and 0 otherwise. Including such a dummy variable enables us to test whether or not options and bonuses themselves provide incentives to managers.

2.2.6 Interactions among governance mechanisms

While there is a large body of literature that describes how each governance mechanism works in isolation, we know little about how they interact. In this study we hypothesize that several of the above mentioned governance mechanisms may be interrelated. Managerial ownership and managerial compensation, for example, are mechanisms that provide managers with incentives to limit managerial discretion and maximize the value of the firm. To the extent that this is true, managerial ownership and managerial compensation should work as substitute mechanisms in mitigating agency problems. That is, if a certain combination of managerial ownership and managerial compensation has

market, the set of "best practises" includes, among others, the establishment of a compensation committee so that transparency and disclosure can be guaranteed (same practice as in the UK) and the substitution of stock options as compensation components with other tools that promote the long-term value of the company.

¹⁶ A similar preliminary analysis is carried out so as to check potential non-linearities concerning the relationship between the rest of the internal governance mechanisms and agency costs. Our results (not reported) indicate that none of them is related to Tobin's Q in a non-linear way.

the best aggregate impact on firm value, providing more holdings to managers may be costly when managerial compensation is already high. The rationale behind this argument is that very high levels of managerial ownership may lead to managerial entrenchment (see, for example, Morck et al, 1988 and McConnell and Servaes, 1990).

In the analysis of the current study we initially focus on the role of managerial ownership as a corporate governance mechanism for the case of UK firms. We then analyze whether other incentive mechanisms (e.g. managerial compensation) or monitoring mechanisms (e.g. non-executive directors and debt-maturity) can work as substitutes for managerial ownership in alleviating agency problems and, hence, improving corporate performance (*“Substitute Hypothesis”*). To the extent that the substitutable hypothesis holds, we expect that the alignment effect of managerial ownership is less pronounced in cases of firms with highly independent boards of directors and high levels of short-term debt and managerial compensation. Furthermore, the entrenchment effect of managerial ownership, if any, is expected to be less pronounced in cases of firms that have strong governance mechanisms in place, which can provide adequate safeguards for investors' wealth.

2.3 Sample and Variables

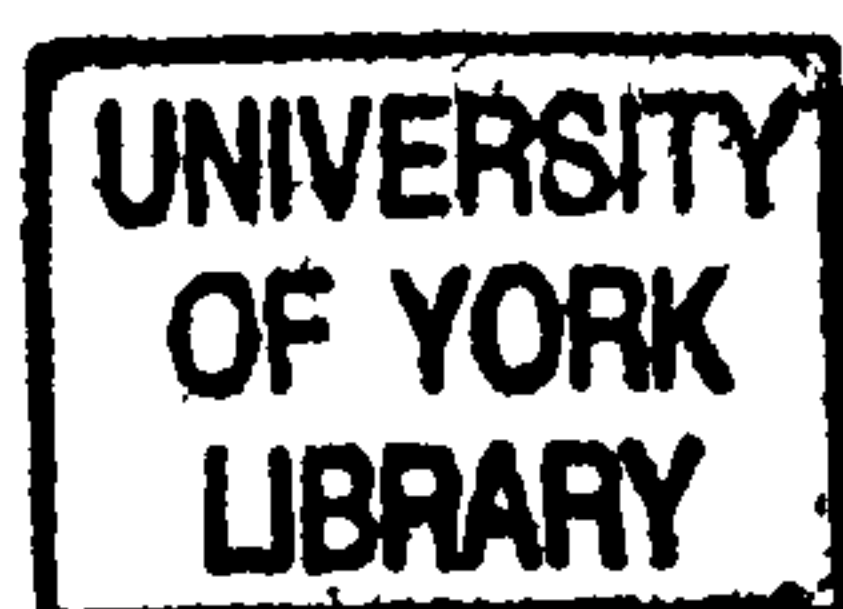
2.3.1 Sample

Initially, we use a sample that includes all firms that are listed in the London Stock Exchange over the period 1999-2003. We use two data sources for the compilation of our sample. Accounting data and data on the market value of equity are collected from

Datastream database. Specifically, we use Datastream to collect information on firm size, market value of equity, book value of equity, short-term debt, bank debt and total debt.

Information on firm's ownership, board and managerial compensation structure is derived from the Hemscott Guru Academic database. This database provides financial data for the UK's top 300,000 companies, detailed data on all directors of UK listed companies, live regulatory and AFX News feeds and share price charts and trades. In specific, we use the Hemscott Guru Academic to get detailed information on the level of managerial ownership (executive and non-executive), ownership concentration, size and composition of the board, managerial salary, bonus, options and other benefits. Although data on directors are provided in a spreadsheet format, information for each item is given in a separate file, which complicates data collection. For example, in order to get information about the number of shares held by executive directors we have to combine two different files: a) the file that contains data on the number of shares held by each director and b) the file that provides information about the type of each directorship (e.g. executive director vs. non-executive director). Also, we have to take into account the fact that several directors in the UK hold positions in more than one company. Similar complications arise when we attempt to collect information about the composition of the board and the remuneration package provided to executive directors.

The way in which our final sample is compiled is the following. First, we match the data from the two databases. Second, missing firm-year observations for any variable in the model during the sample period are dropped. Third, the dataset was cleaned of outliers. Several parts of the dataset were thoroughly inspected. For the case of managerial ownership, for example, information was cross checked with other sources



(Price Waterhouse Corporate Register) for firms with particularly high levels of shares held by executive directors (e.g. greater than 80 per cent). In case when information from the two sources did not match, this observation was dropped from the sample. For the case of ownership concentration, we excluded those firms whose reported level of ownership concentration exceeded 100 per cent. After cross-checking with the Price Waterhouse Corporate Register these were mainly firms with dual class ownership. As for the accounting variables, we restrict our analysis to values for each variable that lie between the 1st and the 99th percentile to avoid the problem with extreme values. Finally, financial firms are excluded from the sample, because of their unique operating and regulatory conditions. These criteria left us with 962 firms for the current analysis.

2.3.2 Variables

Following Lins (2003), we measure firm performance as the ratio of market value of equity plus the book value of assets minus the book value of equity to the book value of assets (TOBIN'S Q).¹⁷ We consider a wide set of potential governance mechanisms or devices as predictors of our proxy for TOBIN'S Q. These are the following: the percentage of shares held by executive directors (EXOWNER), the percentage of shares held by non-executive directors (NONEXOWNER), the ratio of the number of non-executive directors to the total number of directors (NON-EXEC), the number of directors on the board (in logarithm)¹⁸ (BOARDSIZE), the percentage sum of stakes of

¹⁷ The results are robust, however, to alternative definitions for Tobin's Q e.g. the ratio of market value of equity plus the book value of preference shares and the book value of debt to the book value of assets (see, Davies et al. (2005) for details).

¹⁸ We use a log specification for the board size variable, based upon the convex association between board size and market value suggested by other studies.

all shareholders with equity ownership greater than 3 per cent (CONCENTR), the ratio of total cash compensation that is provided to executive directors to total assets (expressed as a percentage) (REMUN), a dummy variable which takes the value of 1 when the roles of chief executive officer (CEO) and chairman of the board (COB) are not separated and 0 otherwise (CEO_DUMMY), the ratio of total debt to total assets (LEVERAGE), the ratio of short-term debt to total debt (SHORTDEBT) and the ratio of bank debt to total debt (BANKDEBT). Also, we control for firm size, measured as the logarithm of the market value of equity (SIZE).

Table 2.1 presents descriptive statistics for all these variables. The average Tobin's Q ratio is 2.05. The average value for managerial ownership is 14.59 per cent, of which the average proportion of stakes held by executive (non-executive) directors is 10.53 per cent (4.27 per cent). Ownership concentration reaches the level of 37.56 per cent, on average, in our sample. Also, the average proportion of non-executive directors is 49.81 per cent and the average board size is 6.95 directors. Finally, we were able to identify only 79 firms out of the final 962 (8.21 per cent) in which the positions of CEO and COB are not separated. As far as the capital structure variables are concerned, the average proportion of short-term debt on firm's capital structure is 47.77 per cent, the proportion of bank debt is 54.13 per cent and the leverage ratio is 19.74 per cent. In general, the descriptive statistics are in line with those reported in other studies for UK firms (see, for example, Ozkan and Ozkan, 2004; Lasfer, 2002 and Short and Keasey, 1999).

2.4 Empirical Results

We examine the determinants of corporate performance by utilizing the cross sectional average methodology proposed by Rajan and Zingales (1995). In particular, the dependent variable is measured at some time t , while for the independent variables we use average-past values. Specifically, the dependent variable is measured in year 2003 and independent variables are measured over the period 1999-2002. This approach has two main advantages. First, using averages in the way we construct our explanatory variables helps mitigate potential problems that may arise due to short-term fluctuations and extreme values in our data. Second, using past values reduces the likelihood of observed relations reflecting the effects of Tobin's Q on firm specific factors.¹⁹

Table 2.2 presents the results from the cross sectional analysis. We start with a non-linear model in terms of executive ownership (similar to the one proposed by Short and Keasey, 1999) in which we do not include any interaction terms (model 1). Our findings show that executive ownership and corporate performance are related non-linearly. Specifically, our results reveal that executive management move from alignment, to entrenchment, to alignment as their ownership stakes in the firm increase. This result is in line with what is suggested by Morck et al. (1988) and Short and Keasey (1999).

The interesting part of our results, though, is the fact that we find strong evidence that executive remuneration and debt maturity can help align the interests of managers with those of shareholders and, therefore, enhance firm value. Characteristically, the coefficients of remuneration (REMUN) and short-term debt (SHORT_DEBT) are

¹⁹ One possibility, for example, is that highly profitable firms reward their managers for good past financial performance by giving them equity ownership. In such cases the causality runs from financial performance to management ownership.

positive and statistically significant to the 1 per cent level. Therefore, our empirical study introduces two additional potential corporate governance mechanisms available to firms.

In model 2 we extend the empirical specification of model 1 by allowing for a cubic non-linear relationship between executive remuneration and performance. Our results strongly support such a relationship. In particular, in addition to managerial ownership, executive remuneration generates conflicting effects on managerial behaviour that have a measurable impact on corporate efficiency. The rest of the results of model 2 are similar to the ones obtained earlier. The next step is to investigate whether the nature of the relationship between executive ownership and performance changes across different levels of non-executive directors, board size, remuneration and short-term debt (i.e. all the governance variables that were found significant in model 1). That is, we test the “*Substitute Hypothesis*” proposed in section 2.2.

In results which are not reported, we observe that board size and short-term debt do not have any significant impact on the relationship between executive ownership and firm performance. However, we find that, as the remuneration package paid to executive directors increases, the role of executive ownership as a governance mechanism becomes weaker. This result is consistent with the “*Substitute Hypothesis*”, which suggests that the alternative governance mechanism or devices available to firms work as substitutes in mitigating agency problems. Additionally, we find that as the ratio of non-executive directors on the board increases, the positive relationship between executive ownership and performance becomes stronger. That is, non-executive directors and executive ownership work as complementary control mechanisms.²⁰

²⁰ However, this result does not appear to be robust in the rest of our regressions.

We further test the impact of remuneration and non-executive directors on the relationship between executive ownership and performance by interacting them not only with the levels term but also with the square and the cubic terms of executive ownership (model 3). Consistent with our expectations, the results of such a task indicate that as remuneration increases both the alignment effect and entrenchment effect of executive ownership on firm performance become weaker. The results presented in model 3, however, do not point to a significant interaction effect between executive ownership and non-executive directors. Finally, in model 4, the only interaction effect we consider is that between executive ownership and remuneration (the one that was found to be robust in model 3). Once more, the results provide strong evidence on the view that the two mechanisms work as substitutes in alleviating agency problems.

Finally, for robustness purposes, in Table 2.3 we utilize splitting sample methods to test for the existence of the interaction effect between executive ownership and compensation. Specifically, we split the sample into “high-pay” firms and “low-pay” firms according to the following criterion: Firms with managerial compensation that lies above the 55th percentile are called “high-pay” firms. On the other hand, firms with managerial compensation that lies below the 45th percentile are called “low-pay” firms. Based on this classification, we examine whether the earlier observed non-linear relationship between executive ownership and Tobin’s Q holds for both sub-samples. The results of this exercise confirm the existence of a non-linear impact of executive ownership for the sample of “low-pay” firms. Consistent with our expectations we do not observe such an impact for the group of high-pay firms (i.e. the coefficients of the level, square and cubic terms of executive ownership are not statistically significant). Such

finding further supports the existence of an interaction effects between executive ownership and executive remuneration. The rest of the findings of Table 2.3 are similar for both subgroups of firms.

2.5 Conclusion

In this chapter we have examined the impact of the several internal corporate governance mechanisms and devices, including managerial ownership, short-term debt and managerial compensation, on corporate performance. Also, we have attempted to test whether these mechanisms work as substitutes or complements in mitigating agency related problems and, therefore, generating good performance.

Consistent with the existing literature, our results indicate that managerial ownership, non-executive directors and board size have a significant impact on corporate performance. However, our results support the existence of two additional potential corporate governance mechanisms available to firms. Specifically, we find that debt maturity and managerial compensation are significant predictors of company performance. Furthermore, in favor of the substitute hypothesis mentioned earlier, our results reveal that managerial ownership and managerial compensation work as substitutes in mitigating agency problems

Figure 2.1: Tobin's Q and Managerial Ownership

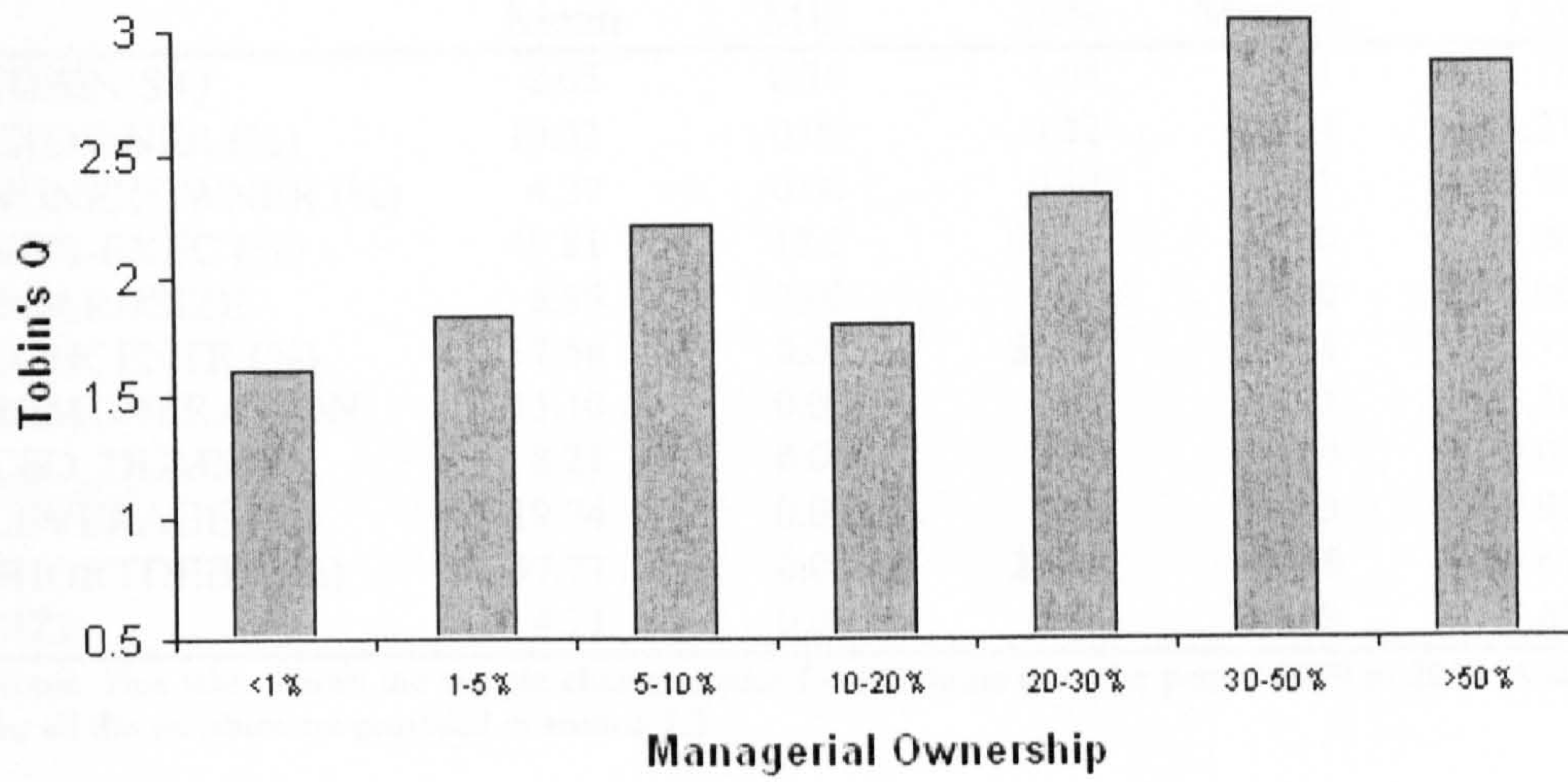


Figure 2.2: Tobin's Q and Remuneration

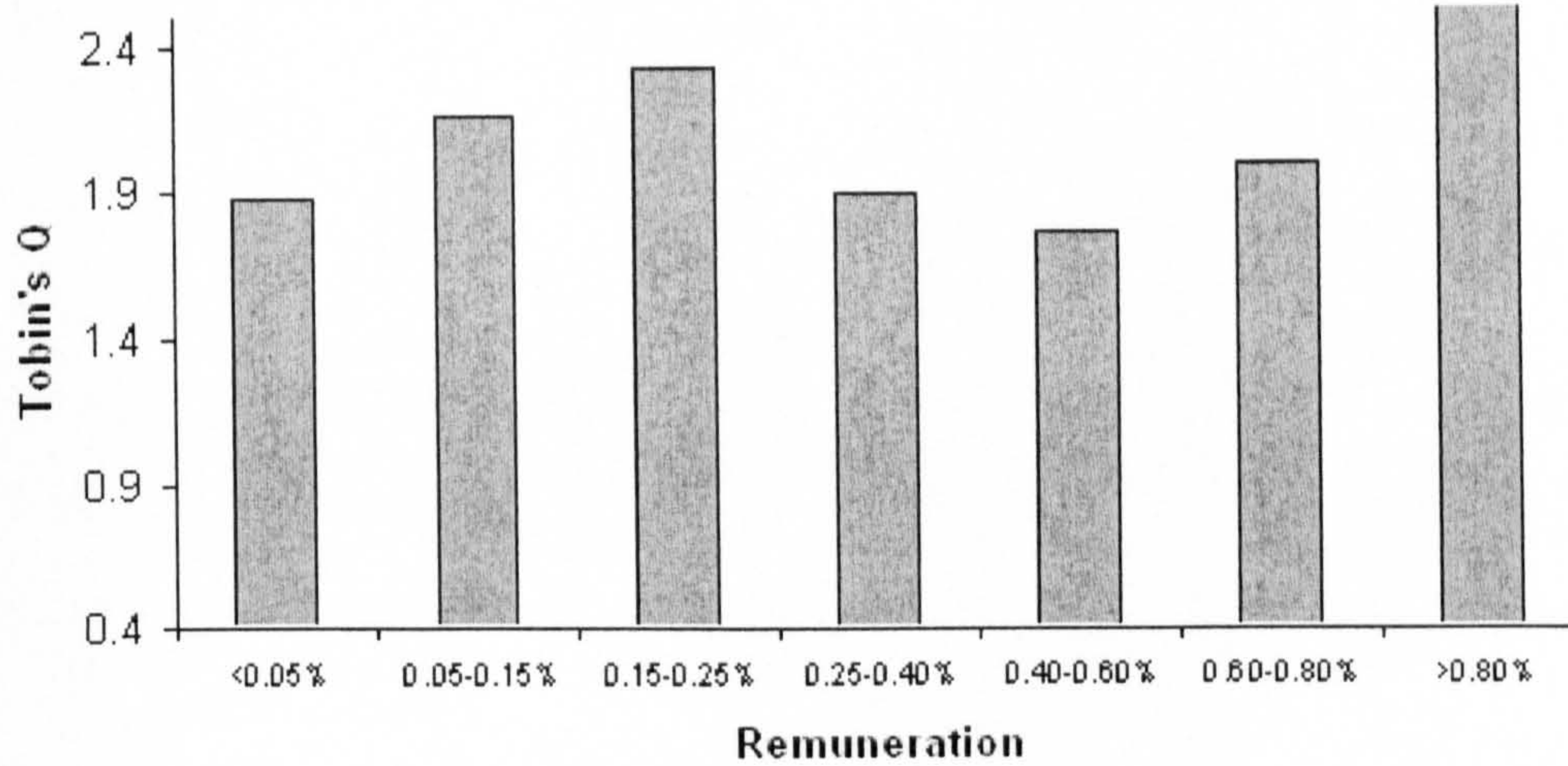


Table 2.1
Descriptive Statistics (N=962)

	Mean	Min	25%	Median	75%	Max
TOBIN'S Q	2.05	0.16	1.04	1.41	2.18	18.94
EXOWNER (%)	10.53	0.00	0.22	2.04	14.21	86.11
NONEXOWNER (%)	4.27	0.00	0.04	0.31	2.78	86.28
NON-EXEC (%)	49.81	12.5	40.00	50.00	60.00	85.71
BOARDSIZE	6.95	2.00	5.00	7.00	8.00	19.00
CONCENTR (%)	37.56	0.00	20.09	36.18	51.75	100
REMUNERATION	15.10	0.00	1.80	5.71	15.38	29.04
CEO_DUMMY	8.21	0.00	0.00	0.00	0.00	1.00
LEVERAGE (%)	19.74	0.00	6.39	16.03	29.90	94.78
SHORTDEBT (%)	47.77	0.00	23.09	46.66	69.67	100
SIZE	4.21	0.08	2.64	4.09	5.48	11.64

Notes: This table shows the sample characteristics for 962 firms over the period 1999 to 2003. Analytical definitions for all the variables are provided in section 2.3.

Table 2.2
Cross sectional regressions predicting corporate performance

Dependent Variable: Tobin's Q				
Independent variables	Model (1)	Model (2)	Model (3)	Model (4)
Constant	0.167 (0.24)	-0.201 (-0.28)	0.304 (0.39)	-0.406 (-0.57)
EXOWNER	0.061 (2.31)**	0.061 (2.27)**	-0.042 (-0.51)	0.105 (3.80)***
EXOWNER ²	-0.002 (-2.01)**	-0.003 (-2.04)**	-0.003 (-0.11)	-0.004 (-3.32)***
EXOWNER ³	2.08e-005 (1.81)*	2.2e-005 (1.85)*	1.46e-005 (0.50)	3.69e-005 (3.03)***
NONEXOWNER	0.003 (0.41)	0.001 (0.21)	-0.001 (-0.16)	-5.15e-005 (-0.008)
NON-EXEC	0.014 (2.72)***	0.017 (3.21)***	0.004 (0.65)	0.017 (3.35)***
BOARD SIZE	-0.592 (-1.87)*	-0.654 (-2.05)**	-0.629 (-1.96)*	-0.649 (-2.00)**
CONCENTR	0.0007 (0.21)	0.0005 (0.16)	-0.0002 (-0.07)	3.86e-005 (0.01)
REMUN	0.296 (8.54)***	0.603 (4.06)***	0.747 (4.84)***	0.752 (4.85)***
REMUN ²	-	-3.274 (-1.93)*	-2.466 (-1.36)	-2.373 (-1.31)
REMUN ³	-	7.585 (1.70)*	5.321 (1.12)	5.240 (1.09)
CEODUMMY	-0.234 (-1.35)	-0.211 (-1.22)	-0.174 (-1.01)	-0.200 (-1.13)
LEVERAGE	0.225 (0.54)	0.296 (0.718)	0.239 (0.61)	0.225 (0.57)
SHORT_DEBT	0.745 (2.83)***	0.705 (2.70)***	0.697 (2.69)***	0.676 (2.63)***
SIZE	0.161 (3.06)***	0.206 (3.44)***	0.229 (3.76)***	0.227 (3.78)***
EXOWNER*REMUN	-	-	-0.033 (-2.46)**	-0.036 (-2.79)***
EXOWNER ² *REMUN	-	-	0.001 (2.60)***	0.001 (2.88)***
EXOWNER ³ *REMUN	-	-	-1.25e-005 (-2.79)***	-1.32e-005 (-3.03)***
EXOWNER*NON-EXEC	-	-	0.003 (1.64)	-
EXOWNER ² *NON-EXEC	-	-	-6e-004 (-0.91)	-
EXOWNER ³ *NON-EXEC	-	-	3.98e-005 (0.57)	-
Industry Dummies	Yes	Yes	Yes	Yes
R ²	0.245	0.255	0.286	0.278
Number of firms	962	962	962	962

Notes: Analytical definitions for all the variables are provided in section 2.3. All regressions include industry dummies. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% respectively. For the estimation we use consistent to heteroscedasticity standard errors.

Table 2.3
Cross sectional regressions predicting corporate performance

Dependent Variable: Tobin's Q

Independent variables	<i>Panel A: High-Pay Firms (Model 5)</i>	<i>Panel B: Low-Pay Firms (Model 6)</i>
Constant	0.170 (0.11)	0.272 (0.57)
EXOWNER	0.030 (0.60)	0.096 (3.08)***
EXOWNER ²	-0.0002 (-0.14)	-0.004 (-2.68)**
EXOWNER ³	-1.64e-006 (-0.11)	3.47e-005 (2.45)**
NONEXOWNER	0.004 (0.40)	-0.001 (0.145)
NON-EXEC	0.023 (2.02)**	0.008 (1.79)*
BOARD SIZE	-0.619 (-1.00)	-0.049 (-0.17)
CONCENTR	0.005 (0.64)	-0.003 (-1.18)
CEODUMMY	-0.298 (-0.86)	-0.147 (-0.82)
LEVERAGE	0.822 (0.92)	0.108 (0.22)
SHORT_DEBT	0.566 (2.11)**	0.615 (2.19)**
SIZE	0.099 (0.92)	0.032 (0.45)
Industry Dummies	Yes	Yes
R ²	0.092	0.224
Number of firms	433	433

Notes: Analytical definitions for all the variables are provided in section 2.3. All regressions include industry dummies. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% respectively. For the estimation we use consistent to heteroscedasticity standard errors.

Chapter 3

How does corporate governance interact with managerial incentives in determining leverage?

3.1 Introduction

Early theoretical work on leverage noted several important factors as determinants of a firm's capital structure (see Modigliani and Miller, 1963; Ross, 1977; Myers, 1977; Jensen and Meckling, 1976; and Jensen, 1986 among others). These include the tax benefits of debt financing, the costs of financial distress and bankruptcy, and the costs associated with informational and agency problems. More recent theoretical research has shifted the attention to the role of managerial incentives and corporate governance in determining a firm's choice of leverage (see, e.g., Harris and Raviv, 1988; Stulz, 1990; and Zwiebel, 1996). The underlying notion in this strand of the literature is that managers' self interest, which is reinforced by the absence of strong corporate governance mechanisms or devices in place, can lead firms to adopt financial policies that do not maximize shareholders' wealth. Managers that have enough control over the firm decision making process, for example, may require a low debt level so as to avoid the disciplinary role of debt.

Although the empirical literature has been successful in providing supporting evidence for the significant role of firm characteristics such as size, growth opportunities, profitability, and asset tangibility in determining leverage, there has been relatively little empirical research conducted on how the interaction between corporate governance and managerial incentives affect the capital structure decision of firms. In particular, prior empirical literature on the subject focuses on the role of managerial incentives in determining corporate financial policy while ignoring how the impact of these incentives changes with firm-specific governance characteristics. One hypothesis, for example, is that managerial incentives to expropriate wealth from shareholders (e.g. by choosing a

leverage ratio that serves their needs but does not maximize the value of the firm) are weaker in firms with strong corporate governance characteristics (e.g. effective boards and active outside investors). The main objective of this chapter is therefore to provide more insights into these relations by providing a detailed examination of the role of internal corporate governance and managerial incentives in determining capital structure.

The empirical analysis of this chapter is conducted in two stages. In the first stage, we simply investigate the direct impact of corporate governance (an index derived after using principal component analysis)²¹ and managerial incentives (proxied by managerial ownership) on leverage. We hypothesize that in the presence of information asymmetry and costly agency problems better corporate governance practices facilitate the access of firms to external finance by reducing its cost, leading to a positive relationship between our proxy for corporate governance and leverage. Consistent with the alignment and entrenchment effects of managerial ownership (see, for example, Jensen and Meckling, 1976 and McConnell and Servaes, 1990), we also expect a non-monotonic relationship between managerial ownership and leverage. The premise behind such a relationship is as follows: managerial ownership, when it is at low levels, helps to reduce the agency conflicts between managers and shareholders, which may involve among other things the choice of a lower level of debt than what shareholders desire (*alignment effect*). On the other hand, high levels of managerial ownership strengthen managerial discretion (and possibly managerial entrenchment), which in turn reinforces managerial incentives to choose a lower than optimal leverage ratio in an attempt to escape the discipline provided by debt (*entrenchment effect*).

²¹ See Section 3.4.1 for a detailed discussion on the calculation of the corporate governance index.

In the second stage of our empirical investigation, we test the extent to which a firm's financing policy is determined by the trade-off between internal corporate governance mechanisms and managerial incentives. Corporate governance, for example, in addition to its direct impact, may affect leverage through influencing managerial incentives to adjust to (or deviate from) an optimal leverage ratio. One possible scenario is that the entrenchment effect of managerial ownership on leverage is less pronounced in well governed firms, given the limited managerial ability to exert opportunistic behaviour (e.g. follow a policy that is not consistent with value maximization) in such firms. Put differently, in the presence of strong internal corporate governance mechanisms in place managers may have the incentives but not the ability to follow a debt policy that is not consistent with value maximization. Likewise, corporate governance may also affect the alignment effect of managerial ownership in the sense that several corporate governance characteristics such as non-executive directors and ownership concentration may work as substitute corporate governance mechanisms or devices for managerial ownership.

To investigate these empirical hypotheses, we use a large sample of UK listed firms over the period 1999-2003. First, we employ principal component analysis to create a corporate governance measure for each firm, which represents a score based on the existence of perceived good governance attributes, such as ownership concentration, existence of non-executive directors and board size. We then interact this measure with managerial incentives proxied by executive ownership. Doing so enables us to test for the existence of both direct and indirect effects of corporate governance on the capital structure decision. In terms of the estimation, we initially utilize an average cross-sectional approach to estimate the leverage equation (see Rajan and Zingales, 1995).

Such an approach helps mitigate problems that may arise due to short-term fluctuations in the data and observed relations reflecting the effect of leverage on firm-specific characteristics and, also, provides results that are directly comparable with previous literature. To control for the effect of unobserved heterogeneity and study the capital structure dynamics, we also put forward a dynamic generalized method of moments (GMM) estimation. The choice of this methodology is motivated by the evidence reported in recent studies that firms adjust partially towards an optimal leverage ratio and that several unobservable factors are likely to affect such an adjustment process (see Ozkan, 2001).

This chapter is similar in spirit to Friend and Lang (1988), Brailsford et al. (2002) and Pindado and de la Torre (2005), who analyze how the impact of managerial ownership on leverage changes with ownership concentration. Specifically, Friend and Lang (1988) show that the existence of large non-managerial investors in US corporations prevents managers from choosing leverage levels that serve their own interests. Brailsford et al. (2002) and Pindado and de la Torre (2005) also report significant interaction effects between managerial ownership and ownership concentration for a sample of Australian and Spanish firms respectively.

Unlike previous studies that focus solely on ownership concentration, however, we consider a wider set of governance variables, namely ownership concentration, board size and board composition, which are also likely to influence the relationship between managerial ownership and leverage. From a methodological perspective, this study is distinguished from previous literature in using principal component analysis to aggregate individual governance mechanisms into a single factor. Our methodology helps avoid

problems that may arise from the potential interdependence between corporate governance and control variables (see, for example, Agrawal and Knoeber, 1996). We believe that our study provides important insights into at least two important related research questions that have not been addressed before. First, if there is a non-linear relation between managerial ownership and leverage, does the nature of this relation depend on the corporate governance environment in which firms operate? Second, if there are devices that may act as substitutes for leverage in monitoring and disciplining managers, should one still expect a significant role played by managerial ownership in determining leverage?²²

The analysis of this chapter provides several important findings with regard to the relationship between managerial ownership, internal corporate governance and the firm's leverage decision. First, the results suggest that firms with better governance practices have a greater ability to issue debt financing. Second, the relationship between leverage and managerial ownership is non-monotonic and significant. We observe a positive relation at moderate levels of managerial ownership and the relationship becomes negative at higher levels. There is strong evidence, however, that the significant relationship between leverage and managerial ownership holds mainly for firms with poor corporate governance practices. That is, our findings suggest that managerial incentives explanations of leverage are more relevant for firms that do not have effective corporate governance mechanisms in place. Finally, consistent with the results reported

²² The hypothesis that corporate governance mechanisms work as substitutes in mitigating agency problems has recently received attention by researchers (see Weir et al., 2002; Cremers and Nair, 2005 and Agca and Mansi, 2005 among others). The main emphasis in these studies, however, is not on how managerial incentives interact with corporate governance but on how internal governance (e.g. monitoring by institutional investors) interacts with external governance (e.g. monitoring by the market of corporate control) in determining corporate policy decisions and firm value.

in recent capital structure studies, our dynamic panel data regressions show that UK firms adjust partially towards a target leverage ratio.

The remainder of the chapter is organized as follows: In Section 3.2 we formulate our empirical hypotheses whereas in Section 3.3 we provide a brief description of the data. Section 3.4 explains how we have constructed the governance index and, also, presents our empirical findings. Finally, Section 3.5 concludes.

3.2 Empirical Hypotheses

In this section we discuss how managerial ownership, internal corporate governance and their interactions influence the capital structure decision of firms. Also, we briefly describe our expectations regarding the relationship between several firm characteristics, such as size, growth opportunities, asset tangibility, profitability and leverage.

3.2.1 The role of managerial ownership

The link between leverage and managerial incentives is often not very clear. The basic intuition in the leverage literature is that managers normally have incentives to keep borrowing at lower levels than what an optimal leverage policy would imply. There are several reasons as to why managers may prefer low leverage. For example, low leverage reduces the probability of bankruptcy and enables managers to have greater discretion over the use of excess cash, possibly for their own benefit. Furthermore, by having low debt, firms and their managers are less subject to monitoring by the capital markets (see, e.g., Stulz, 1990; and Hart and Moore, 1995). However, in the presence of asymmetric information and costly agency conflicts between managers (insiders) and outside investors, leverage may have a disciplining role to play and managers may be willing to

let leverage play this role by increasing leverage. This happens in an attempt to alleviate the market's managerial agency concerns. Moreover, this effect is more likely to occur in the presence of managerial shareholdings in the firm, as ownership generally limits the discretion of managers in using the firm's resources at the expense of outside investors. Consequently, managers may want to raise more debt as their stake in the firm increases leading to a positive relationship between leverage and managerial ownership (*alignment effect*).²³

It is argued, however, that the relationship between leverage and managerial ownership is likely to be non-monotonic. As noted above, managers have incentives to keep borrowing at a level which is lower than optimal. Furthermore, it is more likely that managers will achieve the objective of low leverage at high levels of managerial ownership when they have much greater discretion and are possibly entrenched. Clearly, this would happen as long as the benefits to managers from low leverage are higher than the shared benefits due to the reduction in the expected managerial agency costs. The above discussion implies a negative relationship between leverage and managerial ownership at higher levels of managerial ownership (*entrenchment effect*). We expect that one would at least observe a decrease in the positive impact of managerial ownership on leverage at higher levels.

More importantly, we do not expect the non-linear relation between leverage and managerial ownership described above to hold in an environment in which firms have

²³ In addition to the expected agency benefits of leverage, in increasing leverage managers may also consider the benefits due to the reduction in the likelihood of takeover attempts. Clearly, our implicit assumption to derive this prediction is that the capital markets' agency concerns increase with the level of managerial ownership. Therefore, one could argue that the positive link between leverage and managerial ownership is also consistent with the strong empirical evidence that higher managerial ownership leads to greater firm value, in the sense that managers with greater shareholdings choose higher leverage as a self-disciplining device in the presence of costly and imperfect monitoring.

effective internal corporate governance mechanisms. There are at least two reasons we can provide for this prediction. First, in such an environment, there would be alternative governance devices acting as a substitute for leverage. In other words, there would be less need for leverage to play the role a corporate governance role. Second, the ability of managers to use their discretion would be reduced in the presence of effective internal corporate governance mechanisms. This is not to say that, in the presence of an effective internal corporate governance structure, there should be no significant relation between leverage and managerial ownership. For example, other things being equal, risk-averse managers may still prefer to have a lower leverage ratio than the firm's preferred capital structure. We also test for these possibilities after controlling for the relevant firm-specific characteristics and corporate governance factors in the empirical capital structure model.

Prior empirical research on the relationship between managerial ownership and leverage provides us with mixed findings. A number of studies document a positive relationship between managerial ownership and leverage (see, for example, Kim and Sorensen, 1986; and Mehran, 1992). The main argument in these studies is that the owners of managed-controlled firms prefer debt to equity in order to maintain their control within the firm and, also, avoid the agency costs of external equity. A competing argument in the literature is that debt decreases as the level of managerial ownership increases, reflecting the greater non-diversifiable risk of debt to management than to public investors (Friend and Lang, 1988). More recently, there have been a few studies that provide evidence for a non-linear relation between managerial ownership and leverage (see, for example, Brailsford et al. 2002).

3.2.2 The role of internal corporate governance

The corporate governance environment in which firms operate has a significant impact on the distribution of leverage across firms. The existence of good corporate governance attributes, such as large shareholders and effective boards of directors, signal the firm's quality to its prospective lenders, who obtain a clearer view of the firm. Consequently, well governed firms have better reputation, easier access to capital markets and other sources of finance and, in general, suffer from lower agency costs of debt. This leads to a lower cost of external finance and relatively higher level of leverage in their capital structure. To put it differently, they are less likely to be under-levered, in the sense that they have a leverage level that is closer to the optimal.

In addition to its direct impact, corporate governance may also exert an indirect impact on the capital structure decision through interactions with managerial incentives. That is, corporate governance may constrain or facilitate managerial incentives (as proxied by executive ownership) to choose a particular level of leverage. We then expect that the positive relationship between executive ownership and leverage (*alignment effect*) is less pronounced in well-governed firms because executive ownership and corporate governance (e.g. effective boards and/or active outside investors) can potentially work as substitute devices in mitigating managerial agency problems. To put it simply, executive ownership is less important as an incentive mechanism in the case of firms that possess strong governance. We also expect that the negative relationship between executive ownership and leverage (*entrenchment effect*) is likely to be weaker in well-governed firms. That is, managers of well governed firms face more monitoring restrictions and, therefore, they are less able to adjust the capital structure to its own interests.

To test these hypotheses, we include our corporate governance measure, which is derived using principal component analysis, as well as interaction terms between this measure and executive ownership and its square in the leverage equation.

3.2.3 The role of other control variables

Following Rajan and Zingales (1995) we include the following control variables in the leverage equation we estimate.

Tangibility: The incidence of higher agency costs associated with moral hazard is less dominant in firms in which a large fraction of assets is tangible (Myers, 1977). This is because tangible assets work as collateral in diminishing monitoring costs and, also, have a greater value than intangible assets in the case of bankruptcy. Therefore, firms who have greater proportion of tangible assets tend to have higher leverage ratios. We control for this effect by including the ratio of fixed assets to total assets in our empirical models.

Growth Opportunities: Myers (1977) argues that growth opportunities affect significantly the amount of debt that firms issue in a negative way. In particular, high growth firms prefer relatively lower levels of debt in order to avoid the adverse effects of the underinvestment problem. Such firms should use equity, instead, to finance growth because such financing reduces agency costs between managers and shareholders. We measure growth opportunities as the ratio of the book value of total assets minus the book value of equity plus the market value of equity to the book value of total assets.

Size: Larger firms are more diversified (Titman and Wessels, 1988), have easier access to capital markets and borrow at better conditions (Ferri and Jones, 1979) and suffer from lower agency costs related to asset substitution and underinvestment (Chung, 1993 and

Ang et al., 1982). Consequently, such firms are expected to raise relatively higher leverage. We use the natural logarithm of total assets as a proxy for size in our analysis.

Profitability: There is no consensus regarding the relationship between debt and profitability. On the one hand, the pecking order theory of capital structure posits that firms prefer retained earnings as their main source of financing investment where their second preference is debt and last come new equity issues (Myers and Majluf, 1984). According to this theory, profitable firms mainly rely on their retained earnings to finance investment. Therefore, a negative relationship between profitability and leverage is expected. On the other hand, the trade-off theory predicts that more profitable firms prefer debt to benefit from the tax shield, leading to a positive relationship between debt and profitability. We use the ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to the book value of total assets to measure profitability.

3.3 Data

The data used in this study are obtained from two different sources. We use Datastream to collect accounting data and data on the market value of equity for the years 1999 to 2003. In particular, we collect information on the firms' book and market leverage, asset tangibility, growth opportunities and profitability. Information on the firms' ownership structure and board structure is derived from the Hemscott Guru Academic Database. Specifically, we use this database to get detailed information on the level of executive ownership, ownership concentration and size and composition of the board for each firm.

We compile the final sample in the following manner. We merge data provided from Datastream and Hemscott and exclude financial firms and utilities from the sample.

Then, we drop missing firm-year observations and outliers (i.e. those observations that lie below the 1st percentile and above the 99th percentile for each variable). These criteria lead to a final sample of 946 firms for our empirical analysis. Table 3.1 provides the definitions of the variables used in the chapter whereas Table 3.2 summarizes the key descriptive statistics. We observe that the average book leverage for UK companies is 17.58 per cent. The average proportion of fixed assets in the balance sheet is 29.28 per cent, market to book ratio is 2.22, size (logarithm of total assets) is 10.97 and profitability is 4.6 per cent. As far as the ownership structure and board structure variables are concerned, executive directors hold a significant fraction of firms' total shares, 12.88 per cent, whereas the average ownership concentration (i.e. the sum of stake of firm's shareholders with equity ownership greater than 3 per cent) reaches the level of 35.63 per cent. Also, the average proportion of non-executive directors is 48.29 per cent and the average board size is 6.87 directors. In general, the descriptive statistics presented in Table 3.1 are in line with those reported in other studies that use UK firms in their analyses (see, for example, Ozkan and Ozkan, 2004; Short and Keasey, 1999 and Rajan and Zingales, 1995).

Table 3.3 presents the Pearson's correlation for the variables used in the analysis. The results are generally in line with our expectations. The measure for book leverage is positively and significantly correlated with size and tangibility but negatively and significantly correlated with the market-to-book ratio. The observed positive correlation between leverage and profitability is against the pecking order theory but in line with the prediction of the trade-off theory. We also observe that firms with high leverage in their capital structure are more likely to have low levels of executive ownership, a larger board

size and a larger proportion of non-executive directors on the board. However, such findings do not lead to concrete inferences given the potential non-linear impact of executive ownership on leverage and the potential interdependence among the ownership and the board structure variables.

3.4 Methodology and Results

In this section we describe how we have constructed the corporate governance measure using principal component analysis. Then, we present the results of the univariate and the regression analysis.

3.4.1 Construction of the Governance Index

For our empirical work, we use principal component analysis to aggregate individual governance mechanisms into a single governance index.²⁴ Principal component analysis enables us to combine several governance variables in constructing the governance measure but use a single variable in the empirical models. This helps control for potential multicollinearity problems that may arise when one includes more than one governance variable in a cross-sectional regression independently (see, for example, Agrawal and Knoeber, 1996). An additional advantage of principal component analysis is that it automatically produces weights so that the governance measure will explain as much of the variance in the group of corporate governance attributes and, therefore, does not require the ex ante determination of the weights. Most of the earlier studies that attempt to establish corporate governance ranking variables count on the strong assumption that

²⁴ A similar approach has been used in Callahan et al. (2003) to derive an index for management involvement in the director nomination process and in Kayhan (2003) to derive a composite proxy for managerial entrenchment.

all the corporate governance attributes contribute equally to the corporate governance index (Gompers et al., 2003 and Cremers and Nair, 2005).

We include three internal governance variables, namely ownership concentration (CONCENTR), board size (BOARDSIZE) and non-executive directors (NON-EXEC) as attributes of the corporate governance measure. We expect that ownership concentration has a positive weight in the index. This is based on the conjecture that shareholders with substantial equity stakes have more incentives than small shareholders to supervise management and can do so more effectively (Shleifer and Vishny, 1986; Shleifer and Vishny, 1997; and Friend and Lang, 1988). On the other hand, we expect that board size contributes negatively to the corporate governance measure. For example, larger boards are relatively less effective because coordination, communication and decision making is more cumbersome (Yermack, 1996). As for as the role of non-executive directors is concerned, it can either contribute positively or negatively to the governance index. It is widely acknowledged that non-executive directors contribute to better governance by limiting the exercise of managerial discretion within the firm (Byrd and Hickman, 1992). Recent evidence for UK firms, however, suggests that non-executive directors do not add much to the governance of firms possibly because they lack information about the firm, do not bring the requisite skills to the job and, hence, prefer to play a less confrontational role rather than a more critical monitoring role (see, for example, Franks et al., 2001).²⁵

²⁵ For robustness purposes, we run the principal component analysis after replacing our proxy for ownership concentration with the number of blockholders in each company. The inclusion of the new variable in the governance index is based on the view that within the group of major shareholders, controlling blockholders, who can be defined as those who have the capacity to determine the outcome of particular corporate policy decisions, are the ones with the strongest incentives to be active owners. Although the results are similar in both cases (e.g. the variable for controlling shareholders has a positive weight to the governance index) we prefer not to read too much into the new definition given the lack of a commonly accepted definition for controlling shareholders. Most previous studies classify controlling blockholders as those investors whose ownership stake exceeds the 20% level (see, for example, Faccio and

Table 3.4 presents the results from the principal component analysis. In Panel A we report the eigenvalues of the reduced correlation matrix of these variables. Although more than one eigenvalues is higher than one, indicating that more than one factor explain more variance than any single variable, we pick the first factor, called “GOVERNANCE”, which accounts for the highest percentage of variation. This factor is a linear combination of the variables CONCENTR, NON-EXEC and BOARDSIZE and, given its weights, we treat this variable as an increasing function of corporate governance effectiveness (the underlying eigenvectors are reported in panel B). In panel C, we report some descriptive statistics for the variable GOVERNANCE.²⁶

3.4.2 Univariate analysis

Table 3.5 presents univariate mean and standard deviation comparisons of several firm specific characteristics by leverage quartiles. We are interested in whether the characteristics of companies differ across low-levered firms (first quartile) and high-levered firms (fourth quartile). In general, the results support the view that firms in the first quartile differ significantly from firms in the fourth quartile (i.e. the t-statistic, which tests the hypothesis that the mean difference for each variable across the two groups of firms is zero, is statistically significant for almost all cases). Specifically, we find that firms with low leverage ratios are usually small firms, with a low proportion of tangible assets and relatively greater growth opportunities. We also observe that low-levered firms usually have smaller boards and lower proportions of non-executive directors sitting on

Lang, 2002). However, although in most companies a 20% threshold is likely to have voting control, in other companies the figure is greater and in some less (Leech, 2002).

²⁶ For robustness purposes, we also use the summation of the first two factors as a proxy for corporate governance. Our results are similar in both cases.

them. However, the level of ownership concentration does not seem to differ significantly across the first and the fourth leverage quartiles. Finally, the findings of Table 3.5 show that low-levered firms indicate relatively higher levels of executive ownership. Such a finding is consistent with the managerial entrenchment hypothesis in that managers become entrenched after a specific level of executive ownership, leading to a negative relationship between executive ownership and leverage.

There are at least two reasons, however, why one should be cautious in interpreting the latter finding as anecdotal evidence for a negative relationship between executive ownership and leverage. Firstly, univariate analysis does not effectively control for a potential non-linearity in that relationship. Secondly, as already mentioned before, it is likely that the relationship between executive ownership and leverage may also depend on the corporate governance environment in which firms operate. To address these issues, we provide a detailed preliminary investigation on the relationship between executive ownership, corporate governance and leverage. Specifically, we split the sample into two groups by labeling the upper 45 per cent in terms of GOVERNANCE as “high-governance firms” and the lower 45 per cent as “low-governance firms”. Then, in Table 3.6 we examine how changes in executive ownership influence the leverage ratio for the two sub-samples separately.

The results from this investigation, as presented in Table 3.6, point to a non-linear relationship between executive ownership and leverage (both market leverage and book leverage). We first observe that, in general, leverage increases as executive ownership increases up to the level of about 30 per cent. However, as we move to the next deciles the average leverage drops significantly. Such results seem to be more pronounced for the

sub-group of “low-governance firms”, pointing to the existence of an interaction effect between executive ownership and corporate governance.²⁷ In particular, when executive ownership is between 10 per cent and 20 per cent the average book leverage ratio is 15.76 per cent (16.58 per cent) for high-governance (low-governance) firms. As we move to the next sub-group, the average value of book leverage increases to 15.93 per cent for high-governance firms and 20.20 per cent for low-governance firms. After that point it seems that the relationship between executive ownership and leverage turns to negative. For example, the average leverage ratio drops to the level of 10.04 per cent for high-governance firms and 16.63 per cent for low-governance firms when executive ownership lies between 40 per cent and 50 per cent. For those firms with executive ownership greater than 50 per cent the average leverage increases (decreases) for high-governance (low-governance) firms and these results hold for both book and market leverage ratios. However, because of small sample sizes, such an analysis can not lead to strong inferences regarding the relationship between executive ownership, corporate governance and leverage at high levels of executive ownership (e.g. greater than 30 per cent).

3.4.3 Cross Sectional Regression Analysis

Table 3.7 presents the empirical models where book leverage (models 1-4) and market leverage (model 5) are regressed on a set of firm characteristics, including the corporate governance measure (GOVERNANCE) and executive ownership (EXECOWNER). In an attempt to tackle the problem of endogeneity, we follow the approach suggested by Rajan

²⁷ A confusing finding here may be the fact that, when executive ownership is lower than 10 per cent, the average leverage ratio (both the book and market definitions) is very high for the case of low-governance firms. This may be explained by the fact that most of the firms that we call “low-governance firms” are likely to be large firms that do not need to have strong corporate governance in place because they have a good reputation and a low probability of bankruptcy and, therefore, they can easily achieve high levels of leverage.

and Zingales (1995) according to which the dependent variable is measured in year t , while for the independent variables we use average-past values between $t-1$ and $t-k$. Using averages in the way we construct our explanatory variables helps mitigate potential problems that may arise due to short-term fluctuations and extreme values in our data. Also, using past values reduces problems related to reverse causality (e.g. the likelihood of observed relations reflecting the effects of leverage on firm specific factors). Specifically, in our chapter the dependent variable is measured in year 2003 whereas for the independent variables we use four-year average values during the period 1999 to 2002. Industry dummies are incorporated in all cross-sectional specifications.

We start by estimating a baseline model (model 1), which includes the firm characteristics suggested by Rajan and Zingales (1995). We observe that the coefficients of asset tangibility and firm size are positive and statistically significant. That is, on average, larger firms, and those firms with a greater proportion of tangible assets in their capital structure prefer higher leverage ratios. These results are in line with quite a few empirical studies (Rajan and Zingales, 1995; Booth et al, 2001 and Gaud et al, 2005). Also, as expected, the estimated coefficient of the market-to-book ratio is negative and statistically significant at the 5 per cent level, which supports the view of Myers (1977) that high-growth firms prefer low debt so as to avoid potential agency problems related to underinvestment. This evidence is also in line with empirical studies by Rajan and Zingales (1995), Ozkan (2001) and Gaud et al. (2005).

In model 2 we include executive ownership and its square in the empirical model to test the hypothesis that there is a non-linear relation between leverage and managerial ownership. In line with our hypothesis, the results reveal that the relationship is non-

monotonic. In particular, when the level of executive ownership is low, an increase in executive ownership has the effect of aligning managers and shareholders' interests, leading to a relatively higher leverage ratio. However, when the level of executive ownership is high, the entrenchment effect sets in, resulting in a lower debt level. Our findings suggest a turning point of 32 per cent in that the leverage ratio of firms increases as executive ownership increases up to 32 per cent, and then decreases for executive ownership levels above 32 per cent, which is in line with what Table 3.6 suggests.

We next investigate how the internal corporate governance structure of firms affect the capital structure decision (model 3). We observe a positive and significant association between our measure of corporate governance measure (GOVERNANCE) and leverage. This finding supports the view that well-governed firms, other things being equal, face a lower cost of external finance and, therefore, are able to increase their debt ratios (i.e. direct effect of corporate governance on leverage).

In model 4 we further extend our empirical specification by interacting our measure for corporate governance with the executive ownership terms, namely EXECOWNER and EXECOWNER_SQ. By doing so, we test the hypothesis that corporate governance influences the capital structure decision by changing the incentives of managers (i.e. indirect effect of corporate governance). Our empirical findings support this view. The coefficients of both interaction terms included in model 4 are statistically significant. In particular, the negative coefficient of the interaction term between the corporate governance measure and the executive ownership indicates that, *ceteris paribus*, the alignment effect of executive ownership is less pronounced in the case of well-governed firms. This gives support to the proposition that the role of leverage as a disciplining and

a monitoring device is reduced in well-governed firms as the expected costs of agency conflicts are significantly lower in such firms. That is, executive ownership plays a less important role as an incentive mechanism in the case of firms that already have strong monitoring mechanisms in place. Furthermore, we observe a positive and statistically significant coefficient of the interaction term between corporate governance and the square of executive ownership. Such evidence can be viewed as support for the view that, *ceteris paribus*, the entrenchment effect of executive ownership on leverage becomes weaker as the effectiveness of corporate governance increases. Simply put, managers in well-governed firms are less able to expropriate wealth by pursuing a lower level of leverage than what shareholders desire. We test the joint significance of both interaction terms included in model 4 by utilizing a Wald test. The results reject the null hypothesis that both interaction terms equal zero, supporting the specification of model 4. In model 5 we use a market value definition rather than a book value definition of leverage and re-estimate the model.²⁸ The results are qualitatively similar to the ones obtained and reported so far.

3.4.4 Capital structure dynamics and robustness

In this section we present the results from the dynamic panel data estimations. In the context of our analysis, a dynamic panel data framework is useful for two reasons. First, it helps control more successfully for the endogeneity problem that may arise due to unobserved heterogeneity (e.g. unobservable firm characteristics may be highly

²⁸ Specifically, following Berger et al. (1997) and Rajan and Zingales (1995), we measure market leverage as the ratio of the book value of total debt to the sum of book value of total assets and the market value of total equity.

correlated with regressors). To this end, the dynamic model complements the average cross sectional approach that only controls for endogeneity due to reverse causality. Second, it enables the study of the capital structure dynamics. A dynamic specification recognizes that firms may have a target leverage ratio that can not be achieved instantaneously. Instead, due to adjustment and other costs firms adjust partially to the desired leverage level (see also, Ozkan, 2001 and Miguel and Pindado, 2001). The empirical specification that involves the study of these issues is the following one:

$$Y_{it} = (1 - b)Y_{it-1} + \sum_{k=1}^K \delta_k X_{ik} + n_i + n_t + u_{it}, \quad (1)$$

where Y represents our proxy for corporate leverage and X_k is a vector of variables that account for firm specific characteristics, including managerial ownership, corporate governance as well as the interactions between managerial ownership (and its square) and corporate governance. The terms n_i and n_t represent firm-specific and time effects.

Equation (1) contains a lagged dependent variable, Y_{it-1} , recognizing that firms can not adjust instantaneously to the desired level of leverage following changes in firm-specific characteristics or random economic shocks. Our dynamic specification assumes that the adjustment depends on the parameter b , called the speed of adjustment, which gives the fraction of the desired change that managers can achieve. That is, $Y_{it} - Y_{it-1} = b(Y_{it}^* - Y_{it-1})$, where Y_{it} is the actual leverage ratio at time t , while $Y_{it}^* - Y_{it-1}$ can be interpreted as the desired change in leverage. By definition, the value of b varies between 0 (no adjustment at all towards the target) and 1 (immediate adjustment to the target).

For the estimation of equation (1) we use the GMM estimator proposed by Arellano and Bond (1991) given that ordinary least squares (OLS) and within group

estimators (WG) are likely to yield inconsistent estimates.²⁹ The GMM estimator involves the use of instruments dated [t-2] or earlier for the lagged dependent variable and the endogenous regressors as well as a first difference transformation. These two characteristics can guarantee that the results are not driven by reverse causality or unobserved heterogeneity problems. The consistency of the GMM estimator, however, depends on the validity of instruments used, which in turn depend on the absence of higher order serial correlation in the idiosyncratic component of the error term. Therefore, in addition to the GMM results we also report the Sargan test of over-identifying restrictions, under the null that instruments are valid, and the two tests for existence of first and second order serial correlation in the first differenced residual (denoted as *m1* and *m2* respectively).

Table 3.8 presents the results from the dynamic leverage model. In all specifications we use instruments dated [t-2] as these instruments perform particularly well (e.g. the Sargan test confirms the validity of instruments whereas the *m1* and *m2* tests confirm the existence of serial correlation of order one but not of order two). Consistent with the dynamic capital structure hypothesis, the results indicate that firms partially adjust towards an optimal leverage ratio, with the coefficient of adjustment being close to 0.6. This finding argues in favor of a relatively slow adjustment towards the target leverage ratio (more than 3 years). The dynamic panel data regressions also show that asset tangibility and size remain as two of the most important determinants of leverage (their coefficients are positive and statistically significant in all models).

²⁹ See Bond (2002) for a detailed discussion.

As far as the impact of managerial incentives and internal corporate governance on firm's financing policy are concerned, our results confirm our earlier findings that both variables are statistically significant in the leverage equation. Specifically, there is supporting evidence for both the alignment and entrenchment effects of managerial ownership whereas our corporate governance index enters the equation with a positive sign. In addition, the GMM estimations indicate that corporate governance also affects the leverage decision indirectly. Specifically, it seems that the alignment effect of managerial ownership is less pronounced in firms that operate under a strong corporate governance environment (i.e. the governance index is relatively high) (see model 9). However, in contrast to the cross sectional results, the dynamic analysis does not show that the entrenchment effect of managerial ownership also varies with corporate governance (the coefficient of the interaction term between the square of managerial ownership and corporate governance is statistically insignificant in model 10). These results hold under both definitions of leverage.

In summary, the results from the dynamic panel data regressions support our earlier findings that corporate governance and managerial incentives are both important in shaping the capital structure decision of firms. It also seems that the impact of managerial incentives on leverage (in particular the alignment effect of managerial ownership) varies with the effectiveness of the corporate governance environment in which firms operate. Finally, consistent with recent studies on the subject (see, for example, Ozkan, 2001 and Miguel and Pindado, 2001), our GMM results confirm the dynamic nature of the capital structure decision of firms.

3.5 Conclusion

In this chapter, using a large sample of 946 UK listed firms, we have provided an empirical analysis of the relation between leverage, corporate governance and managerial incentives. We employ principal component analysis to construct a corporate governance measure, which represents a score based on the existence of perceived good governance attributes, such as ownership concentration, non-executive directors and board size. The econometric specification used in this study allows the test of the hypothesis that internal governance influences leverage both directly, through reducing the expected agency costs of debt, and indirectly, through influencing managerial incentives to adjust to (or deviate from) and optimal leverage ratio. It also allows studying the hypothesis that firms, due to adjustment and other costs, adjust only partially towards an optimal leverage ratio.

Our empirical findings strongly suggest that the quality of internal corporate governance structure matters to the leverage decision. In particular, firms that possess strong corporate governance suffer from lower agency costs of debt, leading to a higher leverage ratio. Also, managerial incentives play a significant role in determining leverage and the relation between leverage and managerial ownership, which is a proxy for managerial incentives, is non-monotonic. Most importantly, we present evidence supporting the view that what determines the leverage decision of firms is not only internal corporate governance and managerial incentives per se, but also the interaction between the two. Put differently, we conjecture that although managers may have incentives to choose specific capital structures, these incentives themselves are influenced by the corporate governance environment in which firms operate.

Table 3.1: Variables, Definitions and Sources

Variable	Definition	Source
Dependent Variables		
LEVERAGE(BOOK)	The ratio of the book value of total debt to the book value of total assets (%)	Datastream
LEVERAGE (MKT)	The book value of total debt to the sum of the book value of total assets and the market value of total equity (%)	Datastream
Independent Variables		
TANGIBILITY	The ratio of total fixed assets to the book value of total assets (%)	Datastream
MKTBOOK	The ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets.	Datastream
SIZE	Total assets (in logarithm)	Datastream
PROFITABILITY	The ratio of earnings before interest, taxes, depreciation and amortization (EBITDA) to the book value of total assets.	Datastream
EXECOWNER	The percentage of equity ownership held by executive directors	Hemscott
CONCENTR.	The sum of the stakes of firm's shareholders (other than managers) with equity ownership greater than 3 per cent (%)	Hemscott
NON-EXEC.	The ratio of the number of non-executive directors to the number of total directors on the board (%)	Hemscott
BOARD SIZE	The total number of directors on the board	Hemscott

Notes: This Table provides the definitions of the main variables used in our analysis as well as some information on our data sources. Datastream database provides accounting and market data. Hemscott Guru Academic database provides financial data for the UK's top 300,000 companies and detailed data on all directors of UK listed companies.

Table 3.2: Descriptive Statistics (N=946)

	Mean	St.Dev	Min	25%	Median	75%	Max
LEVERAGE (BOOK)	17.58	16.72	0	2.20	14.43	27.89	87.78
LEVERAGE (MKT)	13.37	14.62	0	1.32	9.58	20.14	92.11
TANGIBILITY	29.28	24.59	0	9.14	21.30	44.33	98.69
MKTBOOK	2.217	2.103	0.221	1.066	1.506	2.463	18.36
SIZE	10.97	2.176	6.171	9.342	10.71	12.25	18.62
PROFITABILITY	0.046	0.182	-0.892	0	0.086	0.151	0.601
EXECOWNER	12.88	17.63	0	0.347	4.410	18.94	88.38
CONCENTR	35.63	20.15	0	20.27	34.14	48.96	95.19
NON-EXEC	48.29	13.69	0	39.29	48.59	57.14	100
BOARDSIZE	6.870	2.209	2	5.25	6.5	8	21

Notes: This Table provides descriptive statistics for the main variables used in our analysis. The means of the variables (except for the leverage variables, which are measured in 2003) are measured over the period 1999–2002. Definitions for all the variables are provided in Table 3.1.

Table 3.3: Correlation Matrix (N=946)

	1	2	3	4	5	6	7	8	9
1. LEVERAGE	1.000								
2. TANGIBILITY	0.348**	1.000							
3. MKTBOOK	-0.177**	-0.276**	1.000						
4. SIZE	0.353**	0.279**	-0.169**	1.000					
5. PROFITABILITY	0.209**	0.348**	-0.164**	0.389**	1.000				
6. EXECOWNER	-0.137**	-0.140**	0.063	-0.426**	-0.067	1.000			
7. CONCENTR	-0.036	0.082*	-0.080*	-0.144**	-0.019	-0.258**	1.000		
8. NON-EXEC	0.079*	0.109**	0.020	0.297**	0.024	-0.437**	0.152**	1.000	
9. BOARDSIZE	0.192**	0.122**	0.004	0.607**	0.205**	-0.265**	-0.158**	0.162**	1.000

Notes: This Table presents the Pearson's Correlation matrix for the main variables used in our analysis. Definitions for all the variables are provided in Table 3.1. ** and * indicate that correlation is significant at the 1% and 5% levels respectively (two tailed).

Table 3.4: Results from Common Factor Analysis

<i>Panel A : Eigenvalues of the reduced correlation matrix</i>			
1	2	3	
1.163	1.152	0.685	
<i>Panel B: Index Weight</i>			
	CONCENTR	NON-EXEC	BOARDSIZE
	0.263	-0.545	-0.796
<i>Panel C: Descriptive statistics for the first factor extracted (called GOVERNANCE)</i>			
Mean	Min	Median	Max
4.9e-18	-5.834	0.112	3.163

Notes: Definitions for the variables CONCENTR, NON-EXEC and BOARDSIZE are provided in Table 3.1.

Table 3.5: Firm Characteristics by Leverage Quartiles

Variable	Q1	Q2	Q3	Q4	t-test
TANGIBILITY	18.39 <i>18.56</i> [19.62]	25.31 <i>25.94</i> [21.60]	30.67 <i>31.33</i> [21.28]	42.74 <i>41.25</i> [28.31]	-3.65*** -10.15***
MKTBOOK	2.994 <i>3.002</i> [3.036]	2.271 <i>2.241</i> [2.109]	1.806 <i>1.859</i> [1.314]	1.795 <i>1.742</i> [1.176]	5.67*** 5.98***
SIZE	9.740 <i>9.710</i> [1.562]	10.64 <i>10.65</i> [2.020]	11.54 <i>11.53</i> [2.106]	11.97 <i>12.00</i> [2.252]	-12.55*** -12.95***
PROFITABILITY	-0.026 <i>-0.028</i> [0.237]	0.032 <i>0.039</i> [0.199]	0.093 <i>0.089</i> [0.105]	0.086 <i>0.082</i> [0.128]	-6.36*** -6.29***
EXECOWNER	15.88 <i>15.69</i> [18.56]	14.87 <i>15.03</i> [19.23]	11.00 <i>11.17</i> [17.03]	9.78 <i>9.49</i> [14.76]	3.96*** 4.07***
CONCENTR	37.31 <i>37.64</i> [21.08]	36.13 <i>36.09</i> [19.75]	34.16 <i>33.07</i> [18.80]	34.90 <i>35.76</i> [20.86]	1.25 0.97
NON-EXEC	47.13 <i>47.21</i> [14.75]	47.36 <i>47.43</i> [13.71]	48.80 <i>48.59</i> [13.56]	49.85 <i>49.82</i> [12.67]	-2.16** -2.10**
BOARDSIZE	6.172 <i>6.191</i> [1.639]	6.613 <i>6.618</i> [2.192]	7.243 <i>7.211</i> [2.400]	7.453 <i>7.469</i> [2.301]	-6.98*** -7.46***
GOVERNANCE	0.320 <i>0.301</i> [0.846]	0.136 <i>0.154</i> [1.049]	-0.174 <i>-0.166</i> [1.127]	-0.282 <i>-0.261</i> [1.163]	6.45*** 6.01***

Notes: This Table provides univariate mean comparisons of several firm specific characteristics by book leverage quartiles (normal format) and market leverage quartiles (italic format). It also provides standard deviation comparisons by book leverage quartiles (bracketed). The *t*-statistic is for a difference of means from the first to the fourth quartiles. Definitions for all the variables are provided in Table 3.1. *** and ** indicate that the difference in means is statistically significant at the 1% and 5% levels respectively.

Table 3.6: Leverage by Executive Ownership and Corporate Governance Effectiveness

	<u>Book Leverage</u>		<u>Market Leverage</u>	
	<i>High-Governance Firms</i>	<i>Low-Governance Firms</i>	<i>High-Governance Firms</i>	<i>Low-Governance Firms</i>
1. EXECOWNER <10 %	15.73	20.66	11.71	15.80
2. 10%< EXECOWNER<20%	15.76	16.58	13.37	11.02
3. 20%< EXECOWNER<30%	15.93	20.20	13.88	16.12
4. 30%< EXECOWNER<40%	14.86	19.23	9.25	13.93
5. 40%< EXECOWNER<50%	10.04	16.63	6.75	9.2
6. EXECOWNER>50%	13.53	7.20	10.10	5.27

Notes: This Table examines how leverage varies with changes in executive ownership and corporate governance. We split the sample into two groups by labeling the upper 45 per cent in terms of GOVERNANCE as “High-Governance Firms” and the lower 45 per cent as “Low-Governance Firms”. Analytical definitions for the variables EXECOWNER and GOVERNANCE are defined in Table 3.1. The number of high-governance firms in groups 1, 2, 3, 4, 5 and 6 is 196, 78, 45, 42, 23 and 42 respectively. The number of low-governance firms in groups 1, 2, 3, 4, 5 and 6 is 345, 33, 15, 12, 10 and 11 respectively.

Table 3.7: Cross Sectional Regressions Predicting Leverage
 Dependent Variable: *Models 1-4: LEVERAGE (BOOK), Model 5: LEVERAGE (MKT)*

<i>Independent Variables</i>	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Constant	-0.062 (-1.35)	-0.095 (-1.99)**	-0.147 (-2.51)**	-0.151 (-2.57)***	-0.140 (-3.17)***
TANGIBILITY	0.172 (6.72)***	0.174 (6.94)***	0.172 (6.95)***	0.171 (6.89)***	0.107 (5.40)***
MKTBOOK	-0.004 (-1.97)**	-0.004 (-2.14)**	-0.003 (-1.71)*	-0.003 (-1.73)*	-0.003 (-1.80)*
SIZE	0.020 (7.59)***	0.021 (7.59)***	0.026 (6.59)***	0.026 (6.72)***	0.022 (6.75)***
PROFITABILITY	0.039 (1.43)	0.035 (1.27)	0.029 (1.03)	0.030 (1.10)	-0.003 (-0.10)
EXECOWNER	-	0.173 (2.22)**	0.171 (2.21)**	0.238 (2.86)***	0.158 (2.02)**
EXECOWNER_SQ	-	-0.278 (-2.37)**	-0.281 (-2.42)**	-0.417 (-3.00)***	-0.322 (-2.55)**
GOVERNANCE	-	-	0.011 (1.75)*	0.015 (2.07)**	0.014 (2.31)***
GOVERNANCE * EXECOWNER	-	-	-	-0.121 (-1.82)*	-0.096 (-1.74)*
GOVERNANCE * EXECOWNER_SQ	-	-	-	0.212 (2.18)**	0.171 (2.20)**
Industry Dummies	Yes	Yes	Yes	Yes	Yes
R ²	0.236	0.239	0.242	0.245	0.189
Number of firms	946	946	946	946	946

Notes: This Table provides the results from our cross sectional regressions predicting leverage. In models 1 to 4 the dependent variable is the book value of total debt to the book value of total assets. In model 5 the dependent variable is the book value of total debt to the sum of the book value of total assets and the market value of total equity. The independent variables, except for GOVERNANCE, are defined in Table 3.1. GOVERNANCE is an index variable that evaluates the effectiveness of the corporate governance system in which firms operate and is derived after using Principal Component Analysis (see Section 3.4.1 for details). All regressions include industry dummies. t-statistic values are reported in parentheses. For the estimation we used consistent to heteroscedasticity standard errors. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels respectively

Table 3.8: Dynamic Panel Data Results (GMM)Dependent Variable: *Models 6-10: LEVERAGE (BOOK), Model 11: LEVERAGE (MKT)*

<i>Independent Variables</i>	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)	Model (11)
Constant	0.002 (0.34)	0.004 (0.83)	0.004 (0.86)	0.004 (0.827)	0.003 (0.61)	0.003 (0.80)
LEVERAGE _{t-1}	0.444 (6.72)***	0.426 (6.09)***	0.410 (6.06)***	0.413 (6.37)***	0.401 (6.14)***	0.554 (6.53)***
TANGIBILITY	0.484 (2.25)**	0.502 (2.07)**	0.553 (2.26)**	0.496 (2.29)**	0.469 (2.19)**	0.385 (1.95)*
MKTBOOK	-0.004 (-1.05)	-0.005 (-1.33)	-0.006 (-1.47)	-0.008 (-1.76)*	-0.008 (-2.15)**	-0.004 (-1.35)
SIZE	0.097 (2.77)***	0.090 (2.51)**	0.096 (2.75)***	0.081 (2.37)**	0.086 (2.73)***	0.068 (2.62)***
PROFITABILITY	0.023 (0.42)	-0.005 (-0.11)	0.004 (0.08)	0.021 (0.55)	0.013 (0.37)	0.008 (0.24)
EXECOWNER	-	0.006 (2.750)***	0.007 (2.70)***	0.006 (2.39)**	0.005 (2.16)**	0.005 (2.27)**
EXECOWNER_SQ	-	-8.5e-005 (-2.55)***	-8.5e-005 (-2.56)***	-6.3e-005 (-1.83)*	-4.6e-005 (-1.25)	-6.1e-005 (-2.22)**
GOVERNANCE	-	-	0.031 (1.90)*	0.044 (2.59)***	0.034 (1.83)*	0.039 (2.85)***
GOVERNANCE * EXECOWNER	-	-	-	-0.001 (-2.08)**	0.001 (0.32)	-0.001 (-1.91)*
GOVERNANCE * EXECOWNER_SQ	-	-	-	-	-3.8e-005 (-0.96)	-
Observations	2496	2496	2496	2496	2496	2496
Wald (joint)	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
Sargan	0.14	0.56	0.27	0.62	0.63	0.34
m1 test	0.00*	0.00*	0.00*	0.00*	0.00*	0.00*
m2 test	0.90	0.97	0.92	0.85	0.92	0.80

Notes: This Table reports the results from the GMM (in first differences) estimator. In models 6 to 10 the dependent variable is the book value of total debt to the book value of total assets. In model 11 the dependent variable is the book value of total debt to the sum of the book value of total assets and the market value of total equity. The independent variables, except for GOVERNANCE, are defined in Table 3.1. GOVERNANCE is an index variable that evaluates the effectiveness of the corporate governance system in which firms operate and is derived using Principal Component Analysis (see Section 3.4.1 for details). For the estimation, levels dated [t-2] were used as instruments. Time dummies were used in all specifications. For the estimation we used asymptotic standard errors robust to heteroscedasticity. We report a Wald test which evaluates the joint significance of all regressors in each model. We also report the Sargan test, which is a test of over-identifying restrictions, asymptotically distributed as a χ^2 under the null of valid instruments. m1 and m2 are tests for the absence of first order and second order correlation in the residuals. These test statistics are asymptotically distributed as $N(0,1)$ under the null of no serial correlation. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels respectively. * indicates that test statistic rejects the null hypothesis.

Chapter 4

Agency Costs and Corporate Governance Mechanisms

4.1 Introduction

Following Jensen and Meckling (1976), agency relations within the firm and costs associated with them have been extensively investigated in the corporate finance literature. There is a great deal of empirical work providing evidence that financial decisions, investment decisions and, hence, firm value are significantly affected by the presence of agency conflicts and the extent of agency costs. The focus of these studies has been the impact of the expected agency costs on the performance of firms.³⁰ Moreover, the implicit assumption is that, in imperfect capital markets, agency costs arising from conflicts between firms' claimholders exist and the value of a firm decreases if the market expects that these costs are likely to be realised. It is also assumed that there are internal and external corporate governance mechanisms that can help reduce the magnitude of these costs and their negative impact on firm value. For example, much of the previous work on the ownership-performance relationship relies on the view that managerial ownership can align the interests of managers and shareholders and hence one is likely to observe a positive impact exerted by managerial shareholdings on the performance of firms. The positive impact is argued to be due to the decrease in the expected costs of the agency conflict between managers and shareholders.

Despite many valuable insights provided by this strand of the literature, however, only very few studies directly tackle the measurement issue of the principal variable of interest, namely *agency costs*. Notable exceptions are Ang et al. (2000), Singh and Davidson (2003) and Fleming et al. (2005), who investigate the empirical determinants of agency costs and focus on the role of debt and ownership structure in mitigating agency

³⁰ See, for example, Morck et al. (1988); McConnell and Servaes (1990); and Agrawal and Knoeber (1996) among others.

problems. In doing so, they use two alternative proxies for agency costs: the ratio of total sales to total assets (asset turnover) and the ratio of selling, general and administrative expenses to total sales (SG&A). In line with the findings of previous research, they provide evidence that managerial ownership aligns the interests of managers and shareholders and, hence, reduces agency costs. However, there is no consensus among the studies regarding the role of debt in mitigating such problems and associated costs. Ang et al. (2000) point out that debt has an alleviating role, whereas for Singh and Davidson (2003) it has an aggravating one. Additionally, existing studies do not provide sufficient evidence on the impact of other governance mechanisms, such as managerial compensation and debt maturity, and growth opportunities on agency costs.

The objective of this chapter is to extend the investigation of these studies by analysing empirically the determinants of agency costs in the UK for a large sample of listed firms. Following the works of Ang et al. (2000), Singh and Davidson (2003) and Fleming et al. (2005) we model both proxies of agency costs: asset turnover and the SG&A ratio. More specifically, we empirically examine the impact of capital structure, ownership, board composition and managerial compensation on the costs that are likely to arise from agency conflicts between managers and shareholders.³¹ In doing so, we also pay particular attention to the role of growth opportunities in influencing the effectiveness of internal governance mechanisms in reducing agency costs.

In carrying out the analysis in this chapter, we aim to provide insights in at least three important areas of the empirical research on agency costs. First, in investigating the

³¹ As explained later in the paper, the two proxies for agency costs that are used in our analysis are more likely to capture agency problems between managers and shareholders. However, we do not rule out the possibility that they may also capture, to some extent, agency problems between shareholders and debtholders.

determinants of agency costs, the analysis of this chapter incorporates important firm-specific characteristics (internal corporate governance devices) that possibly affect agency costs but were ignored by previous studies. In particular, we explore the role of debt maturity structure in controlling agency costs. It is widely acknowledged that short-term debt may be more effective than long-term debt in reducing the expected costs of the underinvestment problem of Myers (1977).³² Accordingly, in our analysis, we consider the maturity structure of debt as a potential governance device that is effective in reducing the expected costs of the agency conflict between shareholders and debtholders. Similar to Ang et al. (2000), who investigate whether bank debt creates a positive externality in the form of lower agency costs, we also check if the source of debt financing matters in mitigating agency problems.

Another potentially effective corporate governance mechanism we consider relates to managerial compensation. Recent studies suggest that compensation contracts can motivate managers to take actions that maximize shareholders' wealth (see, e.g., Core et al., 2003; Murphy, 1999 among others). This is based on the view that financial "carrots" motivate managers to maximize firm value. To put it differently, a manager that receives an attractive compensation package will presumably be less likely, *ceteris paribus*, to exert insufficient effort and risk the loss of his job. In this chapter, we examine the effectiveness of managerial compensation as a corporate governance mechanism by including the salary of managers in our empirical agency model. We also acknowledge that there have been concerns about excessive compensation packages and their negative impact on corporate

³² It is argued that firms with greater growth opportunities should have more short-term debt because shortening debt maturity would make it more likely that debt will mature before any opportunity to exercise the growth options. Consistent with this prediction, there are several empirical debt maturity studies that find a negative relation between maturity and growth opportunities (see, e.g., Barclay and Smith, 1995; Guedes and Opler, 1996; and Ozkan, 2000 among others).

performance (see, for example, Bebchuk and Fried, 2003). Accordingly, we investigate the possibility of a non-monotonic impact the managerial compensation may exert on agency costs.

Second, our empirical model captures potential interactions between corporate governance mechanisms and growth opportunities. We expect the effectiveness of governance mechanisms in reducing agency problems to be dependent on a firm's growth opportunities. In particular, if agency problems are associated with greater information asymmetry (a common problem in high-growth firms), the corporate governance mechanisms that are likely to mitigate such problems are expected to be more effective for high-growth firms (see, e.g., Smith and Watts, 1992 and Gaver and Gaver, 1993). However, if agency problems are associated with conflicts over the use of free cash flow (a common problem in low-growth firms), the corporate governance mechanisms that are likely to mitigate such problems are expected to be more effective for low-growth firms (see, e.g., Jensen, 1986).

Our results strongly support our empirical hypotheses. Debt maturity and managerial compensation seem to play an important role in mitigating agency related problems for UK firms. Additionally, there is strong evidence that specific governance mechanisms are not homogeneous but vary with growth opportunities. For instance, we find that the alignment effect of executive ownership is more pronounced in high-growth firms. This finding complements earlier research by Smith and Watts (1992), Gaver and Gaver (1993) and Lasfer (2002) showing that high-growth firms are likely to prefer incentive mechanisms (e.g. managerial ownership) whereas low-growth firms focus mainly on monitoring mechanisms (e.g. short-term debt) for mitigating agency problems. Finally, consistent with

the findings provided by Ang et al. (2000) and Singh and Davidson (2003) for the US firms and Fleming et al. (2005) for Australian firms, we present evidence that managerial ownership, ownership concentration and, to some extent, bank debt can also work as potential corporate governance mechanisms or devices for UK firms.

The remainder of this chapter is organized as follows. In section 4.2 we discuss the related theory and formulate our empirical hypotheses. Section 4.3 describes the way in which we have constructed our sample and presents several descriptive statistics about it. Finally, Section 4.4 presents the empirical results and section 4.5 concludes

4.2 Agency Costs, Corporate Governance and Growth Options

It has been argued that managerial ownership, when it is at low levels, can help align the interests of managers with those of shareholders (Jensen and Meckling, 1976) (*alignment effect*). After some level of managerial ownership, though, managers exert insufficient effort, collect private benefits and entrench themselves at the expense of other investors (see, for example, McConnell and Servaes, 1990) (*entrenchment effect*). Finally, several studies suggest that at high levels of managerial ownership there is a resurgence of entrenchment behaviour (Morck et al., 1988; Short and Keasey, 1999).

However, in addition to managerial ownership, there are several aspects of firm's ownership, board, capital and compensation structure that can also work as effective governance mechanisms or devices. For example, corporate governance research recognizes the essential role performed by the board of directors in monitoring management (see, for example, Fama and Jensen, 1983 among others). Several studies, though, argue that such an effect is expected to be relatively weak for the case of UK market (see, for

example, Vafeas and Theodorou, 1998) and Lasfer, 2002)³³. In addition to the board of directors, one increasingly important issue concerns the role of ownership concentration in exerting proper management supervision and preventing managerial entrenchment (Shleifer and Vishny, 1986). In the context of the UK market, the existing takeover code and the favourable law to the minority shareholders creates obstacles to building controlling stakes and, therefore, ownership concentration may not affect firm performance significantly.³⁴

Furthermore, managerial compensation can also work as an important mechanism that influences managers to take actions that maximize the value of the firm (see Core et al., 2001 and Murphy, 1999). For example, a manager that receives an attractive compensation package will presumably be less likely, *ceteris paribus*, to exert insufficient effort and risk the loss of his job. However, the relationship between managerial compensation and agency costs is not necessarily linear. There is a strand of literature that considers executive compensation as a part of the agency problems rather than a solution of it.³⁵ Finally, several studies suggest that debt incorporates significant monitoring, signalling and renegotiation characteristics that can mitigate agency conflicts between managers and outside investors (see, for example, Diamond, 1991; Ross, 1977). Such effects are particularly true for the case of short-term debt (Myers, 1977; Flannery, 1986).³⁶

³³ For example, it is argued that UK corporate boards usually play a less confrontational role rather than a more critical monitoring one

³⁴ Specifically, ownership in the UK is very dispersed and relatively large portfolios are kept only by institutional investors. However, in contrast to managers, which are regarded as being strong, UK institutions are usually characterized as being passive investors and insufficient monitors within a firm (Goergen and Rennebog, 2001).

³⁵ See Chapter 1 for an analytical discussion on this issue.

³⁶ An analytical discussion on the impact of these mechanisms on corporate strategy and value is provided in Chapter 1. Similar to the case of corporate performance, we carry out a preliminary investigation to get an idea about the nature of the relationship between internal governance mechanisms and our proxies for agency costs. Two mechanisms were found to be associated with agency costs in a non-linear way, namely managerial ownership and salary (see graphs 4.1 and 4.2). Accordingly, we incorporate higher order polynomials in our empirical specification to capture such non-linearities (see Section 4.4.2).

In addition to the direct impact of these mechanisms on agency costs, it is likely however that the various governance mechanisms interact in complicated ways with other aspects of the firms (e.g. growth opportunities). The reasoning is as follows. The magnitude of agency costs related to underinvestment, asset substitution and free-cash-flow is expected to differ significantly across high growth and low growth firms. In the underinvestment problem, managers may decide to pass up positive net present value projects since the benefits would mainly accrue to debt-holders. Such a problem is generally more severe in firms with attractive growth options (Myers, 1977). Asset substitution problems, which occur when managers opportunistically substitute higher variance assets for low variance assets, are also more prevalent in high-growth firms due to high asymmetric information between investors and borrowers (Jensen and Meckling, 1976). High growth firms, on the other hand, face lower free cash-low problems, which mainly occur in firms that have substantial cash reserves and tend to undertake risky investment projects (Jensen, 1986).

Given the different magnitude and types of agency costs between high-growth and low-growth firms, we expect the effectiveness of corporate governance mechanisms to vary with growth opportunities. In particular, if agency problems are associated with greater underinvestment or information asymmetry (a common problem in high-growth firms), we expect corporate governance mechanisms that mitigate such problems to be more effective in high-growth firms (Smith and Watts, 1992 and Gaver and Gaver, 1993). However, if agency problems are associated with conflicts over the use of free-cash-flow (a common problem in low-growth firms), we expect governance mechanisms that mitigate such problems to play a more important role in low-growth firms (Jensen, 1986).

Several empirical studies that model corporate performance test for the existence of interactions between internal governance mechanisms and growth opportunities. For example, McConnell and Servaes (1995) find that the relationship between firm value and leverage is negative for high-growth firms and positive for low-growth firms. Also, they provide weak evidence that the allocation of equity ownership between corporate insiders and other types of investors is more important for low-growth firms. In a similar spirit, Lasfer (2002) points out that high-growth firm (low-growth firms) rely more on managerial ownership (board structure) to mitigate agency problems. Finally, Chen (2003) finds that the positive relationship between annual stock bonus and equity value is stronger for firms with greater growth opportunities.

4.3 Data and Methodology

4.3.1 Data sources

For our empirical analysis of agency costs we use a large sample of publicly traded UK firms over the period 1999-2003. We use two data sources for the compilation of our sample. Accounting data and data on the market value of equity are collected from Datastream. Specifically, we use Datastream to collect information on firm size, market value of equity, annual sales, selling general and administrative expenses, level of bank debt, short-term debt and total debt.

Information on firm's ownership, board and managerial compensation structure is derived from the Hemscott Guru Academic database. This database provides financial data for the UK's top 300,000 companies, detailed data on all directors of UK listed companies, live regulatory and AFX News feeds and share price charts and trades. In specific, we use

the Hemscott Guru Academic to get detailed information on the level of managerial ownership, ownership concentration, size and composition of the board, and managerial cash compensation.

The way in which our final sample is compiled is the following: we start with a total of 1672 UK listed firms derived from Datastream. This number is reduced to 1450 firms after excluding financial firms from the sample. After matching Datastream data with the data provided by Hemscott Guru Academic, the number of firms further decreases to 1150. Missing firm-year observations for any variable in the model during the sample period are also dropped. Finally, we restrict our analysis to values for each variable that lie between the 1st and the 99th percentile to avoid the problem with extreme values. This criterion left us with 897 firms for the current analysis.

4.3.2 Dependent Variable

In this study we use two alternative proxies for agency costs. Firstly, we use the ratio of annual sales to total assets (Asset Turnover) as an inverse proxy for agency costs. This ratio can be interpreted as an asset utilization ratio that shows how effectively management deploys the firm's assets. A low asset turnover ratio may indicate poor investment decisions, insufficient effort, consumption of perquisites and purchase of unproductive products (e.g. office space). Firms with low asset turnover ratios are expected to experience high agency costs between managers and shareholders.³⁷ A similar proxy for agency costs

³⁷ The asset turnover ratio may also capture (to some extent) agency costs of debt. For instance, the sales ratio provides a good signal for the lender about how effectively the borrower (firm) employs its assets and, therefore, affects the cost of capital.

is also used in the studies of Ang et al. (2000), Singh and Davidson (2003) and Fleming et al. (2005).³⁸

Secondly, following Singh and Davidson (2003), we use the ratio of selling, general and administrative expenses to sales (SG&A) as a direct proxy for agency costs. The idea here is that SG&A expenses include, among others, commissions charged by agents to facilitate transactions, travel expenses for executives, advertising and marketing costs, rents and other utilities and, therefore, the SG&A ratio is likely to reflect, to some extent, managerial discretion in spending company resources. Consistent with this view, Singh and Davidson (2003) point out that management usually use advertising and selling expenses to camouflage expenditures on perquisites.³⁹

4.3.3 Independent Variables

Our empirical model includes a set of corporate governance variables related to firm's ownership, board, compensation and capital structure as predictors of agency costs (see section 4.2). Several control variables are also incorporated. Specifically, we use the logarithm of total assets in 1999 prices as a proxy for firm size (SIZE). Also, we include the market-to-book value (MKTBOOK) as a proxy for growth opportunities.⁴⁰ Finally, we divide firms into 15 sectors and include 14 dummy variables accordingly to control for sector specific effects. Analytical definitions for all the variables are given in Table 4.1.

³⁸ However, Ang et al. (2000) and Fleming et al. (2005), instead of using the ratio directly, consider asset turnover differences with respect to a zero agency cost benchmark.

³⁹ An alternative proxy for agency costs between managers and shareholders, which is not used in our paper though, is the interaction of company's growth opportunities with its free cash flow (see Doukas et al., 2002).

⁴⁰ For robustness purposes, we later substitute MKTBOOK with another proxy for growth opportunities, which is derived after using principal component analysis (see Section 4.2 for details).

4.3.4 Methodology

We examine the determinants of agency costs by utilizing the cross sectional average methodology proposed by Rajan and Zingales (1995). In particular, the dependent variable is measured at some time t , while for the independent variables we use average-past values. Specifically, the dependent variable is measured in year 2003 and independent variables are measured over the period 1999-2002. Using averages in the way we construct our explanatory variables helps mitigate potential problems that may arise due to short-term fluctuations and extreme values in our data. Also, using past values reduces the likelihood of observed relations reflecting the effects of asset turnover on firm specific factors.

To explore the hypothesis that the nature of the relationship between internal governance mechanisms and agency costs differs across high growth and low growth firms, we interact our proxy for growth opportunities with the alternative corporate governance mechanisms. In this way, we test for the existence of both *main effects* (the impact of governance variables on agency costs) and *conditional effects* (the impact of growth opportunities on the relationship between governance variables and agency costs).

4.3.5 Sample Characteristics

Table 4.2 presents descriptive statistics for the variables used in our analysis. The average values of asset turnover ratio and SG&A ratio are 1.24 and 0.45 respectively. The average value for managerial ownership is 14.74 per cent, of which the average proportion of stakes held by executive (non-executive) directors is 10.68 per cent (4.06 per cent). Ownership concentration reaches the level of 37.19 per cent, on average, in our sample. Also, the average proportion of non-executive directors is 49.5 per cent and the average board size is

6.97 directors. Finally, we were able to identify only 73 firms out of the final 897 (8.1 per cent) in which the positions of CEO and COB are not separated. As far as the capital structure variables are concerned, the average proportion of bank debt on firm's capital structure is 55.65 per cent and that of short-term debt is 49.53 per cent. Finally, the average market-to-book value is 2.09. In general, the descriptive statistics are in line with those reported in other studies for UK firms (see, for example, Ozkan and Ozkan, 2004; Lasfer, 2002 and Short and Keasey, 1999).

Table 4.3 presents the Pearson's Correlation among the variables. Our inverse proxy for agency costs, asset turnover, is positively and significantly correlated with managerial ownership, executive ownership, salary, bank debt and short-term debt. Ownership concentration is also positively related to asset turnover but the correlation coefficient is not statistically significant. On the other hand, board size and non-executive directors are found to be negatively correlated with asset turnover. Finally, as expected, asset turnover is negatively correlated with both growth opportunities and firm size. The results for our second proxy for agency costs, SG&A, are qualitatively similar with a few exceptions (e.g. short-term debt) but with opposite signs. This is explained by the fact that SG&A is a direct and not an inverse proxy for agency costs.

4.4 Empirical Results

4.4.1 Univariate Analysis

Table 4.4 reports univariate mean-comparison test results of the sample firm subgroups categorized on the basis of above and below median values for managerial ownership, ownership concentration, proportion of non-executives, board size, salary, bank debt, short-

term debt, total debt, firm size and growth opportunities. In Panel A of Table 4.4 we use asset turnover as an inverse proxy for agency costs. It seems that firms with above median managerial ownership (ownership concentration) have asset turnover of 1.34 (1.31) whereas those with below median managerial ownership (ownership concentration) have asset turnover of 1.15 (1.17). These differences are statistically significant at the 1 per cent (5 per cent) level. That is, firms with high levels of managerial ownership and ownership concentration have higher asset turnover ratios, *ceteris paribus*. The results also indicate that firms with above median values for salary, bank debt and short-term debt have also higher asset turnover ratios. On the other hand, our univariate analysis reveals that firms with larger board sizes display significantly lower sales to asset ratios.

In panel B of Table 4.4 we report the univariate results after using the SG&A ratio as a proxy for agency costs. We find that firms with above median ownership concentration (MKTBOOK) have an SG&A expense ratio of 0.41 (0.55) whereas firms with below median ownership concentration (MKTBOOK) have an SG&A ratio of 0.49 (0.36). The rest of results presented in panel B are either insignificant or against our expectations.⁴¹

Overall, the univariate analysis provides some evidence for the view that several corporate governance mechanisms or devices, such as managerial ownership, ownership concentration, salary, bank debt and short-term debt can help mitigate agency problems between managers and shareholders. Also, consistent with previous studies, we find that the relation between governance variables and agency costs is stronger for the asset turnover ratio than the SG&A ratio. The analysis that follows allows us to test the validity of these results in a multivariate framework.

⁴¹ Singh and Davidson (2003) obtains a set of similar results for the case when agency costs are approximated with the SG&A ratio.

4.4.2 Multivariate Analysis

In this section we present the results from the cross sectional regression analysis. We start with a linear specification model, where asset turnover (our inverse proxy for agency costs) is regressed against a set of explanatory variables (see model 1 of Table 4.5). Our main objective here is to extend the empirical specification of prior agency models by including short-term debt and managerial salary as additional determinants of agency costs. The inclusion of these variables helps investigate the extent to which debt maturity and cash compensation can work as effective corporate governance mechanisms or devices for UK firms. In this model we also control for the impact of several other variables, such as ownership structure, board structure firm size and market to book ratio, on our proxy for agency costs. The empirical results support our expectations regarding the potential corporate governance role played by debt maturity and managerial salary. In particular, there is evidence that both short-term debt and salary are significantly associated with asset turnover in positive way (the coefficients of both variables are statistically significant at 1 per cent level).

Additionally, it seems that the coefficient of our proxy for growth opportunities (MKTBOOK) is negative, which is in line with the view that high-growth firms have from lower asset turnover ratios than low-growth firms. Consistent with the results of Ang et al. (2000), Singh and Davidson (2003) and Fleming et al. (2005), we also find that both executive ownership and ownership concentration are positively and significantly associated with asset turnover (at 5 per cent level). The coefficient of board size, however, is negative and statistically significant indicating that firms with larger board size are less efficient in their asset utilization, *ceteris paribus*. Finally, non-executive directors do not

seem to add much in the governance of UK firms, a result that may be explained by the specificity of the UK corporate governance system (see Ozkan and Ozkan, 2004 and Franks et al., 2001 for complementary evidence).

The second objective of our empirical investigation is to allow for a potential non-linear relationship between executive ownership, salary and agency costs (see discussion and preliminary graphical investigation in sections 4.2). To do so, we re-estimate model 1 after including both quadratic and cubic salary and executive ownership terms as regressors. The results (not reported) do not support such a functional form. Instead, it seems that only salary exerts a non linear impact on asset turnover. On the other hand, the relationship between executive ownership and asset turnover is linear. Based on this evidence, we only retain the square term of salary and the level term of executive ownership in our empirical models (see results of model 2). In particular, the results of model 2 indicate that at low levels of salary, the relationship between salary and asset turnover is positive. At higher levels of salary, however, the relationship turns to negative, which is in line with the studies that view executive compensation as an agency problem (see, for example, Bebchuk and Fried, 2003). We also find that the coefficient of executive ownership is positive and statistically significant, which is in line with the agency theory of Jensen and Meckling (1976). The coefficients of the remaining variables are similar to those reported in model 1.

The last objective of our empirical investigation is to provide more insights as to whether corporate governance mechanisms are homogeneous or whether their impact on agency costs varies with growth opportunities. As mentioned earlier, some evidence on this issue has been put forth in the literature recently by McConnel and Servaes (1995) and

Lasfer (2002), within a performance model though. In this study we extend these studies by testing for the existence of interaction effects between internal governance mechanisms and growth opportunities within an agency framework. To test such a hypothesis, we extend the empirical specification of model 2 by allowing for potential interactions between those mechanisms found significant in earlier models and growth opportunities, as proxied by the market-to-book ratio. The results from such a task, which are presented in model 3, support the existence of two interaction effects. First, we find that the positive impact of executive ownership on asset turnover is more pronounced in high-growth firms (the coefficient EXECOWNER* MKTBOOK is positive and statistically significant. Second, we observe a negative and significant coefficient for the term SHORT_DEBT *MKTBOOK, which is consistent with the view that the effectiveness of short-term debt in mitigating agency problems is lower for high-growth firms. A possible explanation for this finding is that short-term debt is more effective in mitigating agency problems related to free cash flow, which is a common problem in low growth firms, and hence the effectiveness of short term debt as a governance device is expected to decrease with growth opportunities. The results regarding the existence of interaction effects between executive ownership, short-term debt and agency costs serve as complementary evidence to the studies by McConnell and Servaes (1995) and Lasfer (2002), which showed that the impact of managerial ownership and leverage on corporate performance varies with growth opportunities.⁴²

In summary, the results from the multivariate analysis enhance our understanding on the determinants of agency costs in two important ways: First, they suggest two additional

⁴² The idea behind McConnell and Servae's (1995) analysis is that debt has both a positive and a negative impact on the value of the firm because of its influence on corporate investment decisions. What possibly happens is that the negative effect of debt dominates the positive effect in firms with more positive net present value projects (i.e., high-growth firms). However, the positive effect dominates the negative effect for firms with fewer positive net present value projects (i.e., low-growth firms).

corporate governance and devices for UK firms, namely debt maturity and managerial salary. Second, they strongly support the view that the relationship between several governance mechanisms and agency costs is not homogeneous but varies with growth opportunities.

In particular, our empirical findings reveal that in addition to debt source the maturity structure of debt can help reduce agency conflicts between managers and shareholders by leading to higher asset utilization ratios. This finding may also explain (at least partly) why previous studies that have ignored debt maturity in their models end up with contradicting findings regarding the relationship between capital structure and agency costs. Additionally, although there is some evidence that the relationship between salary and asset turnover is non-monotonic (see model 2), the findings indicate that salary (when it is at low levels) can work as an additional mechanism that provides incentives to managers to take value-maximizing actions. Regarding the potential interactions between internal governance mechanisms, growth opportunities and agency costs, the results show that the positive relationship between executive ownership (short-term debt) and asset turnover is stronger for the case of high growth (low growth) firms.

4.4.3 Further Evidence and Robustness Checks

In this section we carry out several robustness checks to test the validity of our results. First, we substitute the variable MKTBOOK with an alternative proxy for growth opportunities, which is derived after employing principal component analysis. Principal component analysis enables the combination of several variables to develop a composite index variable as a proxy for growth opportunities. In particular the variables used in the principal component analysis are the following:

MKTBOOK = Book value of total assets minus the book value of equity plus the market value of equity to book value of assets;

MTBE = Market value of equity to book value of equity;

METBA = Market value of equity to the book value of assets;

METD = Market value of equity plus the book value of debt to the book value of assets.

All these variables, which are highly correlated as shown in Panel A of Table 4.6, have been extensively used in the literature as alternative proxies for growth opportunities.⁴³ We extract the growth proxy based on the eigenvalues provided. Each factor whose eigenvalue is greater than 1 explains more variance than any single variable. Given that only one eigenvalue is greater than 1, the principal component analysis provides us with only one factor that explains firm growth opportunities (see Panel C). We call the composite variable derived from the principal component analysis “GROWTH” and incorporate it in our model as an alternative proxy for growth opportunities. Descriptive statistics for the variable GROWTH are presented in panel D.

Table 4.7 presents the results of cross-section analysis after using the variable GROWTH as a proxy for growth opportunities. In panel A we use the asset turnover ratio as dependent variable. In general, the results are qualitatively similar to the ones reported previously. There is strong evidence that executive ownership, ownership concentration, salary, short-term debt and, to some extent, bank debt is positively related to asset turnover.

⁴³ Two statistical tests, the Barlett’s test and the Kaiser-Meyer-Olkin test confirm that principal component analysis is likely to provide us with a useful proxy for growth opportunities. The first test examines whether or not the intercorrelation matrix comes from a population in which the variables are non-collinear (i.e. an identity matrix). The second test is a test for sampling adequacy. The results of these tests are provided in Panel B of Table 4.6.

Also, there is some evidence supporting a non-linear relationship between salary and asset turnover (in model 4). Finally, our results clearly indicate that agency costs differ significantly across high-growth and low-growth firms and, most importantly, there is a significant interaction effect between growth opportunities and executive ownership. Contrary to our earlier findings, however, we can not provide any evidence for the existence of an interaction between asset turnover and short-term debt.

In Panel B of Table 4.7 we substitute the annual sales to total assets with the SG&A ratio to measure agency costs. As already mentioned earlier in the chapter, this ratio can be used as a direct proxy for agency costs. Our results indicate that executive ownership, ownership concentration and total debt help reduce discretionary spending and, therefore, the agency conflicts between managers and shareholders. The coefficient of short-term debt is marginally statistically significant (only in model 7) and that of salary is insignificant. Also, we find that agency costs and growth opportunities are positively related (i.e. the coefficient of the variable GROWTH is positive and statistically significant to the 5 per cent level). Finally, our results support the existence of an interaction effect between growth opportunities and executive ownership, which is consistent with our earlier findings.

4.5 Conclusion

In this chapter we have examined the effectiveness of the alternative corporate governance mechanisms and devices in mitigating managerial agency problems in the UK market. In particular, we have investigated the impact of capital structure, corporate ownership structure, board structure and managerial compensation structure on the costs arising from

agency conflicts mainly between managers and shareholders. The interactions among several internal corporate governance mechanisms and growth opportunities in determining the magnitude of these conflicts have also been tested.

In addition to managerial ownership and ownership concentration, which have previously been suggested as effective corporate governance mechanisms, our empirical findings suggest that existence of two additional variables, namely short term debt and managerial compensation, that can help resolve agency related issues. Moreover, our results indicate that “growth opportunities” is a significant determinant of the level of agency costs within a firm. Specifically, it seems that high-growth firms indicate lower asset turnover ratios and higher expense ratios relative to low-growth firms, possibly because of extensive information asymmetries between managers, shareholders and debtholders in high-growth firms. Finally, there is strong evidence that the impact of specific governance attributes on agency costs varies with growth opportunities. For instance, our results indicate that executive ownership is particularly effective as a governance mechanism for high-growth firms. This result complements earlier research on corporate performance indicating that high-growth firms tend to prefer incentive mechanisms (e.g. managerial ownership) to monitoring mechanisms (e.g. financial leverage) while the opposite is true for low-growth firms (see, for example, Smith and Watts, 1992; Gaver and Gaver, 1993; McConnell and Servaes, 1995 and Lafer, 2002).

Figure 4.1 Agency Costs and Managerial Ownership

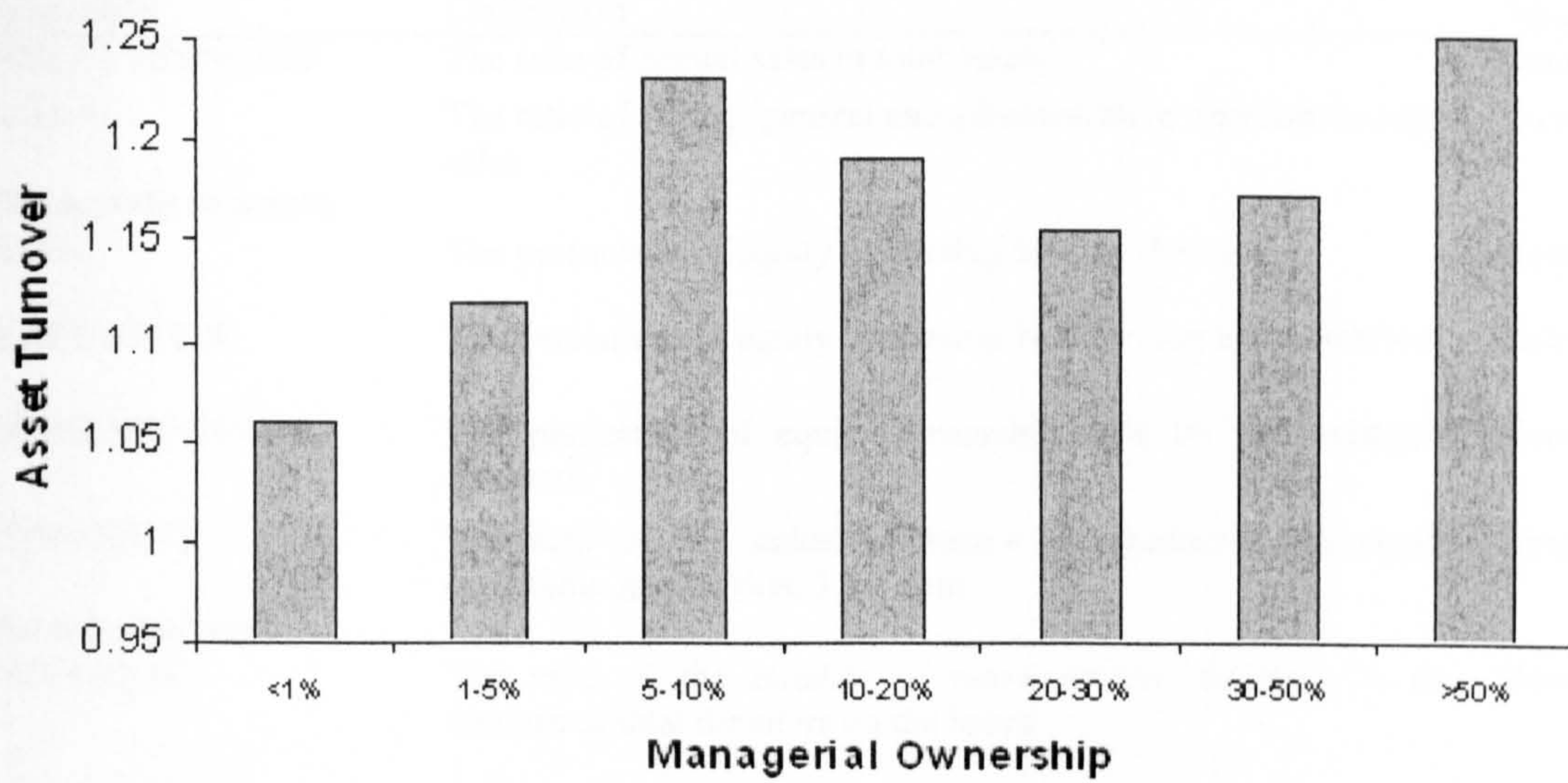


Figure 4.2 Agency Costs and Salary

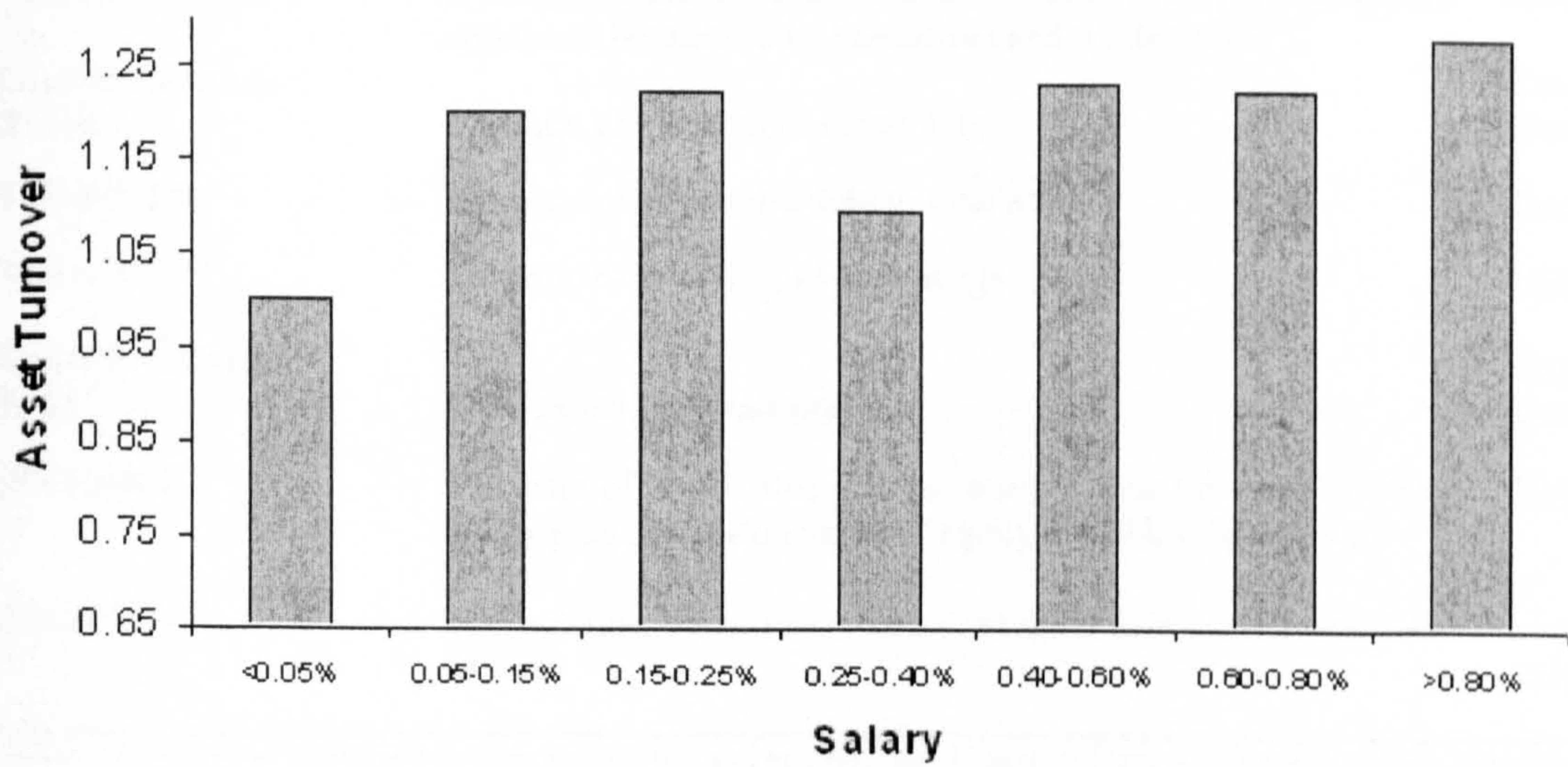


Table 4.1: Variables, definitions and sources

Variable	Definition	Source
ASSET TURNOVER	The ratio of annual sales to total assets	Datastream
SG&A	The ratio of selling, general and administrative expenses to total sales	Datastream
Ownership structure		
MAN	The percentage of equity ownership held by directors	Hemscott
EXECOWNER	The percentage of equity ownership held by executive directors	Hemscott
NONEXECOWNER	The percentage of equity ownership held by non-executive directors	Hemscott
CONCENTR.	The sum of the stakes of firm's shareholders with equity ownership greater than 3 per cent	Hemscott
Board structure		
NON-EXEC.	The ratio of the number of non-executive directors to the number of total directors on the board	Hemscott
BOARD SIZE	The total number of directors on the board	Hemscott
CEO_DUMMY	A dummy variable that takes the value of 1 when the roles of CEO and COB are not separated and 0 otherwise	Hemscott
Compensation Structure		
SALARY	The total salary paid to executive directors scaled by total assets	Hemscott
OPTION_DUMMY	A dummy variable, which takes the value of 1 if the firm pays options or bonuses to its executives and 0 otherwise.	Hemscott
Capital structure		
BANK	The ratio of bank debt to total debt	Datastream
SHORTDEBT	The ratio of short-term debt to total debt	Datastream
TOTALDEBT	The ratio of total debt to total assets	Datastream
Control Variables		
SIZE	Total assets (in logarithm)	Datastream Datastream
MKTBOOK	The ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets.	Datastream
GROWTH	The outcome of common factor analysis (see section 4.4.3 for details)	Our calculation

Notes: Datastream database provides accounting and market data. Hemscott Guru Academic database provides financial data for the UK's top 300,000 companies and detailed data on all directors of UK listed companies.

Table 4.2: Descriptive Statistics (N=897)

	Mean	Min	25%	Median	75%	Max
ASSET_TURNOVER	1.24	0	0.60	1.07	1.64	8.35
SG&A	0.45	0.01	0.15	0.28	0.48	6.52
MAN	14.74	0	0.60	6.28	23.17	99.43
EXECOWNER	10.68	0	0.20	2.04	14.44	99.43
NONEXECOWNER	4.06	0	0.04	0.29	2.60	86.28
CONCENTR.	37.19	0	19.80	36.16	51.59	98.39
NON-EXEC.	0.495	0	0.40	0.50	0.60	0.86
BOARDSIZE	6.97	3	5	7	8	19
CEO_DUMMY	0.08	0	0	0	0	1
SALARY	0.012	0	0.001	0.005	0.012	0.284
OPTION_DUMMY	0.59	0	0	0	0	1
BANK	55.65	0	22.94	60.60	92.12	100
SHORTDEBT	49.53	0	25.70	47.58	70.94	100
TOTALDEBT	18.93	0	6.07	15.51	28.76	94.78
SIZE	11.16	6.03	9.68	10.98	12.33	18.62
MKTBOOK	2.09	0.32	1.05	1.47	2.27	17.25

Notes: This table shows the sample characteristics for 897 firms. The means of the variables are measured over the period 1999–2003. Definitions for all the variables are provided in Table 4.1.

Table 4.3: Pearson Correlation matrix (N=897)

	1	2	3	4	5	6	7	8	9	10	11	12
1. ASSET TURN												
2. SG&A	-0.272*											
3. MAN	0.086*	0.064										
4. EXECOWNER	0.082*	0.074	0.868*									
5. CONCENTR	0.058	-0.061	-0.242*	-0.237*								
6. NON-EXEC	-0.075*	0.006	-0.252*	-0.363*	0.117*							
7. BOARD SIZE	-0.108*	-0.014*	-0.227*	-0.226*	-0.098*	0.167*						
8. SALARY	0.143*	0.216*	0.232*	0.220*	0.026	-0.148	-0.191*					
9. BANK	0.097*	-0.103*	-0.038	-0.031	0.023	-0.047	-0.084*	-0.090*				
10. SHORT_DEBT	0.162*	0.092*	0.151*	0.160*	0.070*	-0.112*	-0.229*	0.147*	0.078*			
11. TOTALDEBT	-0.011	-0.218*	-0.179*	-0.159*	0.005	0.124*	0.151*	-0.112*	0.138*	-0.390*		
12. SIZE	-0.074*	-0.287*	-0.458*	0.407*	-0.119*	0.290*	0.645*	-0.454*	-0.038	-0.401*	0.305*	
13. MKTBOOK	-0.079*	0.262*	0.070	0.068	-0.047	0.049	0.034	0.148*	-0.117*	0.096*	-0.135*	-0.147

Notes: This table presents the Pearson's Correlation matrix for the main continuous variables used in our analysis. Definitions for all the variables are provided in Table 4.1. * indicates that correlation is significant at least at the 5% level (two tailed).

Table 4.4: Mean comparison of agency costs- analyzing high (above median) versus low (below median) ownership structure, board structure, compensation structure and other firm characteristics

	<i>Panel A</i>			<i>Panel B</i>		
	Asset turnover mean of above variable median	Asset turnover mean of below variable median	<i>t-test (mean comparison)</i>	SG&A mean of above variable median	SG&A mean of below variable median	<i>t-test (mean comparison)</i>
MAN	1.34	1.15	3.09***	0.50	0.40	1.93*
EXECOWNER	1.33	1.16	2.83***	0.52	0.38	2.85***
NONEXECOWNER	1.24	1.24	-0.02	0.57	0.37	4.75***
CONCENTR	1.31	1.17	2.23**	0.41	0.49	-1.64
NON-EXEC	1.20	1.27	-1.00	0.45	0.45	0.22
BOARDSIZE	1.12	1.31	-3.07***	0.40	0.50	-1.97*
SALARY	1.38	1.11	4.43***	0.55	0.35	4.04***
BANK	1.31	1.17	2.25**	0.42	0.48	-1.23
SHORTDEBT	1.41	1.08	5.41***	0.50	0.40	1.97**
TOTALDEBT	1.26	1.22	0.67	0.32	0.58	-5.43*
SIZE	1.22	1.27	-0.85	0.29	0.61	-6.85***
MKTBOOK	1.22	1.27	-0.78	0.55	0.36	3.95***

Notes: This table presents mean comparison agency costs- analyzing high (above median) versus low (below median) ownership, capital structure, board structure, compensation structure and other firm characteristics such as size and growth opportunities. Definitions for all the variables are provided in Table 4.1. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels respectively.

Table 4.5: Cross Sectional Regressions Prediction Agency Costs
Dependent Variable: ASSET TURNOVER

Independent variables	Predicted	Model 1	Model 2	Model 3
Constant	+/-	-0.852 (-2.25)**	-1.123 (-2.55)**	-1.140 (-2.56)**
EXECOWNER	+	0.005 (2.03)**	0.005 (1.96)**	0.003 (0.52)
NONEXECOWNER	+	0.005 (1.25)	0.005 (1.17)	0.004 (1.14)
CONCENTR	+	0.003 (2.09)**	0.003 (2.07)**	0.002 (0.88)
NON-EXEC	+/-	-0.155 (-0.58)	-0.086 (-0.32)	-0.068 (-0.26)
BOARD SIZE	+/-	-0.045 (-2.88)***	-0.048 (-3.01)***	-0.071 (-3.69)***
CEO_DUMMY	+/-	-0.104 (-0.97)	-0.078 (-0.72)	-0.076 (-0.71)
SALARY	+	0.065 (3.54)***	0.122 (2.94)***	0.134 (2.98)***
SALARY ²	-	-	-0.003 (-1.82)*	-1e-04 (-0.30)
OPTION_DUMMY	+	0.091 (1.43)	0.081 (1.25)	0.081 (1.28)
BANK	+	0.166 (1.92)*	0.171 (1.97)**	0.212 (1.94)*
SHORT_DEBT	+	0.438 (3.51)***	0.425 (3.47)***	0.686 (4.35)***
TOTAL_DEBT	+	0.286 (1.13)	0.294 (1.17)	0.244 (0.96)
SIZE	+	0.070 (3.01)***	0.086 (3.38)***	0.092 (3.71)***
MKTBOOK	+/-	-0.031 (-2.10)**	-0.030 (-2.01)**	-0.026 (-0.46)
EXECOWNER* MKTBOOK	+/-	-	-	0.001 (1.96)**
CONCENTR* MKTBOOK	+/-	-	-	6e-04 (0.96)
BOARDSIZE* MKTBOOK	+/-	-	-	0.008 (1.57)
SHORT_DEBT* MKTBOOK	+/-	-	-	-0.130 (-2.67)***
BANK* MKTBOOK	+/-	-	-	-0.025 (-0.88)
SALARY * MKTBOOK	+/-	-	-	-0.007 (-0.57)
SALARY ² * MKTBOOK	+/-	-	-	-3.6e-04 (-0.47)
Industry Dummies		Yes	Yes	Yes
R ²		0.177	0.183	0.193
Number of firms		897	897	897

Notes: This table presents cross-sectional regressions predicting agency costs, using asset turnover ratio as an inverse proxy for agency costs. Definitions for all the variables are provided in Table 4.1. All regressions include industry dummies. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels respectively. For the estimation we use consistent to heteroscedasticity standard errors.

Table 4.6**Results from Common Factor Analysis***Panel A: Correlations between the three proxies*

	MKTBOOK	MTBE	METBA	MEBD
MKTBOOK	1			
MTBE	0.559*	1		
METBA	0.991*	0.532*	1	
MEBD	0.993*	0.542*	0.997*	1

Panel B: Tests of sphericity and sampling adequacy

Barlett's Test	0.00
Kaiser-Meyer-Olkin Test	0.799

Panel C: Eigenvalues of the reduced correlation matrix

1	2	3
1.902	0.996	0.193

Panel D: Correlations between common factors and proxies for Growth Opportunities

	MKTBOOK	MTBE	METBA	MEBD
GROWTH	0.984*	0.687*	0.979*	0.982*

Panel E: Descriptive statistics for the common factors extracted

<i>Mean</i>	<i>Min</i>	<i>Median</i>	<i>Max</i>
-0.02	-0.80	-0.33	5.84

Notes: This table provides the results of the common factor analysis. Definitions for the variables MKTBOOK, MTBE, METBA and METD are provided in Section 4.2.3. * indicates that correlation is significant at the 5% level (two tailed)

Table 4.7: Cross Sectional Regressions Prediction Agency Costs

Dependent Variable: *Panel A: ASSET TURNOVER, Panel B: SG&A to ASSETS*

Independent variables	Predicted +/-	Panel A		Panel B	
		Model 4	Model 5	Model 6	Model 7
Constant	+/-	-1.267 (-2.74)***	-1.17 (-2.61)***	2.550 (4.16)***	2.520 (4.28)***
EXECOWNER	+	0.006 (2.37)**	0.006 (2.22)**	-0.004 (-2.37)**	-0.003 (-2.14)**
NONEXECOWNER	+	0.004 (1.09)	0.004 (1.04)	-0.007 (-3.07)***	-0.007 (-2.84)***
CONCENTR	+	0.004 (2.53)**	0.004 (2.53)**	-0.003 (-2.47)**	-0.003 (-2.42)**
NON-EXEC	+/-	-0.035 (-0.13)	-0.059 (-0.22)	0.418 (2.42)**	0.475 (2.57)***
BOARD SIZE	+/-	-0.048 (-3.08)***	-0.047 (-3.01)***	0.025 (2.42)**	0.025 (1.51)
CEO_DUMMY	+/-	-0.087 (-0.80)	-0.070 (-0.64)	-0.011 (-0.179)	-0.027 (-0.47)
SALARY	+	0.127 (2.80)***	0.105 (2.54)**	0.028 (0.670)	0.035 (0.97)
SALARY ²	-	-0.003 (-1.94)*	-9e-04 (-0.55)	-7e-04 (-0.36)	-0.002 (-0.945)
OPTION_DUMMY	+	0.079 (1.17)	0.083 (1.24)	-0.048 (-1.05)	-0.041 (-0.83)
BANK	+	0.207 (1.17)	0.199 (2.17)**	-0.055 (-0.60)	-0.061 (-0.83)
SHORT_DEBT	+	0.390 (3.18)***	0.411 (3.30)***	-0.181 (-1.52)	-0.216 (-1.67)*
TOTAL_DEBT	+	-0.041 (-0.16)	-0.023 (-0.08)	-0.586 (-2.62)***	-0.580 (-2.69)***
SIZE	+	0.091 (3.59)***	0.086 (3.41)***	-0.108 (-3.40)***	-0.108 (-3.61)***
MKTBOOK	+/-	-0.061 (-2.14)**	-0.254 (-1.72)*	0.103 (2.15)**	0.356 (0.89)
EXECOWNER* GROWTH	+/-	-	0.006 (3.43)***	-	-0.005 (-2.08)**
CONCENTR*GROWTH	+/-	-	0.022 (1.42)	-	-0.003 (-1.36)
BOARDSIZE*GROWTH	+/-	-	0.016 (1.42)	-	-0.016 (-0.54)
SHORT_DEBT*GROWTH	+/-	-	-0.067 (-0.65)	-	-0.010 (-0.05)
BANK* GROWTH	+/-	-	0.081 (1.10)	-	0.026 (0.22)
SALARY * GROWTH	+/-	-	-0.025 (-1.27)	-	0.006 (0.15)
SALARY ² * GROWTH	+/-	-	-0.5e-04 (-0.07)	-	8.1e-04 (0.33)
Industry Dummies		Yes	Yes	Yes	Yes
R ²		0.186	0.199	0.217	0.236
Number of firms		844	844	667	667

Notes: This table presents cross-sectional regressions predicting agency costs, using asset turnover ratio as an inverse proxy for agency costs (Panel A) and the SG&A ratio as a proxy for agency costs (Panel B). Definitions for all the variables are provided in Table 4.1. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% levels respectively.

Chapter 5

The Impact of Managerial Entrenchment on Agency Costs: An Empirical Investigation Using UK Panel Data

5.1 Introduction

This chapter examines the role of internal corporate governance mechanisms in mitigating the costs of the manager-shareholder agency conflict. Existing literature provides the theoretical framework to explain why this conflict arises, what its consequences are, and how the agency conflict and its costs can be mitigated. Specifically, it is argued that managers have different objectives than outside investors and act in their own best interest when opportunities arise, usually at the expense of outside investors. Furthermore, it is shown that such opportunities arise more frequently in firms with widely dispersed ownership and poor governance, and also in firms characterized by the absence of perfect contractual relations and effective monitoring and disciplining mechanisms. Managers in such companies are more likely to be entrenched with greater ability to adopt suboptimal strategies that include engaging in activities that make managers indispensable, manipulating performance measures and resisting takeovers.⁴⁴

Previous empirical research also provides important insights into the consequences of the manager-shareholder conflict. It has been shown that entrenched managers prefer lower than optimal leverage (Berger *et al.*, 1997; De Jong and Veld, 2001; Brounen *et al.*, 2006); choose longer maturity debt (Guney and Ozkan, 2005; Datta *et al.*, 2006); hold large amounts of cash (Ozkan and Ozkan, 2004; Ferreira and Vilela, 2004 and Harford *et al.*, 2005); pay lower dividends (Hu and Kumar, 2004; 2005; Khan, 2006); and overinvest (Goergen and Renneboog, 2001; Pawlina and Renneboog, 2005). Previous findings also reveal that firms with weak shareholder rights or entrenched managers exhibit significant

⁴⁴ See Shleifer and Vishny (1997) and Tirole (2006) for an analytical discussion on various ways in which managers may not act in the firm's best interests.

underperformance (see Morck *et al.*, 1988; McConnell and Servaes, 1990; Gompers *et al.*, 2003; Davies *et al.*, 2005; and Core *et al.*, 2006 among others).

In addition to the literature that provides insights into the reasons for and the consequences of the manager shareholder conflict, there is also a well-developed research focusing on the interactions between corporate governance mechanisms and agency costs. This literature reports that firms can reduce agency costs and hence improve their performance by controlling the costly incentives of managers. This is achieved by adopting *good* external and internal governance practices, which limit the potential for suboptimal managerial behaviour. The internal governance mechanisms that have been shown to be effective in this respect include the board of directors, managerial incentives, capital structure and dividend policies of firms (see Gillan, 2006 for a survey of recent research on corporate governance mechanisms).

Despite a great deal of attention having been paid to the above aspects of the manager- shareholder conflict, there is surprisingly little attempt in the current literature to test the relationship between managerial entrenchment and the magnitude of agency costs. The main objective of this chapter is therefore to address this gap by focusing on the measure of managerial entrenchment and investigating empirically the impact of entrenchment on agency costs. In doing so, we hypothesise that good governance practices limit the potential for suboptimal managerial behaviour and hence lower agency costs. More importantly, we argue that this is achieved by reducing managerial entrenchment, defined as the extent to which managers have the ability and incentives to pursue their self-interest and expropriate wealth from shareholders.

Our empirical strategy to test the above hypothesis has two important aspects which, we believe, distinguish our work from previous research significantly. First, we attempt to tackle the measurement issues in relation to agency costs and managerial entrenchment. Second, we adopt an empirical specification to estimate the relation between entrenchment and agency costs, incorporating two crucial features, namely endogeneity and persistency. In what follows, we explain how this chapter seeks to address these issues.

To test the relationship between managerial entrenchment and agency costs we use two proxies for agency costs, namely the asset turnover ratio and the ratio of selling, general and administrative expenses to total sales (SG&A). The main proxy we use is the asset turnover ratio, defined as the ratio of total sales to total assets. This ratio, used first in the agency context by Ang *et al.* (2000) and later also adopted by Singh and Davidson (2004) and Fleming *et al.* (2005), is taken as an inverse proxy for agency costs and interpreted as an asset utilization ratio that shows how effectively management deploys the firm's assets. A low asset turnover ratio indicates poor investment decisions, insufficient effort, and consumption of perquisites, and hence suggests that agency costs arising from the conflicts between managers and shareholders may not be insignificant. For robustness purposes, similar to Singh and Davidson (2004), we also use an alternative proxy for agency costs, namely the ratio of selling, general and administrative expenses to total sales (SG&A).

As for the measurement of managerial entrenchment, we employ principal component analysis to combine a set of corporate governance and managerial incentive variables, which are likely to determine the magnitude of managerial entrenchment. Specifically, we develop several entrenchment measures by using ownership concentration, board structure,

type of blockholders, and voting power of major shareholders as governance indicators; and executive ownership and executive compensation as proxies for managerial incentives. In doing so, our approach extends previous studies that have focused on only few corporate governance variables ignoring the cumulative effect of these influences on agency costs.⁴⁵

While we focus on the measurement of managerial entrenchment and its impact on agency costs, our empirical analysis also casts light on two important features of the relationship between entrenchment and agency costs. First, distinct from previous studies, we explicitly address the endogeneity problem, which can arise in this context for several reasons. For example, it is likely that observable as well as unobservable shocks affecting agency costs can also affect managerial entrenchment as well as other firm characteristics used in the agency model, including dividend payouts, leverage, and market-to-book ratio. It is also possible that observed relations between agency costs and its determinants reflect the effects of agency costs on the latter rather than *vice versa* (see also Cho, 1998; Himmelberg, 1999; and Lemmons and Lins, 2003 for similar concerns about endogeneity in the agency context). Clearly, failing to control for these possibilities is likely to yield inconsistent estimates. To control for the endogeneity problem, we employ a panel data analysis combined with the Generalised Method of Moments (GMM) estimation procedure.

Second, our work differs from existing literature by examining the determinants of agency costs in a dynamic framework. The advantages of a dynamic analysis in this context

⁴⁵ In most studies of corporate governance, managerial ownership and its higher order terms are used to control for the entrenchment effect (see, e.g., Morck *et al.*, 1988; McConnell and Servaes, 1990; and Davies *et al.*, 2005 among others). However, there is a wide range of other entrenchment proxies used in the existing literature, including variables related to environmental factors such as the industry in which the firm operates (Adams *et al.*, 2005); entrenchment indexes, based on specific corporate governance provisions that restrict shareholder rights and provide protection against takeovers (Gompers *et al.*, 2003; Cremers and Nair, 2005; Bebchuk and Cohen, 2005); and finally the ultimate ownership structure of companies, measuring managerial entrenchment by using the disparity between managerial cash-flow rights and control rights (Lemmon and Lins, 2003).

are twofold. Firstly, the dynamic specification allows us to investigate whether agency costs are persistent over time. Secondly, it enables us to examine whether there is a level of agency costs, regarded by managers as equilibrium. We argue that this equilibrium is possibly implied by a trade-off between the (private) benefits of expropriation and the expected (private) costs of such actions to managers, leading to an *optimal* level of expropriation from managers' point of view.⁴⁶ In line with this view, we argue that the mechanism that determines the optimal level of expropriation also implies the *equilibrium* level of agency costs born by shareholders. One important implication of this argument is that, if there is indeed an implied equilibrium level of agency costs, it is possible that managers will deviate from the equilibrium from time to time but will attempt to revert to it. However, it is also possible that the adjustment to equilibrium is not instantaneous and will take sometime due to adjustment costs.

To conduct our empirical investigation we use a unique dataset for a large sample of non-financial UK firms over the period 1999-2005. The UK provides an excellent laboratory to study the impact of managerial entrenchment on agency costs. For example, it is generally argued that UK companies operate under a corporate governance environment characterized by a significant degree of managerial discretion, mainly because of the inadequate external discipline by the market for corporate control (Short and Keasey, 1999; Franks *et al.*, 2001; Koke and Renneboog, 2005) and the limited monitoring role of large shareholders, institutional investors and boards of directors (Faccio and Lasfer, 2000; Goergen and Renneboog, 2001; Ozkan and Ozkan, 2004).⁴⁷

⁴⁶ See La Porta *et al.* (2002) for a theoretical model for the determination of the optimal level of expropriation.

⁴⁷ The last two decades in the UK have witnessed an intensive discussion of corporate governance issues and several reports in the form of "codes of best practice" including Cadbury (1992), Greenbury (1995), Hampel

There are important findings emerging from the analysis of this chapter. There is strong evidence that firms with high levels of managerial entrenchment exhibit significantly lower asset turnover ratio, i.e. higher agency costs. This finding is robust to alternative definitions of entrenchment. We also provide evidence that agency costs are persistent over time and it seems that managers act as though they have an equilibrium level of agency costs to attain. Furthermore, they tend to revert to this equilibrium even if they deviate from it temporarily. However, our results suggest that the equilibrium adjustment is a costly process and managers cannot adjust to desired levels of agency costs quickly. Finally, the results reveal that short-term debt and dividend payments work as effective corporate governance devices for UK firms in mitigating the costs of the manager-shareholder agency conflict.

The remainder of the chapter is organized as follows: In Section 5.2 we provide a description of the data. Section 5.3 explains the determinants of managerial entrenchment and how we measure entrenchment using principal component analysis. Section 5.4 presents our empirical findings from univariate and multivariate analyses. This section also provides a detailed discussion of the estimation procedures adopted in the chapter. Finally, Section 5.5 concludes.

5.2 Data and descriptive statistics

This section presents the data sources and descriptive statistics for the accounting and market variables used in our sample. It also provides an analysis of the evolution of the

(1998) and Higgs (2003) (see Mallin, 2004 and Keasey *et al.*, 2005 for a detailed discussion on the recent developments in UK corporate governance). In terms of empirical evidence on UK corporate governance, although there are several studies investigating the effects of the Cadbury report on the corporate governance of firms (see, e.g., Dahya *et al.*, 2002; Weir *et al.*, 2002 and Lasfer, 2006), only a few studies utilize up-to-date datasets to investigate whether managerial entrenchment still remains a major issue.

ownership structure, board structure and managerial compensation structure over the sample period.

5.2.1 Data sources

For our empirical analysis we use a large sample of listed non-financial UK firms over the period 1999-2005. Accounting and market data are obtained from Datastream. In particular, we use Datastream to collect information on the following variables: firm size (measured by the logarithm of total assets), market value of equity, annual sales, selling general and administrative expenses, total debt, short-term debt, dividend payments and industry classification.

Information on ownership, board and managerial compensation structures is extracted from the Hemscott Guru Academic Database for each of the years from 1999 to 2005. This database provides detailed information for each firm on the level of managerial ownership, ownership concentration, size and composition of the board and level of salary, bonus, options and other benefits paid to managers. In order to distinguish between executive and non-executive director holdings, ownership of each director is investigated separately. Regarding ownership concentration, we consider all investors (other than managers) with an ownership stake greater than 3 per cent. We also categorize blockholders (those with equity ownership greater than 20 per cent and with adequate voting power to establish a voting coalition)⁴⁸ into the following groups: *a)* executive directors; *b)* non-executive directors; *c)* family members or unlisted companies; *d)* non-financial listed corporations; and *e)* financial listed institutions. The main source of information on different types of

⁴⁸ The voting power of major shareholders is calculated using power indices (see Section 5.3.2 for details).

blockholders is Lexis-Nexis though we supplement this by collecting information on several firms from the Price Waterhouse Corporate Register (several issues).

Several screening criteria were applied to the data before carrying out the empirical analysis. First, we excluded financial firms from the sample because of the specific characteristics of their financial ratios and the peculiarity in their regulatory conditions. Second, the dataset was cleared of outliers by excluding the values of each variable that lie outside the 1st and the 99th percentile range. Third, we chose those firms with no missing data over the period 1999 to 2005. Finally, in order to carry out the GMM estimations we kept in the sample only those firms with a minimum of five consecutive years of observations. This selection process yields an unbalanced panel of 587 firms and 3,669 observations.

5.2.2 Descriptive Statistics

Panel A of Table 5.2 presents detailed descriptive statistics for the variables used in our empirical analysis (definitions for all the variables used in this study are provided in Table 5.1). In general, descriptive statistics are in line with those reported in recent studies for UK firms (Ozkan and Ozkan, 2004; Davies et. al., 2005 and Pawlina and Renneboog, 2005). Specifically, we observe that the average value of asset turnover ratio, which is our main variable of interest, is 1.20, while the average value of SG&A ratio is 0.32. Also, on average, firms pay back an amount that equals 2.27 per cent of the book value of their total assets as dividends. Also, our proxies for growth opportunities (market-to-book ratio) and firm size (logarithm of total assets) have mean values of 1.89 and 11.67, respectively. As

for the capital structure variables, the average value of leverage is 18.44 per cent, whereas the ratio of debt that matures within one year to total debt is 47.87 per cent.

5.2.3 Evolution of ownership, board and compensation structure

Panel B of Table 5.2 reports the evolution of the ownership structure, board structure and managerial compensation structure of UK firms over the period 1999-2005. We observe an increase in ownership concentration throughout the sample period. In particular, the sum of stakes of all investors that hold equity ownership greater than 3 per cent (5 per cent) increased from 32.88 per cent (26.93 per cent) in 1999 to 40.86 per cent (32.65 per cent) in 2005. Also, the proportion of companies with controlling blockholders increased from 15.68 per cent in 1999 to 19.74 per cent in 2005. Among controlling blockholders, it seems that financial institutions increased their influence by dominating 10.51 per cent of firms in 2005, while the equivalent figure was only 6.44 per cent in 1999. In the same period, the proportion of family-unlisted companies that hold controlling blocks of shares dropped from 7.28 per cent to 5.78 per cent. We also observe a slight increase in the proportion of companies in which other listed corporations are blockholders. The above findings hold under the following two definitions for controlling blockholders: *a*) investors hold 20 per cent or more of the firm's total shares; and *b*) investors hold 20 per cent or more of the firm's total shares and, have adequate voting power to change the outcome of key decisions of the firm.

From the results presented in Panel B of Table 5.2, it appears that there is a significant decline in the level of executive ownership during the sample period, from 10.19 per cent in 1999 to 6.79 per cent in 2005. This is consistent with the observation of recent studies that explore the evolution of ownership structure of UK firms (see, for example, Marchica and

Mura, 2005). As for the board structure variables, while the average board size remains stable over time, we observe an increase in the proportion of non-executive directors on the company boards, from 46.70 per cent in 1999 to 53.02 per cent in 2005. Notably, there is a decrease in the proportion of firms in which the roles of CEO and COB are combined, from 10.08 per cent in 1999 to 5.79 per cent in 2005. Finally, the statistics show that the level of salary and total compensation paid to executive directors increased by 34 per cent and 43 per cent respectively during the sample period. These increases follow a median cash pay increase for UK CEOs from £158,000 in 1989 to £340,000 in 1997, representing 10 per cent average annual growth (see Conyon and Murphy, 2000).

5.3 Measuring managerial entrenchment

In this section, we provide a review of the variables used as components of our proxy for managerial entrenchment and present the results from the principal component analysis.⁴⁹

5.3.1 The determinants of entrenchment

In measuring managerial entrenchment we combine the following set of corporate governance characteristics that are likely to be associated with managers' incentives and ability to use their discretion and expropriate wealth from shareholders.

Ownership Concentration. Corporate governance research recognizes the essential role performed by major shareholders in monitoring management and restricting managerial

⁴⁹ In addition to the characteristics we include in the analysis, there are several other corporate governance attributes that may intensify the manager-shareholder conflict. These include, for example, takeover readiness provisions such as poison pills and golden parachutes; and constitutional provisions to prevent majority shareholders from having their way such as staggered boards and limits to shareholder bylaw amendments (see, e.g., Bebchuk and Cohen, 2005 and Gompers *et al.*, 2003 for a detailed discussion of these provisions). However, we could not find reliably detailed data on these attributes for each firm in the sample and hence do not incorporate them in the analysis.

discretion. Monitoring benefits are proportionate to the equity ownership of shareholders, and hence an average small shareholder has little or no incentive to monitor management. Conversely, it has been argued that shareholders with substantial equity stakes have greater incentives and ability to do so (Friend and Lang, 1988; and Shleifer and Vishny, 1997). In the context of the UK market, the existing takeover code and the corporate law that is favorable to minority shareholders prevent investors (especially non-institutional investors) from holding very large stakes (Franks *et al.*, 2001). One would, then, expect that efficient monitoring is mainly exerted by those shareholders who own a controlling stake within the firm. In our analysis, the main variable to control for the effect of ownership concentration is defined as the sum of stakes of all shareholders (other than managers) with ownership levels greater than 3 per cent. For robustness, we also consider higher thresholds at 5 per cent and 10 per cent.

Controlling Blockholders. We recognize that the existence of controlling blockholders, defined as those who have the capacity to determine the outcome of particular corporate policy decisions, may have significant implications for the level of managerial entrenchment. It is generally believed that among major shareholders, controlling blockholders, are the ones with the strongest incentives to be active owners. Most studies in previous literature classify controlling blockholders as those investors whose ownership stake exceeds the 20 per cent level. Although in most companies a 20 per cent threshold is likely to yield voting control, there are companies in which a greater threshold may be needed (Leech, 2002). Therefore, in addition to the 20 per cent threshold, we identify controlling blockholders employing a power indices approach. The main advantage of this approach is that in determining control it considers not only the voting power of the largest

shareholder but also the dispersion of other shareholders. Specifically, we use Shapley-Shubik values, which assign a power index to each large shareholder, reflecting the worth of each player of participating in a cooperative game and changing the outcome of a vote.⁵⁰ Then, an investor is characterized as a controlling blockholder if and only if he owns more than 20 per cent of firm's stakes and, also, the corresponding Shapley-Shubik value for his stakes is greater than that of the average shareholder in the industry in which the firm operates. Accordingly, we include a dummy variable in the construction of the entrenchment proxy, which denotes whether there exists a controlling blockholder in a company or not.

Type of Controlling Blockholders. The costs of monitoring across different types of large shareholders and controlling blockholders are likely to vary. It is also possible that monitoring costs outweigh the private benefits of being active for some controllers. This implies that, in addition to its existence, the type of controlling shareholders may have an impact on the level of managerial entrenchment. For instance, the generally accepted view for the UK market is that financial institutions, mainly due to a lack of monitoring expertise

⁵⁰ This analysis is based on the assumption that all major shareholders have incentives to be active monitors in the sense of taking part in top decision making in the firm. Specifically, the Shapley-Shubik index is the probability that shareholder i is pivotal (i.e. has the ability to change the outcome of a voting game) and is

defined by $\Phi_i(u) = \sum_{s_i} \frac{s!(n-s-1)!}{n!}$, where s is the number of players of the subset s_i and n is the total

number of players. In estimating the Shapley-Shubik values we initially assume that small shareholders (e.g. those with equity stake lower than 3%) have no incentives to participate in voting coalitions. Therefore, following Pawlina and Renneboog (2005) we rescale the holdings of large shareholders to 100% prior to calculating the Shapley-Shubik index. The resulting values vary within the range 0 (dummy voter) and 1 (dictator) and reflect the worth to each player of participating in a cooperative game that requires 50% + 1 of the rescaled votes to reach absolute control. In addition to the standard Shapley-Shubik index, we relax the assumption that small shareholders do not monitor at all and compute the Shapley-Shubik values after considering an "oceanic game" in which there is a finite number of large investors and an "ocean" of investors with infinitesimally small equity stakes (i.e. lower than 3%). The idea here is that even a relatively small equity stake in large corporations corresponds to a very large monetary value. The results, however, do not show a significant difference between the two indexes regarding our classification. To put it differently, it seems that in the case of our sample oceanic investors do not significantly affect the power of controlling blockholders (for an analytical discussion of such indexes and their application to studies on shareholder control of companies see Leech, 2001; and Leech, 2002).

and their strong desire to safeguard investment liquidity, are less active investors. On the other hand, individual companies and family members are said to have much stronger incentives to monitor management (Crespi and Renneboog, 2003; Franks *et al.*, 2001 and Khan, 2006).

In order to control for these differences in constructing our entrenchment proxy, we classify controlling shareholders into different categories by their type, namely financial institutions, family members or unlisted companies, and listed corporations, and incorporate a separate dummy variable for each category.

Non-Executive Directors. Another aspect of corporate governance that may influence the level of managerial entrenchment relates to the composition of the board. One argument here is that unless a board is independent, monitoring of management will be weak. Consistent with this conjecture, Rosenstein and Wyatt (1990) find a positive relationship between the percentage of non-executive directors on the board and corporate performance. However, there are studies that find exactly the opposite results. For example, the analyses by Agrawal and Knoeker (1996), Hermalin and Weisbach (1991) and Franks *et al.* (2001) support the view that non-executive directors are usually characterized by a lack of information about the firm, do not bring the requisite skills to the job and, hence, prefer to play a less confrontational monitoring role. The evidence regarding the governance role of non-executive directors in UK companies is mixed (see, e.g. Dahya and Travlos, 2000; Weir *et al.*, 2002; Ozkan and Ozkan, 2004 and Hillier *et al.*, 2005). An argument that has gained support recently and was advocated first by Franks *et al.* (2001) is that the inability of the UK regulatory system to enforce the duties of directors causes non-executive directors to be passive, leading to higher managerial entrenchment. To control for the

influence of non-executive directors on the measure of managerial entrenchment we include the ratio of non-executives on the board among the components.

Board Size. There is no consensus among existing studies regarding the effectiveness of the size of the board in monitoring management. On the one hand, several studies following Pearce and Zahra (1991) suggest that large boards are particularly effective because they provide counsel and advice regarding the strategic options of the firm. On the other hand, another strand of the literature supports the view that large boards are value reducing because large boards make coordination, communication and decision making more cumbersome and hence they are less efficient than small boards (Yermack, 1996; Eisenberg *et al.*, 1998). In the UK, empirical evidence on the potential corporate governance role of board size is also mixed. For example, Conyon (1998) finds that board size has some importance in the CEO succession process while Dahya and McConnell (2005), in a similar but more recent study, fail to establish a strong link between board size and appointment of the CEO process.

CEO Duality. A two-tier leadership structure suggests that the positions of the chairman of the board (COB) and the chief executive officer (CEO) are held by different individuals. The Cadbury (1992) report on corporate governance of UK firms stresses that in the absence of a two tier leadership structure, the probability that insiders will engage in opportunistic behaviour is higher. Recent empirical evidence for UK firms, however, does not indicate a significant association between CEO duality and corporate performance (see, for example, Vafeas and Theodorou, 1998; Weir *et al.*, 2002 and Florackis, 2005). To control for the effect of a corporate leadership structure on our entrenchment proxy, we

incorporate in the principal component analysis a dummy variable that takes the value of 1 if the roles of COB and CEO are not separated and 0 otherwise.

Executive Ownership. According to the convergence of interests hypothesis executive ownership helps align the interests of managers with those of shareholders. It is argued that executive ownership works as an incentive mechanism to prevent managers from expropriating wealth from outside shareholders. There is, however, evidence that the relationship between executive ownership and corporate performance is not necessarily linear and that the ultimate effect of executive ownership on performance is determined by a trade-off between the alignment and the entrenchment effects (see Short and Keasey, 1999; Florackis, 2005 and Davies *et al.*, 2005 for recent UK evidence). Accordingly, in measuring managerial entrenchment we attempt to incorporate both aspects of managerial ownership. However, preliminary regressions of executive ownership on our proxies for agency costs suggest that only the level term of executive ownership is statistically significant and, as a result, only this term is included among the variables that determine the level of managerial entrenchment.⁵¹

Executive Compensation. The compensation package that managers receive constitutes another component of corporate governance that is likely to be associated with the level of managerial entrenchment. Since the studies by Murphy (1999) and Core *et al.* (2003) a growing strand of the literature treats executive compensation as a potential corporate governance mechanism that mitigates the agency conflict between managers and

⁵¹ In particular, we have regressed our proxies for agency costs against the level, square and cubic terms of executive ownership. The results, however, do not support any of the hypothesized non-linear structures and only the linear terms of executive ownership is found to be significant (both at the 5% level). This finding, which is consistent with earlier studies on agency costs that support a linear relationship between ownership structure and agency costs (see, e.g., Ang *et al.*, 2000; Singh and Davidson, 2003 and Fleming *et al.*, 2005), prompted us to use only the level term of executive ownership in constructing our entrenchment proxy

shareholders (see, for example, Hutchinson and Gul, 2004 and Linn and Park, 2006 for recent evidence). However, there is a strand of the literature that considers executive compensation as part of the agency problem (see Berger *et al*, 1997; Fried and Bebchuk, 2003). According to this view, attractive compensation packages usually create an environment ripe for abuse, leading to a high level of managerial entrenchment. Consistent with this view, concerns about the excessive remuneration packages of managers in the UK have led to the establishment of basic recommendation in the form of “best practices” for issues related (among others) to the level and the structure of managerial compensation (Cadbury, 1992; Greenbury, 1995 and Hampel, 1998).

In order to incorporate the effects of executive compensation in our analysis, we first include the executive salary among the variables that are likely to influence the level of managerial entrenchment. In an attempt to control for the effect of other compensation components on entrenchment, we later substitute total executive remuneration, which represents the sum of salary, options, bonuses and other benefits that executive directors receive, for the initial salary variable.

5.3.2 Results from the Principal Component Analysis (PCA)

As mentioned earlier, in this study we utilize PCA to measure managerial entrenchment. There are mainly two reasons for using this methodology. First, PCA enables us to combine a wide set of governance variables in constructing a single entrenchment proxy. Earlier studies either consider a restricted set of variables as attributes of managerial entrenchment or ignore to a significant extent the multicollinearity problem that may arise when several corporate governance and control variables are independently incorporated in empirical

models.⁵² Controlling for potential interrelations is crucial for the analysis of the UK companies given the recent evidence that several corporate governance mechanisms work as substitutes in mitigating agency problems (Weir *et al.*, 2002; Peasnell *et al.*, 2003; Florackis, 2005; Lasfer, 2006). Second, a further advantage of PCA is that it automatically produces weights so that the entrenchment proxy will explain much of the variance in the group of corporate governance attributes and, therefore, does not require the ex ante determination of the weights. Most of the earlier studies that attempt to establish entrenchment ranking variables rely on the strong assumption that all the corporate governance attributes contribute equally to the entrenchment proxy (see, for example, Gompers *et al.*, 2003; Bebchuk and Cohen, 2005; Cremers and Nair, 2005; Adams *et al.*, 2005).⁵³

Table 5.3 presents the results from the PCA.⁵⁴ In panel A we report the correlation matrix of the nine variables used as attributes of the entrenchment proxy. Three different definitions for managerial entrenchment are put forward. Our narrowest definition, ENTRENCHMENT 1, combines six variables, namely ownership concentration, non-executive director ratio, board size, CEO duality, executive ownership and executive compensation. The findings in Panel B of Table 5.3 suggest that ownership concentration and executive ownership contribute negatively to the entrenchment proxy, while the

⁵² The studies by Agrawal and Knoeber (1996) and Beiner *et al.*, (2006) are among the exceptions, which attempt to estimate simultaneous equations systems considering potential interrelations among the alternative corporate governance mechanisms.

⁵³ PCA has also been used in other contexts for data reduction purposes. Callahan *et al.* (2003), for example, combine ten governance variables via PCA to construct an index of managerial involvement in director nomination process. To ensure the validity of PCA in the context of our study, two statistical tests, the Barlett's test and the Kaiser-Meyer-Olkin (KMO) test are conducted. The first test examines whether or not the intercorrelation matrix comes from a population in which the variables are non-collinear (i.e. an identity matrix) and the second test is a test for sampling adequacy. In both cases the tests support the view that the data are likely to factor well.

⁵⁴ Before carrying out the principal component analysis all variables are normalized.

converse is true for the non-executive ratio, board size, CEO duality and executive compensation, which is in line with our expectations.⁵⁵

The second definition (ENTRENCHMENT 2) includes an additional set of variables related to the role and identity of controlling shareholders in determining the magnitude of managerial entrenchment. Specifically, it includes a dummy variable that denotes the existence of a controlling blockholder among shareholders. Moreover, it also distinguishes between financial institutions and family or unlisted companies by including corresponding dummy variables for each type of blockholder. The three additional variables contribute negatively to the entrenchment index with the variable that refers to the existence of controlling blockholder having the greatest weight.

Finally, the third definition (ENTRENCHMENT 3) incorporates information about the voting power of each shareholder in defining blockholders. The weights of the variables retain their signs but under this definition the variables related to ownership concentration and the existence and type of controlling blockholders contribute to a much greater extent to the composite entrenchment index than the variables related to board structure and compensation structure. Panel C of Table 5.3 reports analytic descriptive statistics for the three alternative proxies of managerial entrenchment.

⁵⁵ It is worth noting here that the negative weight of the executive compensation variable is against the incentive role that compensation can play in motivating managers to maximize the value of the firm. However, the negative weight is consistent with studies that view compensation as part of the agency problem.

5.4 Empirical Results

5.4.1 Univariate Analysis

In Table 5.4 we report univariate mean-comparison tests of the subgroups of firms categorized on the basis of above and below median values for several firm-specific characteristics. In Panel A, using a *t*-test, we test the hypothesis that firms with above median values of these characteristics differ from firms with below median values with respect to the asset turnover ratio. The results are generally in line with our expectations and strongly support the hypothesis that the effectiveness of firms in utilizing their assets changes with the level of managerial entrenchment. Specifically, we find that firms with above median entrenchment levels have significantly lower asset turnover ratios relative to firms with below median entrenchment levels, which possibly suggests higher agency costs for above median firms. The difference between the means is statistically significant under all three definitions of managerial entrenchment.

We also find that firms with above median values for dividend, market to book and short-term debt have relatively high asset turnover. On the other hand, firms with above median leverage values indicate relatively lower asset turnover. These results are statistically significant at the 1 per cent level. Additionally, the results reveal that among ownership characteristics, only ownership concentration, when defined as the sum of stakes of those investors with equity ownership greater than 3 per cent, and executive ownership are significantly associated with asset turnover. In particular, it appears that firms with above median ownership concentration (executive ownership) have an asset turnover of 1.23 (1.29), while firms with below median ownership concentration (executive ownership) have an asset turnover of 1.17 (1.11). The results regarding the board structure variables are also statistically significant and reveal that firms with below median values of non-

executive directors ratio and board size have lower asset turnover. This is consistent with our earlier argument that, in the context of the UK market, large boards and the boards dominated by non-executive directors are not necessarily more efficient. There is also evidence that firms in which the roles of CEO and COB are separated have higher asset turnover relative to those in which these roles are held by the same person.⁵⁶

In Panel B of Table 5.4 we conduct a similar investigation by examining whether firms with high asset turnover differ from firms with low asset turnover with respect to several characteristics, including the level of managerial entrenchment. For this purpose, we compare firms in the first quartile of the asset turnover distribution with those in the fourth quartile. We find evidence that, on average, firms in the fourth asset turnover quartile pay more dividends and have higher levels of short-term debt than firms in the first asset turnover quartile. The proportions of blockholders and the stakes held by executive directors are also higher in the fourth quartile firms. However, the fourth quartile firms are more likely to have the same person as CEO and COB, and to have higher non-executive director ratios and larger board sizes. Finally, consistent with our expectations, the univariate analysis provides evidence that firms with relatively high asset turnover ratios exhibit significantly lower levels of managerial entrenchment. This finding, though, hold only under the first and third entrenchment proxies.

⁵⁶ For robustness, we provide further univariate analysis results by using the industry median for each variable rather than the sample median as a segmenting criterion. Although most results remain robust, in particular those that concern the impact of managerial entrenchment on asset turnover, we find that firms categorized on the basis of above and below median values of market to book, ownership concentration and CEO duality do not seem to have significantly different asset turnover ratios (results not reported for brevity).

5.4.2 Multivariate Analysis

5.4.2.1 Empirical model and method of estimation

As mentioned earlier, our main hypothesis is that asset turnover ratio, an inverse proxy for agency costs, is negatively related to managerial entrenchment. Furthermore, following the extant literature on agency costs and corporate performance, we expect that dividend payouts, corporate leverage and short-term debt are expected to have a positive influence on asset turnover. This rests on the view that these variables may work as effective corporate governance devices and hence are expected to lower agency costs. McConnell and Servaes (1995) and more recently Harvey *et al.* (2004) have pointed out that leverage can act as an effective corporate governance device by reducing the agency costs of free cash flow. Similarly, high dividend payouts ensure that fewer liquid assets are left at the discretion of managers. Greater dividend payouts also expose managers to greater monitoring by existing and prospective financiers (Easterbrook, 1984).

Similarly, it is widely acknowledged that, in addition to total debt, the maturity structure of debt may influence agency costs. For example, short-term debt is usually considered as an effective instrument in reducing the expected costs of the underinvestment problem.⁵⁷ Finally, the signs of the estimated coefficients of market to book ratio and firm size are expected to be positive and negative respectively. That is, larger firms and firms with less attractive growth opportunities face fewer informational problems (Jensen and

⁵⁷ It is argued that firms with greater growth opportunities should have more short-term debt because shortening debt maturity would make it more likely that debt will mature before any opportunity to exercise the growth options (Myers, 1977). Consistent with this prediction, there are empirical studies that find a negative relation between maturity and growth opportunities (see, for example, Ozkan, 2000 among others). Also, an empirical study by Florackis (2005) finds that short-term debt is positively related with Tobin's Q.

Meckling, 1976), leading to a lower magnitude of agency costs between managers and shareholders.⁵⁸

We investigate the impact of managerial entrenchment on agency costs by adopting a dynamic model. Our empirical specification is as follows:

$$Y_{it} = \alpha Y_{it-1} + \beta X_{it} + \sum_{k=1}^K \delta_k Z_{it} + n_i + n_t + u_{it}, \quad (1)$$

where Y represents our proxy for agency costs, X is our proxy for managerial entrenchment, Z is a vector of the control variables that include dividends, short-term debt, market-to-book ratio, leverage and firm size while the terms n_i and n_t represent respectively time-invariant firm-specific (fixed) effects and firm-invariant time-effects and capture the effects of unobserved firm heterogeneity and economy-wide factors that are outside the firm's control. The subscripts i and t denote firms and years respectively.

As discussed earlier, distinct from the existing research on the empirical determinants of agency costs, the nature of our model specification is dynamic. Equation (1) therefore contains a lagged dependent variable, Y_{it-1} , recognizing the possibility that managers cannot adjust instantaneously to the desired level of agency costs, if any, following changes in firm-specific characteristics in the underlying trade-off model, which was mentioned earlier, and/or random economy-wide shocks. Our dynamic partial adjustment specification implicitly assumes that the change in agency costs between $t-1$ and t is given by

$$Y_{it} - Y_{it-1} = \lambda(Y_{it}^* - Y_{it-1}) \quad (2)$$

⁵⁸ It is worth noting here that the negative relationship between market to book and asset turnover holds only in cases when the agency problems related to asymmetric information and underinvestment, which are less common in low-growth firms, are more severe than the free cash flow problems, which are more prevalent in low-growth firms.

where Y_{it} is the actual level of agency costs at time t , while $(Y_{it}^* - Y_{it-1})$ can be interpreted as the desired change in agency costs. Clearly, λ gives the fraction of the desired change managers can achieve and its value lies between 0 and 1. If $\lambda=1$, it follows that managers can adjust the level of agency costs immediately, i.e. $Y_{it}^* = Y_{it}$, implying costless adjustment. The other extreme, i.e. when $\lambda=0$, suggests that managers cannot change at all the existing level of agency costs due to excessive adjustment costs, i.e. $Y_{it} = Y_{it-1}$. Obviously, this is an extreme situation in which no change takes place in the level of agency costs from one period to another. More importantly, this holds even if managers are prepared to, say, lower agency costs by, for example, reducing the amount of expropriation. Equally, we argue that what static models of agency costs imply, i.e., the perfect ability of managers to adjust instantaneously to the desired level of agency costs, is also highly unlikely. Our model specification, given in Equation (1), allows us to estimate the adjustment speed, λ , which equals $(1-\alpha)$, explicitly accounting for adjustment costs.

For the estimation of equation (1) we avoid the use of ordinary least squares (OLS) and within group estimators (WG) because these estimators are likely to yield inconsistent estimates. Specifically, in the case of the OLS estimator, assuming n_i to be stochastic implies that the lagged explanatory variable Y_{it-1} is positively correlated with the error term $(n_i + u_{it})$ due to the presence of unobserved fixed effects. The WG estimator resolves this inconsistency by eliminating n_i by transforming the original observations into deviations from the time mean of each variable. However, this transformation induces a correlation between the transformed dependent variable and the transformed error term.⁵⁹

As discussed earlier, another estimation problem, which is not necessarily specific to the dynamic specification, related to the endogeneity problem. In addition to the reasons as

⁵⁹ See Bond (2002) for an analytical discussion of these issues.

to why the endogeneity problem may arise, it is worth mentioning the possibility that some of the regressors may be correlated with the past and current values of the idiosyncratic component of disturbances, u_{it} in Equation (1).

Due to the problems outlined above, in this chapter we adopt an instrumental variables approach (IV), where the lagged dependent variable and endogenous regressors are instrumented. In particular, we utilize a GMM method of estimation, which provides consistent estimates by utilizing instruments that are obtained from the orthogonality condition between the regressors and the error term in (1). A GMM specification of the first differences (GMM-DIFF) is initially estimated, which uses instruments dated $t-2$ and earlier (see, Arellano and Bond, 2001). The consistency of this estimator depends only on the validity of instruments used, which in turn depends on the absence of higher order serial correlation in the idiosyncratic component of the error term. Therefore, the Sargan test of over-identifying restrictions, under the null hypothesis that instruments are valid, and the two tests for existence of first and second order serial correlation in the first differenced residual (denoted as $m1$ and $m2$ respectively) are reported.

Additionally, we report the results from the GMM system estimator (GMM-SYSTEM), which exploits additional moment conditions by combining a set of first differenced equations and a set of equations in levels. It has been shown that the GMM-SYSTEM estimator leads to a significant gain in terms of efficiency and is particularly useful in cases when the series have near unit root properties (see Blundell and Bond, 1998 and Bond, 2002). Both for the GMM-DIFF and the GMM-SYSTEM estimators, we compute and report the two-step GMM results using the small variance correction suggested by Windmeijer (2000).

5.4.2.2 GMM Results

Turning to the results in Table 5.5, Panel A presents the findings obtained from the GMM-DIFF estimator. Model 1 incorporates our narrow definition of entrenchment, ENTRENCHMENT 1, which controls for the effect of the firm characteristics related to the firm's ownership, board and managerial compensation structures but does not take into account the role of controlling shareholders. In subsequent models we incorporate the more general entrenchment proxies, namely ENTRENCHMENT 2 and ENTRENCHMENT 3, accounting for the existence and identity of controlling blockholders (Model 2) as well as the voting power of major shareholders within firms (Model 3). All three models, which use instruments for endogenous variables dated $[t-2]$, perform well.⁶⁰ More specifically, the Wald (joint) test provides evidence that supports the joint significance of all the regressors in the model, and the Wald (time) test supports the view that economy-wide events which are common to all firms in the sample play a significant role in determining the asset utilization ratio of firms. Furthermore, the Sargan statistic confirms the validity of instruments used and the $m1$ and $m2$ tests as expected confirm the existence of serial correlation of order one, but not of order two.

The results in Table 5.5 for the first three specifications (Models 1-3) suggest that the dynamic nature of our agency costs model is not rejected. Specifically, the estimated coefficient of the lagged dependent variable is positive and significant at the 1 per cent

⁶⁰ We investigate whether the explanatory variables are predetermined or strictly exogenous with respect to the error term. To do this, we start using instruments dated $t-2$ for each regressor. Later, we add the instrument dated $t-1$ to analyse the potential bias arising from the correlation between $x_{i,t-1}$ and the first-differenced error term. To investigate the possibility of strict exogeneity we also include the current value, $x_{i,t}$, in the instrument set. This investigation leads us to conclude that the explanatory variables are neither predetermined nor strictly exogenous. We, therefore, use instruments dated $t-2$ in our estimation (see also Blundell et al., 1992).

level. The adjustment speed, given by 1 minus the estimated coefficient of the lagged dependent variable, is about 0.60 in the first three model specifications. This finding suggests that managers face substantial costs when they wish to adjust to the equilibrium level of agency costs, where the optimal level is not constant over time and changes with the changes in the determinants of agency costs. The value of the coefficient of the lagged dependent variable implies that it takes more than three years to complete the adjustment. This in turn suggests that agency costs are persistent over time.

Our findings in relation to the dynamic nature of the agency model lies between the view of perfect contractual possibilities, i.e. adjustment costs are zero, and the view of no recontracting possibilities, i.e. adjustment costs are excessive. Under the latter view there is no possibility of alignment, while the former view rests on the ability of managers and/or shareholders to correct suboptimal contracts instantaneously.⁶¹

In line with our main hypothesis, the results provide strong evidence that managerial entrenchment is inversely related with asset turnover ratio. Under all specifications, regardless of the specific definition, the estimated coefficient of entrenchment proxy is statistically significant at the 5 per cent level. This finding supports the hypothesis that the incentives of managers to pursue their own interests and expropriate wealth from outside investors are reflected on the firm's ability to utilize its assets effectively. To put it differently, all else being equal, higher managerial entrenchment leads to greater agency costs. As expected, the coefficients of dividend and short-term debt are also positive and

⁶¹ It is worth mentioning that managers/shareholders may wish to adjust to a new level of agency costs mainly for two reasons. First, they may be away from their desired level of agency costs and wish to revert to the desired level. Second, there may be changes in circumstances, which encourage managers to change agency costs. For example, changes in ownership structure may lead to a different level of desired agency costs because of managers' ability, and indeed their incentives, to expropriate would change with the new ownership structure.

statistically significant. This is consistent with the findings of prior empirical research for UK firms, which suggest that dividend payments and short-term debt can potentially work as effective corporate governance devices by restricting managerial discretion in spending company's resources (see, Farinha, 2003 and Khan, 2006 for dividend payments; and Guney *et al.*, 2005 and Florackis, 2005 for short-term debt).

In our final specification in Panel A (Model 4) we re-estimate the specification given in Model 3 after putting forward a GMM-SYSTEM estimator, according to which, for the equations in first differences, levels dated [t-2] were used as instruments whereas for the equations in levels, first differences dated [t-1] were used as instruments. It seems that Model 4 is also well specified. In addition to the statistical tests provided for earlier specifications, the Sargan difference statistic supports the validity of the additional moments conditions utilized in GMM-SYSTEM in all cases. As for the results, they support our earlier findings that managerial entrenchment and asset turnover are negatively related though the coefficient of the variable ENTRENCHMENT 3 is statistically significant only at the 10 per cent level. Moreover, the coefficients of the lagged turnover ratio, dividend ratio and short-term debt retain their signs and are all statistically significant at the 1 per cent level.

5.4.2.3 Additional Checks

Our first robustness check relates to the proxy we use for agency costs. We incorporate an alternative measure of agency costs in our empirical model. More specifically, we estimate our preferred empirical specification by replacing the asset turnover ratio with the ratio of selling, general and administrative expenses to total sales (SG&A). As discussed earlier, the asset turnover ratio is a widely accepted proxy for agency costs (see, e.g., Ang *et al.*, 2000;

Singh and Davidson, 2003; Fleming *et al.*, 2005). However, it is argued that the SG&A ratio can be used as a direct proxy of managerial agency costs because the SG&A expenses may reflect better the managerial discretion in spending company resources. These expenses include, among others, commissions charged by agents to facilitate transactions, travel expenses for executives, advertising and marketing costs, rents and other utilities.

In Panel B of Table 5.5 (Models 5-6), we present the results obtained from this exercise. In particular, Model 5 presents the results from the GMM-DIFF estimator whereas Model 6 presents the results from the GMM-SYSTEM estimator. In general, the results regarding our main hypothesis are qualitatively similar to the ones obtained in Models 1-4. Specifically, our entrenchment proxy enters positively in both models, which is in line with the argument that high levels of managerial entrenchment lead to high expense ratios. However, the findings suggest that short-term debt and dividend payouts exert a negative impact though only the estimated coefficient of short-term debt seems to be statistically significant. Finally, the dynamic features of the alternative specifications are similar in that the adjustment speed suggested by the coefficient of the lagged dependent variable is about 0.70 in Model 5 and 0.50 in Model 6.⁶²

Clearly, the impact of managerial entrenchment on agency costs may depend on firm characteristics such as the firm's growth opportunities and its financial status. To explore these possibilities we incorporate a set of dummy variables in the analysis and interact them with the entrenchment proxy. First, we use a dummy variable that takes a value of 1 if the firm has a market-to-book ratio that lies below the median value and 0 otherwise. As expected, the coefficient of the interaction term, $DUMMY_{MKTBOOK}^*$

⁶² An additional alternative proxy for agency costs between managers and shareholders, which is not used in our paper though, is the interaction of company's growth opportunities with its free cash flow (see Doukas *et al.*, 2000 and Doukas *et al.*, 2002).

ENTRENCHMENT, is negative, possibly suggesting a more pronounced negative relationship between managerial entrenchment and agency costs for the case of low growth firms. However, the estimated coefficient is insignificant. These findings also hold when we incorporate the alternative proxy for agency costs, the SG&A ratio. Second, we also attempt to gain insights into whether the firm's financial status plays a significant role in impacting the relationship between managerial entrenchment and agency costs. For example, we incorporate a dummy variable that takes a value of 1 if the firm simultaneously has a market-to-book ratio that lies below the median value and a cash holdings ratio – defined as the ratio of cash and marketable securities to total assets – that lies above the median value. We argue that such firms, namely cash-rich firms with lower growth opportunities, should be more susceptible to managerial agency problems such as overinvestment. We find that the negative effect of entrenchment on agency costs is stronger. More specifically, the estimated coefficient of the interaction term, $DUMMY_{(MKTBOOK+CASH)} * ENTRENCHMENT$, is negative and significant at the 10 per cent level. The results are not reported for brevity but available upon request from the authors.

Overall, the results of these additional tests indicate that most of our results are robust to alternative measures of agency costs and provide limited evidence that the impact of managerial entrenchment on agency costs may be dependent upon some financial firm characteristics and growth opportunities.

5.5 Conclusion

The manager-shareholder agency conflict has been well-documented in the finance literature. Focusing on the incentives of managers and their ability to expropriate wealth

from outside shareholders, this chapter investigates whether firms having managers with greater entrenchment suffer from higher agency costs. We present strong evidence that a variety of firm characteristics explain managerial entrenchment which in turn has a significant impact on agency costs. More specifically, it seems that ownership and board structures and managerial compensation are important in determining the extent of managerial entrenchment. Furthermore, after controlling for endogeneity and unobserved heterogeneity, using asset turnover ratio as our main proxy of agency costs we show that the manager-shareholder agency conflict is much more costly to firms with entrenched managers. We also find that agency costs are negatively related to dividend payouts and short-term debt.

The dynamic analysis of this chapter reveals that agency costs born by shareholders are persistent over time and managers act as though there is an equilibrium level of these costs they wish to attain. We argue that this is implied by a trade-off between the expected private benefits and private costs of expropriation accrued to managers where the trade-off determines the optimal level of expropriation. We also observe that managers deviate from the equilibrium level of agency costs but attempt to revert to it, though with some delay possibly due to significant adjustment costs. These are new insights into the analysis of agency costs, which suggest new avenues of future research. One such avenue relates to the determinants of the speed of adjustment towards the equilibrium level of agency costs. However, to do so, there is need for further research to establish whether there is a level of agency costs in the first place, which managers envisage as equilibrium. Another avenue of future research is to focus on the interaction between the financial status of firms and managerial entrenchment in determining agency costs born by shareholders.

Table 5.1
Variable Definitions and Data Sources

Variable	Definition and Source
Dependent Variables	
ASSET TURNOVER	The ratio of annual sales to total assets (<i>Datastream</i>)
SG&A	The ratio of selling, general and administrative expenses to total sales (<i>Datastream</i>)
Independent Variables	
DIVIDEND	The ratio of dividend payments to total assets (%) (<i>Datastream</i>)
MKTBOOK	The ratio of book value of total assets minus the book value of equity plus the market value of equity to book value of assets. (<i>Datastream</i>)
LEVERAGE	The ratio of total debt to total assets (%) (<i>Datastream</i>)
SHORTDEBT	The ratio of short-term debt to total debt (%) (<i>Datastream</i>)
SIZE	Total assets (in logarithm) (<i>Datastream</i>)
EXECOWNER	The percentage of equity ownership held by executive directors (<i>Hemscott</i>)
CONCENTR (3%)	The sum of the stakes of firm's shareholders with equity ownership greater than 3 per cent) (<i>Hemscott</i>)
CONCENTR (5%)	The sum of the stakes of firm's shareholders with equity ownership greater than 5 per cent (<i>Hemscott</i>)
3 LARGEST	The sum of the stakes of firm's three largest investors (<i>Hemscott & Lexis Nexis & Pricewaterhouse Corporate Register (hereafter PWC)</i>)
CONTROL. BLOCKS	A dummy variable that takes the value of 1 if the firm has a controlling shareholder, and 0 otherwise. Controlling shareholders are defined in two ways: a) those who own 20% or more of firms stakes and b) those who own 20% or more of firm's stakes and, also, have enough voting power (as measured after utilizing power indices) to participate in voting coalitions and change the outcome of a voting game (see Section 5.3.1 for more details) (<i>Hemscott & Lexis Nexis & PWC</i>)
FAMILY BLOCKS	A dummy variable which takes the value of 1 if the controlling shareholder is a family member or an unlisted company, and 0 otherwise. (<i>Lexis Nexis & Hemscott & PWC</i>)
FINANCIAL BLOCKS	A dummy variable which takes the value of 1 if the controlling shareholder is a financial institution and 0 otherwise. (<i>Hemscott & Lexis Nexis & PWC</i>)
OTHER LISTED BLOCKS	A dummy variable which takes the value of 1 if the controlling shareholder is another listed company and 0 otherwise. (<i>Hemscott & Lexis Nexis & PWC</i>)
RNONEXEC	The ratio of the number of non-executive directors to the number of total directors on the board (%) (<i>Hemscott</i>)
BOARD SIZE	The total number of directors on the board (<i>Hemscott</i>)
CEO_DUALITY	A dummy variable indicating whether the position of CEO and chairman of the board are held by the same person. (<i>Hemscott</i>)
SALARY	The average salary paid to executive directors (<i>Hemscott & Annual Reports</i>)
TOTAL COMPENSAT.	The average total compensation (salary + options + bonuses + other benefits) paid to executive directors. (<i>Hemscott & Annual Reports</i>)
ENTRENCHMENT (1, 2 and 3)	Three composite variables derived after using principal component analysis (see Section 5.3.1 for details). (<i>our own calculation</i>)

Table 5.2
Descriptive Statistics

This table presents the descriptive statistics of the final sample used in the current study. Panel A reports detailed descriptive statistics for all the accounting and market variables. Panel B includes information about the evolution of ownership structure, board structure and managerial compensation structure of UK firms during the period 1999-2005 (mean values and standard deviations). Definitions for all variables are provided in Table 5.1.

<i>Panel A: Descriptive Statistics (1999-2005)</i>									
	<i>Mean</i>	<i>St. Dev.</i>	<i>Min</i>	<i>25%</i>	<i>Median</i>	<i>75%</i>	<i>Max</i>	<i>Skewness</i>	<i>Kurtosis</i>
TURNOVER	1.20	0.8	0	0.63	1.08	1.58	7.21	1.34	6.42
SG&A	0.32	0.41	0.006	0.133	0.221	0.369	6.16	6.82	70.51
DIVIDEND	2.27	2.75	0	0	1.78	3.23	49.30	4.77	57.67
MKTBOOK	1.89	1.80	0.11	1.03	1.36	2.00	19.62	4.49	30.08
LEVERAGE	18.44	16.64	0	3.36	15.91	29.08	99.24	0.98	3.98
SHORTDEBT	47.87	43.03	0	24.11	47.90	7.27	100	1.82	7.88
SIZE	11.67	2.04	6.65	10.25	11.46	13.06	18.94	0.38	2.84
<i>Panel B: Evolution of Ownership, Board and Compensation Structure</i>									
	<i>1999</i>	<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>2005</i>	<i>All years</i>	
Ownership Structure									
CONCENTR (3%)	32.88 (18.34)	33.14 (19.19)	33.96 (19.55)	35.77 (19.51)	36.06 (19.29)	37.54 (19.20)	40.86 (19.23)	35.79 (19.38)	
CONCENTR (5%)	26.93 (15.88)	27.28 (17.30)	28.63 (17.84)	29.11 (18.17)	29.33 (17.95)	30.11 (17.65)	32.65 (18.19)	29.21 (17.74)	
3 LARGEST	25.38 (13.46)	25.53 (15.17)	25.84 (15.26)	26.79 (14.91)	27.31 (15.20)	27.68 (14.54)	28.96 (14.02)	26.80 (14.78)	
CONTROL. BLOCKS	15.68 (36.42)	17.52 (38.05)	17.00 (37.63)	17.92 (38.38)	18.87 (39.16)	20.00 (40.03)	19.74 (39.85)	18.21 (38.59)	
FAMILY BLOCKS	7.28 (26.02)	6.29 (24.29)	5.79 (23.38)	5.29 (22.40)	5.83 (23.45)	6.02 (23.80)	5.78 (23.39)	5.97 (23.69)	
FINANCIAL BLOCKS	6.44 (24.58)	8.95 (28.58)	7.66 (26.63)	9.39 (29.19)	9.09 (28.77)	10.62 (30.83)	10.51 (30.71)	9.05 (28.69)	
OTHER LISTED BLOCKS	0.84 (9.14)	1.14 (10.64)	1.36 (11.60)	1.53 (12.31)	1.72 (12.93)	1.77 (13.20)	2.15 (14.51)	1.53 (12.26)	
EXECOWNER	10.19 (15.82)	10.74 (15.89)	10.38 (15.94)	8.88 (14.58)	8.30 (14.00)	7.75 (13.19)	6.79 (12.21)	8.98 (14.61)	
Board structure									
RNONEXEC	46.70 (15.18)	47.64 (14.50)	48.85 (14.09)	49.46 (14.49)	50.32 (14.53)	51.35 (14.46)	53.02 (13.71)	49.72 (14.51)	
BOARDSIZE	7.65 (2.46)	7.50 (2.43)	7.33 (2.40)	7.21 (2.30)	7.30 (2.42)	7.34 (2.36)	7.40 (2.40)	7.37 (2.39)	
CEO_DUALITY	10.08 (30.15)	9.14 (28.85)	8.52 (27.94)	8.53 (27.96)	7.72 (26.71)	4.96 (21.72)	5.79 (23.39)	7.74 (26.73)	
Compensation Structure									
SALARY (£)	154,722 (99,832)	154,600 (102,542)	168,398 (109,573)	174,438 (111,258)	181,725 (117,958)	190,696 (129,437)	207,256 (133,764)	176,545 (117,028)	
TOTAL COMPENSAT. (£)	238,959 (224,830)	236,271 (217,147)	257,718 (236,337)	269,679 (239,400)	289,155 (274,148)	309,111 (307,375)	341,337 (329,315)	278,264 (266,571)	

Table 5.3
Results from Principal Component Analysis

This Table provides the results of the principal component analysis, which has been used in order to create the proxies for managerial entrenchment. Panel A reports the correlation coefficients among the entrenchment components whereas Panel B reports the weights of each of the entrenchment proxies. Finally, Panel C provides the descriptive statistics for the derived proxies. Definitions for all variables are reported in Table 5.1.

Panel A: Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. CONCENTR	1.00								
2. CONTROL. BLOCKS	0.36	1.00							
3. FAMILY BLOCKS	0.19	0.59	1.00						
4. FINANCIAL BLOCKS	0.21	0.62	-0.06	1.00					
5. RNONEXEC	0.07	0.08	0.10	-0.01	1.00				
6. BOARDSIZE	-0.13	0.02	0.01	-0.03	0.21	1.00			
7. CEO_DUALITY	0.01	-0.04	-0.03	-0.03	0.20	0.15	1.00		
8. EXECOWNER	-0.15	-0.02	-0.05	0.03	-0.40	-0.25	-0.25	1.00	
9. TOTAL COMPENS.	-0.15	-0.08	-0.07	-0.09	0.32	0.11	0.11	-0.28	1.00

Panel B: Index Weight

	1	2	3	4	5	6	7	8	9
ENTRENCHMET 1	-0.03	-	-	-	0.46	0.47	0.30	-0.48	0.51
ENTRENCHMET 2	-0.20	-0.30	-0.15	-0.28	0.36	0.44	0.28	-0.39	0.50
ENTRENCHMET 3	-0.44	-0.56	-0.28	-0.47	0.12	0.28	0.11	-0.12	0.34

Panel C: Descriptive statistics for the ENTRENCHMENT proxies

	Mean	St. Dev.	Min	25%	Median	75%	Max	Skewnes	Kurtosis
ENTRENCHMET 1	1	1.45	-4.14	0.14	1.15	1.98	5.08	-0.44	3.25
ENTRENCHMET 2	1	1.52	-4.35	0.59	1.33	1.98	4.13	-1.08	3.66
ENTRENCHMET 3	1	1.46	-4.59	0.11	1.14	1.98	5.10	-0.40	3.13

Table 5.4
Univariate Results

Panel A reports mean comparison of Asset Turnover (sales to assets)- analyzing high (above median) versus low (below median) ownership structure, board structure, compensation structure, managerial entrenchment and other firm characteristics. Panel B provides univariate mean comparisons of firm specific characteristics by asset turnover quartiles (1st vs. 4th quartile). In both panels a t-test statistic is used to compare the mean difference. Definitions for all variables are provided in Table 5.1. ***, ** and * indicate that the mean difference is statistically significant at the 1%, 5% and 10% level respectively.

	Panel A			Panel B		
	Asset turnover mean of above variable median	Asset turnover mean of below variable median	t-test	1 st quartile asset turnover	4 th quartile asset turnover	t-test
Accounting Variables						
DIVIDEND	1.348	1.054	11.14***	1.07	2.88	-15.97***
MKTBOOK	1.237	1.165	2.69***	2.04	1.85	2.03**
LEVERAGE	1.125	1.277	-5.69***	20.37	14.01	8.03***
SHORTDEBT	1.165	0.787	35.96***	35.58	47.23	-11.17***
SIZE	1.179	1.223	-1.62	11.85	11.37	4.84***
Ownership Structure						
CONCENTR (3%)	1.231	1.171	2.22**	36.45	36.17	0.29
CONCENTR (5%)	1.222	1.180	1.56	27.46	27.92	-0.51
3 LARGEST	1.219	1.183	1.38	27.18	27.97	-1.06
CONTROL. BLOCKS	1.196	1.202	-0.17	20.39	23.77	-1.74*
FAMILY BLOCKS	1.293	1.195	1.38	8.94	8.72	0.16
FINANCIAL BLOCKS	1.170	1.204	-0.72	8.29	10.69	-1.75*
EXECOWNER	1.294	1.108	7.00***	7.63	12.02	-6.20***
Board structure						
RNONEXEC	1.115	1.261	-5.36***	52.45	47.03	8.01***
BOARDSIZE	1.132	1.252	-4.52***	7.78	7.11	5.76***
CEO_DUALITY	1.193	1.301	1.96*	10.80	7.42	2.52**
Compensation structure						
SALARY	1.218	1.184	1.29	171569	170989	0.11
COMPENSATION	1.224	1.179	1.39	275952	258171	1.56
Entrenchment Proxies						
ENTRENCHMENT 1	1.156	1.246	-3.37***	1.14	0.74	5.83***
ENTRENCHMENT 2	1.156	1.246	-3.35***	0.88	0.85	0.43
ENTRENCHMENT 3	1.142	1.261	-4.46***	1.02	0.75	3.81***

Table 5.5: Panel Data Results (GMM estimators)

This Table reports the results from the GMM in first differences (GMM-DIFF) and the GMM in system (GMM-SYSTEM) estimators. In Panel A, the dependent variable is asset turnover ratio whereas in Panel B it is the SG&A ratio (in both cases deviations from the corresponding industry means are used). For the GMM-DIFF estimator, levels dated [t-2] were used as instruments. For the GMM-SYSTEM estimator, for the equations in first differences, levels dated [t-1] were used as instruments whereas for the equations in levels, first differences dated [t-1] were used as instruments. Time dummies were used in all specifications. For the estimation we used asymptotic standard errors robust to heteroscedasticity. m1 and m2 are tests for the absence of first order and second order correlation in the residuals. These test statistics are asymptotically distributed as N(0,1) under the null of no serial correlation. We also report the Sargan test, which is a test of over-identifying restrictions, asymptotically distributed as a χ^2 under the null of valid instruments. The Sargan-Diff statistic tests the validity of the additional instruments utilized by the GMM-SYSTEM estimator. Wald (joint) and Wald (time) tests the joint significance of all regressors and time dummies respectively. Analytical definitions for all variables are provided in Table 5.1.

Dependent Variable: Panel A: ASSET TURNOVER (inverse proxy for agency costs), Panel B: SG&A RATIO (direct proxy for agency costs)

Independent Variables	Predicted	Panel A (Models 1-4)						Panel B: ((Models 5-6)							
		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 5	Model 6	Model 5	Model 6				
Constant	+/-	0.064 (3.45)***	0.052 (2.72)***	0.061 (3.24)***	-1.079 (-2.73)***	0.010 (2.66)***	-1.085 (-2.35)**								
Depend. Variable (t-1)	+	0.402 (4.03)***	0.407 (4.38)***	0.390 (4.10)**	0.504 (7.81)***	0.308 (3.75)***	0.499 (3.82)***								
DIVIDEND	+ in mod. 1-4 - in mod. 5-6	0.046 (2.29)**	0.043 (2.09)**	0.045 (2.12)**	0.039 (2.59)***	-0.085 (1.53)	-0.174 (-0.15)								
MKTBOOK	+/-	-0.024 (-1.33)	-0.003 (-0.15)	-0.012 (-0.71)	0.010 (0.87)	0.001 (0.03)	0.012 (1.16)								
LEVERAGE	+/-	0.002 (0.87)	0.002 (0.57)	0.001 (0.58)	0.003 (0.16)	0.065 (0.33)	-0.033 (-0.36)								
SHORTDEBT	+ in mod. 1-4 - in mod. 5-6	0.040 (2.28)**	0.040 (2.60)**	0.046 (2.82)**	0.030 (4.92)***	-0.013 (-1.17)	-0.004 (1.82)*								
SIZE	+/-	-0.150 (-2.09)	-0.105 (-0.68)	-0.119 (-0.72)	0.052 (1.39)	0.086 (0.45)	-0.002 (-0.10)								
ENTRENCHMENT 1	-	-0.103 (-2.15)**	-	-	-	-	-								
ENTRENCHMENT 2	-	-	-0.104 (-2.12)**	-	-	-	-								
ENTRENCHMENT 3	- in mod. 1-4 + in mod. 5-6	-	-	-0.100 (-2.35)**	-0.07 (-1.75)*	0.085 (2.30)**	0.050 (2.16)**								
Estimation Method		GMM-DIFF	GMM-DIFF	GMM-DIFF	GMM-SYSTEM	GMM-DIFF	GMM-SYSTEM								
Observations		2,495	2,495	2,495	3,082	2,047	2,535								
Wald (joint)		54.13 0.00**	48.33 0.00**	50.43 0.00**	318.7 0.00**	34.20 0.00**	54.34 0.00**								
Wald (time)		17.08 0.00**	11.86 0.04*	16.45 0.01**	19.57 0.04*	2.00 0.84	7.43 0.19								
Sargan		36.72 0.11	35.95 0.14	35.31 0.16	71.63 0.21	12.47 0.16	36.81 0.99								
Sargan-Diff.		-	-	-	36.32 0.41	-	24.34 0.91								
m1 test		-3.433 0.00**	-3.671 0.00**	-3.568 0.00**	-3.966 0.00**	-2.845 0.00**	-3.485 0.01*								
m2 test		-0.246 0.805	-0.336 0.74	-0.270 0.79	-0.068 0.95	-0.906 0.36	-0.769 0.44								

Chapter 6

Conclusions

The objective of this thesis is two fold. First, it investigates the adverse effects of the manager-shareholder conflict on corporate strategy and value. Second, it attempts to provide more insights into the determination of those mechanisms that can ameliorate the agency conflict between managers and shareholders.

Using a large sample of UK listed firms, for which a unique database has been compiled, we show that agency issues have severe implications for capital structure choice and corporate performance. Specifically, in chapter 2 we show that firms with entrenched management indicate relatively low Tobin's Q ratios. Certain elements of corporate financial structure, managerial compensation structure and ownership and board structure can help attenuate the conflict of interest between managers and shareholders, leading to a better corporate performance. It seems however that several of these elements (e.g. managerial ownership and managerial compensation) have an ambiguous effect on Tobin's Q. Most importantly, it seems that managerial ownership and managerial compensation are not independent mechanism but they work as substitute mechanisms for ameliorating agency conflicts.

In chapter 3 we show how internal corporate governance influences the firms' capital structure choice. The analysis centres around the view that managerial incentives are important in shaping up the capital structure of firms and the exact impact of these incentives on leverage are likely to be determined by firm-specific governance characteristics. To conduct our investigation of these issues, we construct a corporate governance measure using detailed ownership and governance information for a large sample of UK listed firms. The empirical findings indicate that better corporate governance practices reduce the agency costs of debt, leading to a higher leverage ratio. More importantly, in addition to its direct effect, there is evidence that corporate governance affects the firm financing policy decision indirectly, through

influencing managerial incentives to adjust to (or deviate from) an optimal leverage ratio. In particular, our findings indicate that the alignment effect of managerial ownership on leverage is less pronounced in well-governed firms, possibly because managerial ownership and corporate governance work as substitute mechanisms for resolving agency issues. Furthermore, there is rather weak evidence that the entrenchment effect of managerial ownership is weaker in firms that possess strong corporate governance. Finally, consistent with the results reported in recent capital structure studies, our dynamic panel data models show that UK firms adjust partially towards a target leverage ratio.

Chapters 4 and 5 concentrate on the empirical determinants of agency costs rather than focusing on a corporate performance or a particular corporate policy decision. Specifically, in chapter 4 we aim to extend the empirical literature on the determinants of agency costs by using a large sample of UK listed firms. To do so, we employ two alternative proxies for agency costs: the ratio of total sales to total assets (asset turnover) and the ratio of selling, general and administrative expenses to total sales (SG&A). In our analysis, we control for the influence of two potential internal governance mechanisms or devices that were ignored by previous studies, namely debt maturity and managerial compensation. We also examine the potential interactions between internal governance mechanisms and firm growth opportunities in determining agency costs. Our results reveal that the capital structure characteristics of firms, namely bank debt and debt maturity, constitute two of the most important corporate governance devices for UK companies. Also, managerial ownership, managerial compensation and ownership concentration seem to play an important role in mitigating agency costs. Finally, our results suggest that the impact exerted by specific internal governance mechanisms on agency costs varies with firms'

growth opportunities. Specifically, the alignment effect of managerial ownership seems to be more pronounced in the case of high-growth firms.

Finally, Chapter 5 builds on the analysis of chapter 4 to investigate the relationship between managerial entrenchment and agency costs. Two key aspects of this chapter are the derivation of a uniquely constructed proxy for managerial entrenchment, which is based on a set of variables that are likely to affect managerial ability and incentives and expropriate wealth from shareholders, and the use of the dynamic panel data methodology, which allows us to study whether agency costs are persistent over time and, also, whether there is a level of agency costs that is perceived by managers as an equilibrium level of agency costs. The empirical findings indicate that there is a strong inverse (positive) relationship between our proxy for managerial entrenchment and asset turnover ratio (expense ratio). There is also evidence that short-term debt and dividend payments work as effective corporate governance mechanisms or devices for UK firms. Finally, the findings reveal that agency costs are persistent over time.

The main conclusions and implications of this thesis can be summarized as follows. The manager-shareholder conflict is costly for modern corporations, especially for those characterized by a distinct separation between ownership and control. The conflict is clearly reflected to asset turnover, expense ratio, capital structure choice and corporate performance. There are several strategies that firms can use to ameliorate the manager-shareholder conflict. These include changes in the ownership structure (e.g. level of managerial ownership), managerial compensation structure (e.g. level of salary) and financial structure (e.g. level of short-term debt and dividend ratio). These corporate governance mechanisms, however, do not work independently in reducing agency costs but there are complicated ways of reducing agency costs such that the impact of one mechanism depends on the chosen level of the other or other

firm-specific characteristics (e.g. the value of growth options). This finding casts doubt on earlier studies that treat several corporate governance mechanisms as exogenous. The results of this study also bring into question the results in previous studies that ignore endogeneity.

Several lines for future research can be suggested. Firstly, there is a need to develop more sophisticated proxies for corporate governance and managerial entrenchment than those reported in this thesis. This progress can be made by considering not only internal control mechanisms but also external control mechanisms for measuring corporate governance and managerial entrenchment. One could use, for example, takeover readiness provisions such as poison pills and golden parachutes and constitutional provisions to prevent majority shareholders from having their way such as staggered boards and limits to shareholder bylaw amendments. Some efforts have been made within such a framework but the existing studies are restricted to US firms (see, e.g., Bebchuk and Cohen, 2005 and Gompers *et al.*, 2003).

Secondly, a natural extension of our work would be to investigate the implications of the manager-shareholder conflict on corporate policy decisions other than the capital structure. The first candidate is managerial compensation. Recent UK evidence clearly shows that executive compensation (both cash-based and equity-based) has increased dramatically during the last decade. It is far from clear, however, whether such an increase is linked to better share price or whether high compensation packages reflect managerial power to garner overcompensation. One way to think about answering this question is to consider that entrenched managers have the ability to extract high wages and larger perquisites from shareholders, and obtaining more latitude in determining corporate strategy (Shleifer and Vishny, 1988).

Another corporate policy decision that is expected to be significantly influenced by the manager-shareholder conflict is the dividend decision. Unlike the findings of Fama and French

(2001), who observe a declining propensity to pay dividends, recent studies document an increasing propensity to pay dividends (see, for example, Ferris et al., 2006). It has also been realized that several firms have increased their dividend payments by rather more than growth opportunities alone justified. How can this phenomenon be explained? To what extent does managerial short-termism and managerial entrenchment drive such an irrational corporate behavior?

Thirdly, more research is needed on boards of directors. In the current thesis we have only investigated the effects of different board structures on capital structure and corporate performance. More contentious, however, is the question of what determines board effectiveness in large corporations. Which are the most important factors that drive the adoption/operation of specific board structures, mechanisms and practices? How can we develop measures of board effectiveness that incorporate the operations/processes which characterise boards? A few US studies focus on the role of board size and board composition in this regard. However, to what extent do factors such as ownership configuration (executive/board ownership, concentration, institutional ownership, etc.), organisational characteristics (type, industry, age, leverage, growth, etc.), board member characteristics (education, experience, reputation, etc.) and general board characteristics (leadership, experience, diversity, etc.) also influence board effectiveness?

A satisfactory answer to these questions will enhance our understanding of several board practices and dynamics and, also, help identify any 'gaps' in governance. The results from such an investigation could be important for firms themselves when seeking to better understand/design their governance arrangements. Additionally, the research will be useful for external monitors (e.g., as part of their own appraisals of companies' governance), auditors (e.g., for governance/compliance risk analysis), fund managers (e.g., for voting decision analysis) and

regulators (e.g., as part of developing governance standards/policies and listing requirements). More broadly, in the context of the mixed governance-performance evidence mentioned above, the results will foster a richer characterisation of the linkage(s) between corporate governance and financial performance, to the extent that they provide a broader and more rigorous analysis of what 'good' governance involves and what its determinants might be.

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