

Agency costs and corporate governance mechanisms: Evidence for UK firms

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Abstract

In this paper, 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 (SG&A) to total sales. In our analysis, we control for the influence of several internal governance mechanisms or devices that were ignored by previous studies. Also, we examine the potential interactions between these 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 internal governance mechanisms on agency costs varies with firms' growth opportunities.

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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.¹ Moreover, the implicit assumption is that in imperfect capital markets agency costs arising from conflicts between firms' claimholders exist and the value of firms 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 expected costs and their negative impact on firm value. For example, much of prior work on the ownership and performance relationship relies on the view that managerial ownership can align the interests of managers and shareholders and hence one would 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 much valuable insights provided by this strand of 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) and Sign and Davidson (2003), which investigate the empirical determinants of agency costs and focus on the role of debt and ownership structure in mitigating agency problems for the US firms. 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 (SG&A) to total sales. In line with the findings of prior research they provide evidence for the view that managerial ownership aligns the interests of managers and shareholders and, hence, reduces agency costs in general. However, there is no consensus on the role of debt in mitigating such problems and associated costs. Ang et al. (2000) point out that debt has an alleviating role whereas Sign and Davidson (2003) an aggravating one.

¹ See, for example, Morck et al. (1988); McConnell and Servaes (1990); and Agrawal, and Knoeber (1996) among others.

The objective of this paper 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) and, Sign and Davidson (2003), 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 likely to arise from agency conflicts between managers and shareholders.² 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 paper, we aim to provide insights at least in three important areas of the empirical research on agency costs. First, in investigating the determinants of agency costs, the analysis of this paper incorporates important firm-specific characteristics (internal corporate governance devices) that possibly affect agency costs but were ignored by previous studies. For example, we explore the role the debt maturity structure of firms can play 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).³ 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) that investigate if 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., 2001; Murphy, 1999 among others). This is based on the view that financial "carrots" motivate managers to maximize firm value. That is, a manager will presumably be less likely, *ceteris paribus*, to exert insufficient effort and risk the loss of his job the greater the

² As explained later in the paper, the two proxies for agency costs that are used in our analysis are more likely to capture the agency problems between managers and shareholders. However, we do not rule out the possibility that they may also capture the agency problems between shareholders and debtholders.

³ 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).

level of his compensation. Several empirical studies provide evidence for the effectiveness of managerial compensation as a corporate governance mechanism. For instance, Hutchinson and Gul (2003) find that managers' compensation can moderate the negative association between growth opportunities and firm value. In this paper, we examine the effectiveness of managerial compensation as a corporate governance mechanism by including the salary of managers in our empirical model. We also acknowledge that there have been concerns about excessive compensation packages and their negative impact on corporate performance. 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. Following McConnell and Servaes (1995) and Lasfer (2002), we expect the effectiveness of governance mechanisms in reducing agency problems to be dependent on firm's growth opportunities. In particular, if agency problems are associated with greater information asymmetry (a common problem in high-growth firms), we expect the effectiveness of corporate governance mechanisms in mitigating asymmetric information problems to increase in high-growth firms (Smith and Watts, 1992 and Gaver and Gaver, 1993). However, if, as argued by Jensen (1986), 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 are likely to mitigate such problems to play a more important role in low-growth firms (Jensen, 1986).

Last but not least, in contrast to previous studies that focus on the US market, we provide evidence for UK firms. Although the UK and the US are usually characterized as having a similar "common law" regulatory system (see, e.g., La Porta et al., 1998), the UK market bears significant distinguishing characteristics.⁴ It is argued that several of these characteristics may contribute to a more significant degree of managerial discretion and, hence, higher level of managerial agency costs. For example, despite the relatively high proportion of shares held by financial institutions, there is a great deal of evidence that financial investors do not take an active role in corporate governance. Similarly, UK boards are usually characterized as corporate devices that provide weak disciplinary function. More specifically, weak fiduciary obligations on directors have resulted in non-

⁴ For a more detailed discussion about the characteristics of the prevailing UK corporate governance system see Short and Keasey (1999); Faccio and Lasfer (2000); Franks et al. (2001); and Ozkan and Ozkan (2004).

executives playing more an advisory than a monitoring role.⁵ Consequently, the investigation of agency issues and the effectiveness of the alternative governance mechanisms in the UK, in a period that witnesses an intensive discussion of corporate governance issues, would be of significant importance.

Our results strongly suggest that managerial ownership constitutes a strong corporate governance mechanism for the UK firms. This result is consistent with the findings provided by Ang et al. (2000) and Sign and Davidson (2003) for the US firms. Ownership concentration and salary also seem to play a significant role in mitigating agency related problems. The results concerning the role of capital structure variables on agency costs are striking. It seems that both the source and the maturity structure of corporate debt have a significant effect on agency costs. Finally, there is strong evidence that specific governance mechanisms are not homogeneous but vary with growth opportunities. For instance, we find that executive ownership is more effective as a governance mechanism for high-growth firms. This result is complementary to the results obtained by Smith and Watts (1992), Gaver and Gaver (1993) and Lasfer (2002), which support the view that high-growth firms are likely to prefer incentive mechanisms (e.g. managerial ownership) whereas low-growth firms focus more on monitoring mechanisms (e.g. short-term debt).

The remainder of the paper is organized as follows. In section 2 we discuss the related theory and formulate our empirical hypotheses. Section 3 describes the way in which we have constructed our sample and presents several descriptive statistics of that. Section 4 presents the results of our univariate, multivariate and sensitivity analysis. Finally, section 5 concludes.

2. Agency costs and Governance Mechanisms

In what follows, we will discuss the potential interactions between agency costs and internal corporate governance mechanisms available to firms. Also, we will analyze how firm growth opportunities affect agency costs and the relationship between governance mechanism and agency costs.

⁵ Empirical studies by Faccio and Lasfer (2000), Goergen and Rennebog (2001), Franks et al. (2001) and Short and Keasey (1999) provide evidence on the weak role of institutions and board of directors in reducing agency problems in the UK.

2.1 Debt Financing

Agency problems within a firm are usually related to free cash-flow and asymmetric information problems (see, for example, Jensen, 1986 and Myers and Majluf, 1984). It is widely acknowledged that debt servicing obligations help to the reduction of agency problems of this sort. This is particularly true for the case of privately held debt (e.g. bank debt). Bank debt incorporates significant signalling characteristics that can mitigate informational asymmetry conflicts between managers and outside investors (see, for example, Jensen, 1986; Stulz, 1990; and Ross, 1977). For example, the announcement of a bank credit agreement conveys positive news to the stock market about creditor's worthiness. Moreover, bank debt bears important renegotiation characteristics. As Berlin and Mester (1992) argue, because banks are well informed and typically small in number, renegotiation of a loan is easier. A bank's willingness to renegotiate and renew a loan indicates the existence of a good relationship between the borrower and the creditor and that is a further good signal about the quality of the firm. Additionally, it is argued that bank debt has an advantage in comparison to publicly traded debt in monitoring firm's activities and in collecting and processing information. For example, Fama (1985) argues that banks have a comparative advantage as lenders in minimizing information costs and can get access to information not otherwise publicly available. Therefore, banks can be viewed as performing a screening role employing private information that allows them to evaluate and monitor borrowers more effectively than other lenders.

In addition to debt source, the maturity structure of debt may matter. For example, short-term debt may be more useful than long-term debt in reducing free cash flow problems and in signalling high quality to outsiders. For example, as Myers (1977) suggests, agency conflicts between managers and shareholders 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. Also, short-term debt can be advantageous especially for high-quality companies due to its low refinancing risk (Diamond, 1991). Finally, if yield curve is downward sloping, issuing short-term debt increases firm value (Brick and Ravid, 1985).

Consequently, bank debt and short-term debt are expected to constitute two important corporate governance devices. We include the ratio of *bank debt to total debt* and the ratio of *short-term debt to total debt* to our empirical model so as to approximate

the ability of the lender to mitigate agency problems. Also, we include the ratio of *total debt to total assets (leverage)* to approximate lender's incentive to monitor. In general, as leverage increases, so does the risk of default by the firm, hence the incentive for the lender to monitor the firm⁶.

2.2 Managerial Ownership

The conflicts of interest between managers and shareholders arise mainly from the separation between ownership and control. Corporate governance deals with finding ways to reduce the magnitude of these conflicts and their adverse effects on firm value. For instance, Jensen and Meckling (1976) suggest that managerial ownership can align the interest between the two different groups of claimholders and, therefore, reduce the agency costs within the firm. According to their model, the relationship between managerial ownership and agency costs is linear and the optimal point for the firm is achieved when the managers acquires all of the shares of the firm. However, the relationship between managerial ownership and agency costs can be non-monotonic (see, for example, Morck et al., 1988; McConnell and Servaes, 1990,1995 and, Short and Keasey, 1999). It has been shown that, at low 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*). After some level of managerial ownership, though, managers exert insufficient effort (e.g focus on external activities), collect private benefits (e.g. build empires or enjoy perks) and entrench themselves (e.g. undertake high risk projects or bend over backwards to resist a takeover) at the expense of other investors (*entrenchment effect*). Therefore the relationship between the two is non-linear. The ultimate effect of managerial ownership on agency costs depends upon the trade-off between the alignment and entrenchment effects.

In the context of our analysis we propose a non-linear relationship between managerial ownership and managerial agency costs. 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 will dominate the other and at what levels of managerial ownership. We, therefore, carry out a preliminary investigation about the pattern of the relationship

⁶ Ang et al. (2000) focus on the impact of bank debt on agency costs. However, Sign and Davidson (2003) argue that large firms have greater access to public debt and, therefore, they focus on the impact of leverage on agency costs. Our study is more similar to Ang et al (2000) given the fact that UK firms use significant amounts of bank debt financing (see Corbett and Jenkinson, 1997).

between managerial ownership and agency costs. Figure 1 presents the way in which the two variables are associated.

[Insert Figure 1 here]

Clearly, at low levels of managerial ownership, asset turnover and managerial ownership are positively related. However, after managerial ownership exceeds the 10 per cent level, the relationship turns from positive to negative. Therefore, there is evidence both for the alignment and the entrenchment effects. In order to capture both of them in our empirical specification, we include the level and the square of managerial ownership in our model as predictors of agency costs. In trial regressions, the cube of managerial ownership is also included. However, the results do not point to a cubic relationship.

2.3 Ownership Concentration

A third alternative for alleviating agency problems is through concentrated ownership. Theoretically, shareholders could take themselves an active role in monitoring management. However, given that the monitoring benefits for shareholders are proportionate to their equity stakes (see, for example, Grossman and Hart, 1988), an average shareholder has little or no incentives to exert monitoring behaviour. In contrast, shareholders with substantial stakes have more incentives to supervise management and can do so more effectively (see Shleifer and Vishny, 1986; Shleifer and Vishny, 1997 and Friend and Lang, 1988). In general, the higher the amount of shares that investors hold, the stronger their incentives to monitor and, hence, protect their investment. Additionally, corporate governance can be improved in the sense that large shareholders may also prevent the possibility of a takeover bid and, hence, make managers to feel safer about their positions (Shleifer and Vishny, 1986; Bukart, 1995).

Although large shareholders may help in the reduction of agency problems associated with managers, they may also harm the firm by causing conflicts between large and minority shareholders. In cases, when large shareholders gain nearly full control of a corporation, they are engaged in self-dealing expropriation procedures at the expense of minority shareholders (Shleifer and Vishny, 1997). Any expropriation incentives are stronger when law does not effectively protect small shareholders and the diversity between cash and control rights of large shareholders is huge (see, for example, Grossman and Hart, 1986). Furthermore, the existence of concentrated holdings may decrease

diversification, market liquidation and stock's ability to grow and, therefore, may increase the incentives of large shareholders to expropriate firm's resources. Several empirical studies provide evidence consistent with that view (see, for example, Beiner et al, 2003).

In order to test the impact of ownership concentration on agency costs, 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. The results remain robust when the threshold value changes from 3 per cent to 5 percent or 10 per cent.

2.4 Board of Directors

Corporate governance research recognizes the essential role performed by the board of directors in monitoring management (Fama and Jensen, 1983; Weisbach, 1988 and Jensen, 1993). 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, considered necessary for organizational effectiveness. For instance, as Pearce and Zahra (1991) point out, large powerful boards help in strengthening the link between corporations and their environments, provide counsel and advice regarding strategic options for the firm and play crucial role in creating corporate identity. Other studies, though, suggest that large boards are less effective than large boards. The underlying notion is that large boards make coordination, communication and decision-making more cumbersome than it is in smaller groups (Eisenberg et al., 1998 and Beiner et al, 2004).

The composition of a board is also important. There are two components that characterize the independence of a board, the proportion of non-executive directors and the separated or not roles of chief executive officer (CEO) and chairman (COB). Boards with a significant proportion of non-executive directors can limit the exercise of managerial discretion by exploiting their monitoring ability and protecting their reputations as effective and independent decision makers. Consistent with that view, Byrd and Hickman (1992) and Rosenstein and Wyatt (1990) propose a positive relationship between the percentage of non-executive directors on the board and corporate performance. Also, 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. Other studies find exactly the opposite results. They argue that non-executive directors are usually characterized by lack of information about the firm and, hence, they prefer to play a less confrontational role rather than a more critical monitoring one (see, for example, Agrawal and Knoeker, 1996

and Hermalin and Weisbach, 1991). As far as the separation between the role of CEO and COB is concerned, it is believed that separated roles can lead to better board performance and, hence, less agency conflicts. The Cadbury (1992) report on corporate governance stretches that issue and recommends that CEO and COB should be two distinct jobs. Firms should comply with the recommendation of the report for their own benefit. A decision not to combine these roles should be publicly explained.

In the context of the UK market, UK boards are believed to be less effective than the US ones. For instance, UK legislation encourages non-executive directors to be inactive since it does not impose fiduciary obligations on them. Also, UK boards are dominated by executive directors, which have less monitoring power. Franks et al. (2001) confirm this view by providing evidence on a non-disciplinary role of non-executive directors in the UK. To test the effectiveness of the board of directors in mitigating agency problems we include three variables in our empirical model: a) the ratio of the number of non-executive directors to the number of total directors, b) the total number of directors (board size) and c) a dummy variable which takes the value of 1 when the roles of CEO and COB are not separated and 0 otherwise.

2.5 Managerial Compensation

Another important component of corporate governance is the compensation package that is provided to firm management. Recent studies by Core et al. (2001) and Murphy (1999) suggest, among others, that compensation contracts can motivate managers to take actions that maximize shareholders' wealth. In particular, as Core et al. (2001) point out, if shareholders could directly observe the firm's growth opportunities and executives' actions no incentives would be necessary. However, due to asymmetric information between managers and shareholders, both equity and compensation related incentives are required. For example, an increase in managerial compensation may reduce managerial agency costs in the sense that satisfied managers will be less likely, *ceteris paribus*, to utilize insufficient effort, perform expropriation behaviour and, hence, risk the loss of their job. Despite the central importance of the issue, only a few empirical studies examine the impact of managerial compensation components on corporate performance. An exception is the study by Hutchinson and Gul (2004), which analyzes whether or not managers' compensation can moderate the negative association between growth opportunities and

firm value⁷. The results of this study indicate that corporate governance mechanisms such as managerial remuneration, managerial ownership and non-executive directors possibly affect the linkages between organizational environmental factors (e.g. growth opportunities) and firm performance. Also, Chen (2003) analyzes the relationship between equity value and employees' bonus. He finds that the annual stock bonus is strongly associated with the firm's contemporaneous but not future performance.

Managerial compensation, though, is considered to be a debated component of corporate governance. Despite its potentially positive impact on firm value, compensation may also work as an "infectious greed" which creates an environment ripe for abuse, especially at significantly high levels. For instance, remuneration packages usually include extreme benefits for managers such as the use of private jet, golf club membership, entertainment and other expenses, apartment purchase etc. Benefits of this sort usually cause severe agency conflicts between managers and shareholders.⁸ Therefore, it is possible that the relationship between compensation and agency costs is non-monotonic. Similar to the case of managerial ownership, we carry out a preliminary investigation about the pattern of the relationship between salary and agency costs. As shown in figure 2, the relationship between salary and agency costs is likely to be non-linear⁹.

In our empirical model, we include the ratio of the total salary paid to executive directors to total assets as a determinant of agency costs. Also, in order to capture potential non-linearities, we include higher ordered salary terms in the regression equation. Finally, we include a dummy variable, which takes the value of 1 when a firm pays options or bonuses to managers and 0 otherwise. Including that dummy variable in our analysis enables us to test whether or not options and bonuses themselves provide incentives to managers. As Zhou (2001) points out, ignoring options is likely to incur serious problems

⁷ Rather, the majority of the studies in that strand of literature reverse the causation and examine the impact of performance changes on executive or CEO compensation (see, for example, Rayton, 2003 among others).

⁸ Concerns about excessive compensation packages and their negative impact on corporate performance have led to the establishment of basic recommendations in the form of "best practises" in which firms should comply so as the problem with excessive compensation to be diminished. 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 posterior report, the Greenbury (1995) report, specific propositions about remuneration issues were made. For example, an issue that was stretched was the rate of increase in managerial compensation. In the case of the US market, the set of "best practises" includes, among others, the establishment of a compensation committee so as transparency and disclosure to be guaranteed (same practise 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

⁹ A similar preliminary analysis is carried out so as to check potential non-linearities concerning the relationship between the rest of internal governance mechanisms and agency costs. Our results (not reported) indicate that none of them is related to agency costs in a non-linear way.

unless managerial options are either negligible compared to ownership or almost perfectly correlated with ownership.

[Insert Figure 2 here]

2.6 Growth Opportunities

The magnitude of agency costs related to underinvestment, asset substitution and free cash flow 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 accrue to debt-holders. This is more severe for firms with more 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 information asymmetry between investors and borrowers (Jensen and Meckling, 1976). High-growth firms, though, face lower free cash-flow problems, which occur when firms have substantial cash reserves and a tendency to undertake risky and usually negative NPV 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 these kinds of problems to be more effective in high-growth firms (Smith and Watts, 1992 and Gaver and Gaver, 1993). However, if, as argued by Jensen (1986), 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 company performance confirm the existence of potential interactions between governance mechanism 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. Their results also indicate that equity ownership matters and the way in which it matters depend upon investment opportunities. Specifically, they provide weak evidence that the allocation of equity ownership between corporate insiders and other types of investors is more important in low-growth firms. Also, Lasfer (2002) points out high-growth firms (low-growth firms) rely more on managerial ownership (board structure) to mitigate agency

problems. Finally, Chen (2003) argues that the positive relationship between annual stock bonus and equity value is stronger for firms with greater growth opportunities.

In order to capture potential interaction effects, we include interaction terms between proxies for growth opportunities and governance mechanisms in our empirical model and, also, employ sample-splitting methods (see, for example, McConnell and Servaes, 1995 and Lasfer, 2002). Based on previous empirical evidence the prediction we make is that mechanisms that are used to mitigate asymmetric information problems (free cash flow problems) should be stronger in high-growth firms (low-growth firms).

3. Data and Methodology

3.1 Data

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 database. Specifically, we use Datastream to collect information for 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. Specifically, we get detailed information on the level of managerial ownership, ownership concentration, size and composition of the board and, finally, the level of managerial salary, bonus, options and other benefits. Hemscott 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. Despite the fact that data on directors are provided in a spreadsheet format, information for each item is given in a separate file. This makes data collection for the required variables fairly complicated. For example, in order to get information about the amount of shares held by executive directors we have to combine two different files: a) the file which contains data on managerial ownership and b) the file which provides information about the names and the type of each director (e.g. executive director, non-executive director etc). Also, we have to take into account the fact that several directors in the UK hold positions in more than one company. Complications also arise when we attempt to collect information about the composition of the board and the remuneration package that is provided to executive directors.

The way in which our final sample is compiled is the following: we start with a total of 1672 UK firms derived from Datastream. This number reduces to 1450 firms after excluding financial firms from the sample. When we match Datastream data with the data provided by Hemscott 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 exclude outliers so as to avoid the problem with extreme values. We end up with 897 firms for our empirical analysis.

3.2 Dependent Variable

In our analysis we use two alternative proxies to measure 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. For instance, 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 shareholders¹⁰. A similar proxy for agency costs is also used in the studies of Ang et al. (2000) and Sign and Davidson (2003). However, Ang et al. (2000), instead of using the ratio directly, they use the difference in the ratios of the firm with a certain ownership and management structure and the no-agency-cost base case firm.

Secondly, following Sign and Davidson (2003), we use the ratio of selling, general and administrative (SG&A) expenses to sales (expense ratio). In contrast to asset turnover, expense ratio is direct proxy of agency costs. SG&A expenses include salaries, commissions charged by agents to facilitate transactions, travel expenses for executives, advertising and marketing costs, rents and other utilities. Therefore, expense ratio should reflect to a significant extent managerial discretion in spending company resources. For example, as Sign and Davidson (2003) point out, "management may use advertising and selling expenses to camouflage expenditures on perquisites" p.7. Firms with high expense ratios are expected to experience high agency costs between managers and shareholders.

¹⁰ 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

3.3 Independent Variables

Our empirical model includes a set of corporate governance variables related to firm's ownership, board, compensation and capital structure. Several control variables are also incorporated. For example, 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. Finally, we divide firms into 15 sectors and include 14 dummy variables accordingly so as to control for sector specific effects. Analytical definitions for all these variables are given in Table 1.

[Insert Table 1 here]

3.4 Methodology

We examine the determinants of agency costs by employing a cross sectional regression approach. Following Rajan and Zingales (1995) and Ozkan and Ozkan (2004), the dependent variable is measured in year 2003, while for the independent variables we use average-past values. Using averages in the way we construct our explanatory variables helps in mitigating 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. Specifically, for accounting variables and the market-to-book ratio we use average values for the period 1999-2002. Ownership, board and compensation structure variables are measured in year 2002. Given that equity ownership characteristics in a country are relatively stable over a certain period of time, we do not expect that measuring them in a single year would yield a significant bias in our results (see also La Porta et al., 2002, among others).

Several interaction effects may be present in our empirical specification. For example, as explained analytically in section 2.5, there is a possibility that the nature of the relationship between the alternative governance mechanisms or devices and agency costs varies with firm's growth opportunities. To explore that possibility, we firstly interact our proxy for growth opportunities (MKTBOOK) with the alternative corporate governance mechanisms. In this way, we test for the existence of both *main effects* (the impact governance variables on agency costs) and *conditional effects* (the impact of growth opportunities on the relationship between governance variables and agency costs). Additionally, we split the sample into high-growth and low-growth firms and estimate our

empirical models for each sample separately. Then we check whether the coefficients of governance variables retain their sign and their significance across the two sub-samples.

3.5 Sample Characteristics

Table 2 presents descriptive statistics for the main variables used in our analysis. It reveals that the average values of asset turnover ratio and SG&A ratio are 1.24 and 0.45 respectively. The mean 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). The ownership concentration reaches the level of 37.19 per cent, on average, in the UK firms. Also, the average proportion of non-executive directors is 50 per cent and the average board size consists of 6.97 directors. Finally, we were able to identify only 73 firms out of the final 897 (8.1 per cent) in which the same person held the positions of CEO and COB. 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, these values are in line with those reported in other studies for UK firms (see, for example, Ozkan and Ozkan, 2004 and Short and Keasey, 1999).

[Insert Table 2 here]

The results of the Pearson's Correlation of our variables are reported in Table 3. Our inverse proxy for agency costs, asset turnover, is clearly positively correlated to 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 contrary, board size and non-executive directors are found to be negatively correlated with asset turnover. Finally, as expected, asset turnover is found to be 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 given that SG&A is a direct and not an inverse proxy for agency costs.

[Insert Table 3 here]

4. Empirical Results

4.1 Univariate analysis

In Table 4, we report 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, board size, the proportion of non-executives, bank debt, short-term debt, total debt, salary, firm size and growth opportunities. Firms with above median managerial ownership (ownership concentration) have asset turnover of 1.34 (1.31) and 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. The results for executive ownership, salary, bank debt and short-term debt are also found to be statistically significant and are in the hypothesized direction. Specifically, we find that firms with above median values for all these variables have relatively higher asset utilization ratios. On the contrary, there is evidence that firms with larger board sizes indicate significantly lower asset utilization ratios.

[Insert Table 4 here]

In panel B of the same table we report the results using SG&A expense ratio as a proxy for agency costs. Results are in general not in line with the hypothesized signs with notable exceptions those of ownership concentration and growth opportunities. For example, 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 expense ratio of 0.49 (0.36). However, the results for managerial ownership, salary and short-term debt suggest that these governance mechanisms or devices are not effective in protecting firms from excessive SG&A expenses. Sign and Davidson (2003) obtains a set of similar results, for the case when agency costs are approximated with the SG&A ratio.

Overall, the univariate analysis indicates several corporate governance mechanisms or devices, such as managerial ownership, ownership concentration, salary, bank debt and short-term debt, which can help in mitigating agency problems between managers and shareholders for the case of the UK market. Also, consistent with previous studies, we find the relation between governance variables and agency costs to be stronger

for the asset turnover ratio than the SG&A expense ratio. The analysis that follows allows us to test the validity of these results in a multivariate framework.

4.2 Multivariate analysis

In this section we present our results that are based on a cross sectional regression approach. We start with a linear specification model, where we include only total debt from our set of capital structure variables (model 1). In general, the estimated coefficients are in line with the hypothesized signs. Specifically, consistent with the results of Ang et al. (2000) and Sign and Davidson (2003), we find both managerial ownership and ownership concentration to be positively related to asset-turnover. The coefficients are statistically significant at the 5 per cent and 1 per cent significance level respectively. On the contrary, the coefficient for board size is negative, which probably indicates that firms with larger board size are less efficient in their asset utilization. Also, the results for our proxy for growth opportunities (MKTBOOK) support the view that high-growth firms suffer from higher agency costs than low-growth firms. Finally, there is strong evidence that managerial salary can work as an effective incentive mechanism that helps aligning the interests of managers with those of shareholders. Specifically, the coefficient for salary is positive and statistically significant to the 1 per cent level. Therefore, compared to previous studies, our empirical model provides evidence on the existence of an additional potential corporate governance mechanism available to firms.

[Insert Table 5 here]

In model 2 we incorporate two additional capital structure variables, the ratio of bank debt to total debt and the ratio of short-term debt to total debt, in order to test whether debt-source and debt-maturity impacts agency costs. Also, we split managerial ownership into executive ownership (the amount of shares held by executive directors) and non-executive ownership (the amount of shares held by non-executive directors). We do this because we expect that equity ownership works as a better incentive mechanism in the hands of executive directors rather in the hands of non-executive directors. According to our results, bank debt is positively related to asset turnover. Also, in addition to debt source, the maturity structure of debt seems to have a significant effect on agency costs. The coefficient of short-term debt is positive and statistically significant at the 1 per cent significance level. Furthermore, there is evidence that from total managerial ownership,

only the amount of shares held by executive directors can enhance asset utilization and, hence, align the interest of managers with those of shareholders.

In model 3 we estimate a non-linear model by adding the square of salary. As explained earlier in the paper, a priori expectations, which are supported by preliminary graphical investigation, suggest that the relationship between asset turnover and salary can be non-monotonic. Our results provide strong evidence that the relationship between salary and asset turnover is non-linear. In particular, at low levels of salary, the relationship between salary and asset turnover is positive. However, at higher levels of salary, the relationship becomes negative. This result is consistent with studies that suggest that extremely high levels of salary usually work as an “infectious greed” and create agency conflicts between managers and shareholders. The coefficients of the remaining variables are similar to those reported in models 1 and 2. Finally, in model 4 we allow for a non-linear relationship between managerial ownership and agency costs. However, our results do not support such a relationship.

To sum up, the results of Table 5 indicate that managerial ownership (executive ownership), ownership concentration, salary (when it is at low levels), bank debt and short-term debt can help in mitigating agency problems by enhancing asset utilization. Also, the coefficients for the control variables market to book and firm size, negative and positive respectively, suggest that smaller and non- growth firms are associated with reduced asset utilization ratio and, hence, more severe agency problems between managers and shareholders.

As discussed earlier in the paper, there is a possibility that the nature of the relationship between the alternative governance mechanisms or devices and agency costs varies with firm’s growth opportunities. In Panel A of Table 6, we explore such a possibility by interacting those governance mechanisms found significant in models 1-4 with growth opportunities, proxied by market-to-book ratio. Our empirical results support the existence of two interaction effects. We find that executive ownership is an effective governance mechanism especially for high-growth firms (the coefficient EXECOWNER* MKTBOOK is positive and statistically significant). That result is consistent with the study of Lasfer (2002), which finds that the positive relationship between managerial ownership and firm value is stronger in high-growth firms. On the contrary, the coefficient SHORT_DEBT*MKTBOOK is found to be negative and statistically significant. This means that the efficiency of short-term debt in mitigating agency problems is lower for low-growth firms. A possible explanation may be that short-term debt basically mitigates

agency problems related to free cash flow. Given that high-growth firms do not suffer from severe free cash-flow problems (but mainly from asymmetric information problems), the efficiency of short-term debt as governance device decreases for these firms. A similar result is obtained in McConnell and Servaes (1995) who find that the relationship between corporate value and leverage is positive (negative) for low-growth (high-growth) firms. The idea 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) and that the positive effect will dominate the negative effect for firms with fewer positive net present value projects (i.e., low-growth firms).

[Insert Table 6 here]

Secondly, we use the variable MKTBOOK so as to split the sample into two sub-samples. We label the upper 45 per cent in terms of MKTBOOK as “high-growth firms” and the lower 45 per cent as “low-growth firms”. Then, we re-estimate our basic model for the two sub-samples separately (Table 6, panel B). The results of this exercise confirm the existence of an interaction effect between executive ownership and asset turnover. In particular, the coefficient of EXECOWNER is positive and statistically significant only in the case of the sample, which includes only high-growth firms. As far as short-term debt is concerned, it is found to be positive and statistically significant in both samples.

To summarize, the results of our multivariate analysis suggest, among others, that executive ownership and ownership concentration can work as effective governance mechanisms for the case of the UK market. These results are in line with the ones reported by the studies Ang et al. (2000) and Sign and Davidson (2003). Also, we find that, in addition to the source of debt, the maturity structure of debt can help to reduce agency conflicts between managers and shareholders. The fact that previous studies have ignored the maturity structure of debt may partly explain their contradicting results concerning the relationship between capital structure and agency costs. Furthermore, we find that salary can work as an additional mechanism that provides incentives to managers to take value-maximizing actions. However, its impact on asset turnover is not always positive i.e. the relationship between asset turnover and salary is non-monotonic. Finally, there is strong

evidence that the relationship between several governance mechanisms (e.g. executive ownership) and agency costs varies with growth opportunities.

4.3 Robustness checks

Given the significant impact of growth opportunities on agency costs (*main impact*) and on the impact of other corporate governance mechanisms (*conditional impact*), we further investigate the relationship between growth opportunities, governance mechanisms and agency costs. At first, we substitute the variable MKTBOOK with an alternative proxy for growth opportunities. The new proxy is derived after employing common factor analysis, a statistical technique that uses the correlations between observed variables to estimate common factors and the structural relationships linking factors to observed variables. The variables which are used in order to isolate latent factors that account for the patterns of colinearity are following variables:

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.

These variables have been extensively used in the literature as alternative proxies for growth opportunities and Tobin's Q. As shown in Table 7 (panel A) all these variables are highly correlated to each other. In order to make sure that principal component analysis can be employed and can provide valid results, we perform two tests in our sample, the Barlett's test and the Kaiser-Meyer-Olkin test. 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 from these tests, which are reported in panel B are encouraging and suggest that common factor analysis can be employed in our sample since it is possible for all the four proxies to measure the same "thing". Panel C presents the eigenvalues of the reduced correlation matrix of our four proxies for growth opportunities. Each factor whose eigenvalue is greater than 1 explains more variance than a single variable. Given that only one eigenvalue is greater than 1, our common factor analysis provides us with one factor that can explain firm growth opportunities. Clearly, as shown in panel D, the factor is highly

correlated with all MKTBOOK, MTBE, METBA and METD. The new variable is called GROWTH and can be used as an alternative proxy for growth opportunities. Descriptive statistics for the variable GROWTH are presented in panel D.

[Insert Table 7 here]

The results of the estimated models after using of the variable GROWTH as proxy for growth opportunities are presented in Table 8. Specifically, in panel A we re-estimate the models 3 and 5 of Table 5 but we substitute MKTBOOK for the variable GROWTH. In general, the results of such a task are similar to the ones reported previously. For instance, there is strong evidence that executive ownership, ownership concentration, salary, short-term debt and, to some extent, bank debt are effective governance mechanisms. Also, there is some evidence supporting a non-linear relationship between salary and asset turnover. Finally, our results clearly indicate that agency costs differ across high-growth and low-growth firms and most importantly that there is a significant interaction effect between growth opportunities and executive ownership. However, we can not provide any evidence for potential interaction between asset turnover and short-term debt.

[Insert Table 8 here]

In panel B of table 8, we split our sample into high-growth and low-growth firms on the basis of high and low values for the variable GROWTH. Specifically, we label the upper 45 per cent in terms of GROWTH as “high-growth firms” and the lower 45 per cent as “low-growth firms”. Then we estimate our basic model for each sub-sample separately. The results are very similar to the ones reported in Table 6 (panel B) where we apply exactly the same methodology with the variable MKTBOOK.

As an additional robustness check, we use a third proxy for growth opportunities and re-estimate the models 6 and 7 that are reported in Table 8. That proxy is a dummy variable, which takes the value of 1 if the firm is a high-growth firm and 0 otherwise. The definition used in order to distinguish between high-growth and low-growth firms is the following: Firms above the 55th percentile in terms of the variable GROWTH are called high-growth firms. Firms below the 45th percentile in terms of the variable GROWTH are called low-growth firms. Finally, firms between the 45th and 55th percentile are excluded from the sample. The results (not reported) are qualitatively similar to the ones reported in

Table 8. For example, there is evidence for the existence of an interaction effect between executive ownership and growth opportunities but not for the one between short-term debt and growth opportunities.

Also, we re-estimate the models reported in table 8 after substituting the total salary paid to executive directors for the total remuneration package paid to executive directors. We are doing so given that the total remuneration package that is paid to managers includes several other things than salary. For instance, the components of compensation structure have been increased in number during the last decade and may include annual performance bonus, fringe benefits, stock (e.g. preference shares), stock options, stock appreciation rights, phantom shares and other deferred compensation mechanisms like qualified retirement plans (see Lynch and Perry, 2003 for an analytical discussion). Once more, the results are qualitatively similar.

Finally, in Table 9 we substitute the annual sales to total assets with the ratio of SG&A expenses to total sales. As already mentioned earlier in the paper, this ratio can be used as a direct proxy for agency costs. Our results indicate that executive ownership, ownership concentration and total debt help in reducing discretionary spending and, therefore, reduce the agency conflicts between managers and shareholders. Sign and Davidson (2003) do not find any evidence to support these results. 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 statistical level. Finally, our results support the existence of an interaction effect between growth opportunities and executive ownership. However, once more, we cannot provide evidence on the existence of an interaction effect between short-term debt and growth opportunities.

[Insert Table 9 here]

5. Conclusion

In this paper 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

them and growth opportunities in determining the magnitude of these conflicts have also been tested.

Our results strongly suggest managerial ownership, ownership concentration, executive compensation, short-term debt and, to some extent, bank debt are important governance mechanisms for the UK companies. Moreover, “growth opportunities” is a significant determinant of the magnitude of agency costs. Our results suggest that high-growth firms face more serious agency problems than low-growth firms, possibly because of information asymmetries between managers, shareholders and debtholders. Finally, there is strong evidence that some governance mechanisms are not homogeneous but vary with growth opportunities. For instance, our results indicate that executive ownership is more effective for high-growth firms. This result is complementary to the ones derived by the studies of Smith and Watts (1992) and Gaver and Gaver (1993), which support the view high-growth firms prefer incentive mechanisms (e.g. managerial ownership) to monitoring mechanisms (e.g. debt).

Finally, the results of our paper suggest that the interactions between the alternative corporate governance mechanisms or devices and growth opportunities should be considered in analysing the effectiveness of these mechanisms. It seems that the impact exerted by governance mechanisms on agency costs vary with firms’ growth opportunities.

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Figure 1: Agency Costs and Managerial Ownership

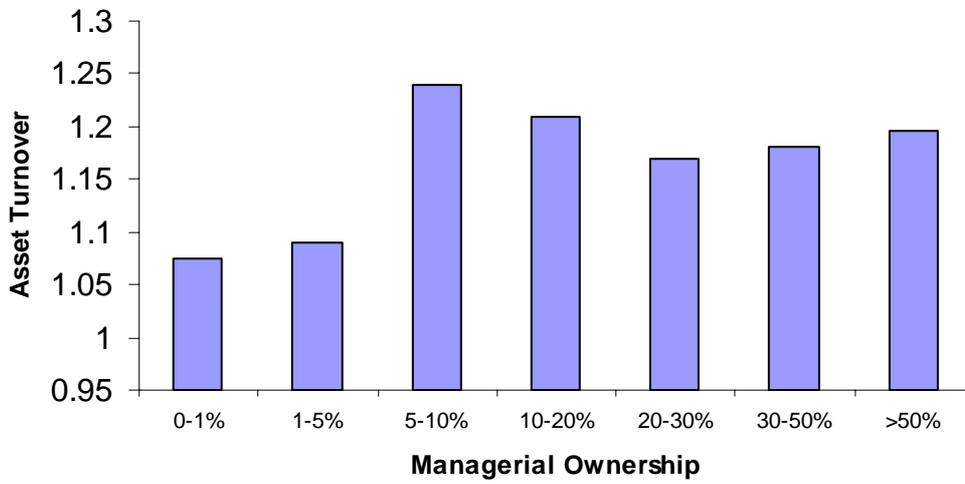


Figure 2: Agency Costs and Salary

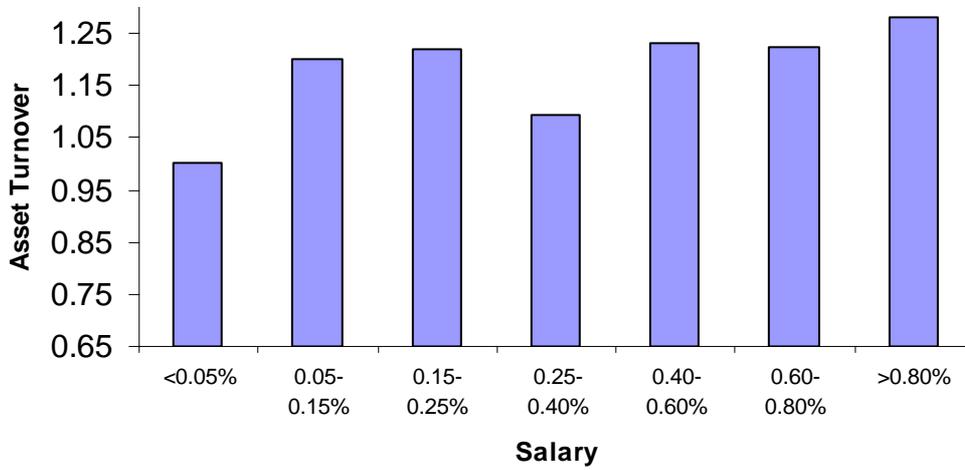


Table 1

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%.	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 option or bonus 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
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 4.3 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, detailed data on all directors of UK listed companies.

Table 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.	0.50	0	0.40	0.50	0.60	0.86
BOARDSIZE	6.97	3	5	7	8	19
CEO_DYMMY	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 (except ownership structure, board structure and compensation structure variables, which are measured in year 2002). Definitions of the variables are given in Table 1.

Table 3
Pearson Correlation matrix (N=897)

	ASSET_ TURN	SG&A†	MAN	EXECO WNER	CONCE NTR	NON- EXEC	BOARD SIZE	SALA RY	BANK	SHORT_ DEBT	TOTAL DEBT	SIZE
SG&A†	-0.272*											
MAN	0.086*	0.064										
EXECOWNER	0.082*	0.074	0.868*									
CONCENTR	0.058	-0.061	-0.242*	-0.237*								
NON-EXEC	-0.075*	0.006	-0.252*	-0.363*	0.117*							
BOARDSIZE	-0.108*	-0.014*	-0.227*	-0.226*	-0.098*	0.167*						
SALARY	0.143*	0.216*	0.232*	0.220*	0.026	-0.148	-0.191*					
BANK	0.097*	-0.103*	-0.038	-0.031	0.023	-0.047	-0.084*	-0.090*				
SHORT_DEBT	0.162*	0.092*	0.151*	0.160*	0.070*	-0.112*	-0.229*	0.147*	0.078*			
TOTALDEBT	-0.011	-0.218*	-0.179*	-0.159*	0.005	0.124*	0.151*	-0.112*	0.138*	-0.390*		
SIZE	-0.074*	-0.287*	-0.458*	0.407*	-0.119*	0.290*	0.645*	-0.454*	-0.038	-0.401*	0.305*	
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 of the variables are given in Table 1. * indicates that correlation is significant at the 5% level (two tailed). †For the case of SG&A we used 667 out of 897 observations due to missing values.

Table 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 of the variables are given in Table 1. * indicates statistical significance at the at the 10% level.

Table 5

Cross sectional regressions of agency costs on corporate governance variables, growth opportunities and other firm characteristics

Dependent Variable: <i>Ratio of Annual Sales to Total Assets</i> (inverse proxy for agency costs)					
Independent variables	Predicted	Model (1)	Model (2)	Model (3)	Model (4)
Constant		-0.234 (-0.73)	-0.852 (-2.25)**	-1.123 (-2.55)	-1.202 (-2.61)***
MAN	+	0.004 (2.12)**	-	-	-
EXECOWNER	+	-	0.005 (2.03)**	0.005 (1.96)**	0.009 (1.55)
EXECOWNER ²	-	-	-	-	-0.0007 (-0.97)
NONEXECOWNER	+	-	0.005 (1.25)	0.005 (1.17)	0.004 (1.17)
CONCENTR	+	0.003 (2.16)**	0.003 (2.09)**	0.003 (2.07)**	0.003 (2.10)**
NON-EXEC	+/-	-0.144 (-0.56)	-0.155 (-0.58)	-0.086 (-0.32)	-0.068 (-0.27)
BOARD SIZE	+/-	-0.044 (-2.78)***	-0.045 (-2.88)***	-0.048 (-3.01)***	-0.049 (-3.05)***
CEO_DUMMY	+/-	-0.128 (-1.22)	-0.104 (-0.97)	-0.078 (-0.72)	-0.084 (-0.78)
SALARY	+	6.07 (3.26)***	6.50 (3.54)***	12.25 (2.94)***	12.02 (2.91)***
SALARY ²	-	-	-	-29.45 (-1.82)*	-28.42 (-1.80)*
OPTION_DUMMY	+	0.084 (1.32)	0.091 (1.43)	0.081 (1.25)	0.079 (1.22)
BANK	+	-	0.166 (1.92)*	0.171 (1.97)**	0.173 (1.98)**
SHORT_DEBT	+	-	0.438 (3.51)***	0.425 (3.47)***	0.429 (3.48)***
TOTAL_DEBT	+	0.117 (0.50)	0.286 (1.13)	0.294 (1.17)	0.290 (1.15)
SIZE	+	0.043 (1.92)*	0.070 (3.01)***	0.086 (3.38)***	0.090 (3.44)***
MKTBOOK	+/-	-0.031 (-2.35)**	-0.031 (-2.10)**	-0.030 (-2.01)**	-0.030 (-2.05)**
Industry Dummies		Yes	Yes	Yes	Yes
R ²		0.159	0.177	0.183	0.183
Number of firms		897	897	897	897

Notes: This table presents cross-sectional regressions predicting agency costs, using the asset turnover ratio as an inverse proxy for agency costs. Model 1 is a linear model which includes only total debt ratio from our set of capital structure variables. In model 2 we incorporate two additional capital structure variables, the ratio of bank debt to total debt and the ratio of short-term debt to total debt. Also, we split managerial ownership into executive ownership and non-executive ownership. In model 3 we estimate a non-linear model by adding the square of salary. Finally, in model 4 we estimate a non-linear model by adding both the square of salary and the square of executive ownership. The independent variables are defined in Table 1. All regressions include industry dummies. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% respectively. — indicates that variable is not included in the model. For the estimation we use consistent to heteroscedasticity standard errors.

Table 6

Cross sectional regressions of agency costs on corporate governance variables, growth opportunities and other firm characteristics

Dependent Variable: <i>Ratio of Annual Sales to Total Assets</i> (inverse proxy for agency costs)				
Independent variables		<i>Panel A</i>	<i>Panel B</i>	
	Predicted	Model (5)	High- growth	Low- growth
Constant		-1.140 (-2.56)**	-0.780 (-1.72)*	0.702 (1.37)
EXECOWNER	+	0.001 (0.52)	0.008 (2.08)**	0.001 (0.32)
NONEXECOWNER	+	0.004 (1.14)	0.008 (1.22)	0.002 (0.44)
CONCENTR	+	0.002 (0.88)	0.006 (2.50)***	0.001 (0.41)
NON-EXEC	+/-	-0.068 (-0.26)	-0.174 (-0.38)	-0.375 (-1.10)
BOARD SIZE	+/-	-0.071 (-3.69)***	-0.067 (-2.81)***	-0.071 (-3.20)***
CEO_DUMMY	+/-	-0.076 (-0.71)	0.265 (1.37)	-0.130 (-0.90)
SALARY	+	13.45 (2.98)***	12.30 (2.36)**	4.94 (0.54)
SALARY ²	-	-0.12 (-0.30)	-34.33 (-1.60)	19.4 (0.16)
OPTION_DUMMY	+	0.081 (1.28)	0.165 (1.58)	0.134 (1.57)
BANK	+	0.212 (1.94)*	0.478 (3.45)***	0.068 (0.527)
SHORT_DEBT	+	0.686 (4.35)***	0.623 (3.10)***	0.490 (3.46)***
TOTAL_DEBT	+	0.244 (0.96)	0.827 (2.25)**	-0.340 (-1.18)
SIZE	+	0.092 (3.71)***	0.116 (3.71)***	0.071 (1.96)*
MKTBOOK	+/-	-0.026 (-0.46)	-	-
EXECOWNER* MKTBOOK	+/-	0.001 (1.96)**	-	-
CONCENTR* MKTBOOK	+/-	0.0006 (0.96)	-	-
BOARDSIZE* MKTBOOK	+/-	0.008 (1.57)	-	-
SHORT_DEBT* MKTBOOK	+/-	-0.130 (-2.67)***	-	-
BANK* MKTBOOK	+/-	-0.025 (-0.88)	-	-
SALARY * MKTBOOK	+/-	-0.671 (-0.57)	-	-
SALARY ² * MKTBOOK	+/-	3.634 (-0.47)	-	-
Industry Dummies		Yes	Yes	Yes
R ²		0.193	0.149	0.079
Number of firms		897	404	404

Notes: This table presents cross-sectional regressions predicting agency costs, using the SG&A ratio as a proxy for agency costs. In model 5 we include interaction terms in the regression equation. In panel B, we re-estimate our basic model for the sample of high-growth and low-growth firms separately. The independent variables are defined in Table 1. All regressions include industry dummies. t-statistic values are reported in parentheses. ***, ** and * indicate coefficient is significant at the 1%, 5% and 10% respectively. — indicates that variable is not included in the model. For the estimation we use consistent to heteroscedasticity standard errors.

Table 7

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	0.799
Kaiser-Meyer-Olkin Test	0.00

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

	Mean	Min	Median	Max
	-0.02	-0.80	-0.33	5.84

Notes: This table provides the results of the common factor analysis. MKTBOOK is 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. MTBE is the market to book value of equity. METBA is the market value of equity to the book value of assets. METD is the market value of equity plus the book value of debt to the book value of assets. * indicates that correlation is significant at the 5% level (two tailed)

Table 8

Cross sectional regressions of agency costs on corporate governance variables, growth opportunities and other firm characteristics

Dependent Variable: <i>Ratio of Annual Sales to Total Assets</i> (inverse proxy for agency costs)					
Independent variables	Predicted	<i>Panel A</i>		<i>Panel B</i>	
		Model (6)	Model (7)	High-growth	Low-growth
Constant		-1.267 (-2.74)***	-1.17 (-2.61)***	-0.782 (-1.41)	-0.699 (-1.22)
EXECOWNER	+	0.006 (2.37)**	0.006 (2.22)**	0.007 (1.94)*	-0.0004 (-0.11)
NONEXECOWNER	+	0.004 (1.09)	0.004 (1.04)	0.006 (0.86)	0.003 (0.62)
CONCENTR	+	0.004 (2.53)**	0.004 (2.53)**	0.005 (2.22)**	0.002 (0.72)
NON-EXEC	+/-	-0.035 (-0.13)	-0.059 (-0.22)	0.174 (0.36)	-0.262 (-0.73)
BOARD SIZE	+/-	-0.048 (-3.08)***	-0.047 (-3.01)***	-0.041 (-1.77)*	-0.071 (-3.09)***
CEO_DUMMY	+/-	-0.087 (-0.80)	-0.070 (-0.64)	0.103 (0.49)	-0.136 (-0.94)
SALARY	+	12.69 (2.80)***	10.51 (2.54)	14.32 (2.41)**	8.73 (0.87)
SALARY ²	-	-35.34 (-1.94)*	-9.32 (-0.55)	-43.90 (-1.81)*	-11.44 (-0.09)
OPTION_DUMMY	+	0.079 (1.17)	0.083 (1.24)	0.123 (1.24)	0.112 (1.25)
BANK	+	0.207 (1.17)	0.199 (2.17)**	0.385 (2.71)***	0.063 (0.495)
SHORT_DEBT	+	0.039 (3.18)***	0.411 (3.30)***	0.592 (2.93)***	0.288 (2.10)**
TOTAL_DEBT	+	-0.041 (-0.16)	-0.023 (-0.08)	0.545 (1.24)	-0.302 (-0.98)
SIZE	+	0.091 (3.59)***	0.086 (3.41)***	0.081 (2.59)***	0.079 (1.92)*
GROWTH	+/-	-0.061 (-2.14)**	-0.254 (-1.72)*	-	-
EXECOWNER* GROWTH	+/-	-	0.006 (3.43)***	-	-
CONCENTR*GROWTH	+/-	-	0.022 (1.42)	-	-
BOARDSIZE*GROWTH	+/-	-	0.016 (1.42)	-	-
SHORT_DEBT*GROWTH	+/-	-	-0.067 (-0.65)	-	-
BANK* GROWTH	+/-	-	0.081 (1.10)	-	-
SALARY * GROWTH	+/-	-	-2.467 (-1.27)	-	-
SALARY ² * GROWTH	+/-	-	-0.528 (-0.07)	-	-
Industry Dummies		Yes	Yes	Yes	Yes
R ²		0.186	0.199	0.24	0.21
Number of firms		844	844	380	381

Notes: This table presents cross-sectional regressions predicting agency costs, using the asset turnover ratio as an inverse proxy for agency costs. In this table we re-estimate the models presented in table 6 after having used an alternative proxy for growth opportunities (GROWTH). The independent variables are defined in Table 1. 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 9

Cross sectional regressions of agency costs on corporate governance variables, growth opportunities and other firm characteristics

Dependent Variable: <i>Ratio of SG&A expenses to Total Sales</i> (proxy for agency costs)					
Independent variables	Predicted	<i>Panel A</i>		<i>Panel B</i>	
		Model (8)	Model (9)	High-growth	Low-growth
Constant		2.550 (4.16)***	2.520 (4.28)***	1.563 (2.02)**	1.964 (3.02)***
EXECOWNER	-	-0.004 (-2.37)**	-0.003 (-2.14)**	-0.003 (-1.28)	-0.002 (-0.91)
NONEXECOWNER	-	-0.007 (-3.07)***	-0.007 (-2.84)***	-0.005 (-1.33)	-0.009 (-2.78)***
CONCENTR	-	-0.003 (-2.47)**	-0.003 (-2.42)**	-0.004 (-1.90)*	-0.009 (0.51)
NON-EXEC	+/-	0.418 (2.42)**	0.475 (2.57)***	0.420 (1.09)	0.049 (2.10)*
BOARD SIZE	+/-	0.025 (2.42)**	0.025 (1.51)	0.011 (0.42)	0.047 (1.56)
CEO_DUMMY	+/-	-0.011 (-0.179)	-0.027 (-0.47)	-0.054 (-0.45)	-0.033 (-0.40)
SALARY	-	2.836 (0.670)	3.500 (0.97)	1.777 (1.21)	-6.25 (-0.51)
SALARY ²	+	-6.87 (-0.36)	-16.23 (-0.945)	-0.871 (-0.04)	12.35 (0.91)
OPTION_DUMMY	-	-0.048 (-1.05)	-0.041 (-0.83)	0.079 (0.85)	-0.136 (-2.15)**
BANK	-	-0.055 (-0.60)	-0.061 (-0.83)	-0.057 (-0.30)	-0.008 (-0.09)
SHORT_DEBT	-	-0.181 (-1.52)	-0.216 (-1.67)*	-0.052 (-0.22)	-0.354 (-2.66)***
TOTAL_DEBT	-	-0.586 (-2.62)***	-0.580 (-2.69)***	-0.635 (-1.34)	-0.708 (-3.10)***
SIZE	-	-0.108 (-3.40)***	-0.108 (-3.61)***	-0.109 (-1.34)	-0.153 (-2.61)***
GROWTH	+/-	0.103 (2.15)**	0.356 (0.89)	-	-
EXECOWNER* GROWTH	+/-	-	-0.005 (-2.08)**	-	-
CONCENTR*GROWTH	+/-	-	-0.003 (-1.36)	-	-
BOARDSIZE*GROWTH	+/-	-	-0.016 (-0.54)	-	-
SHORT_DEBT*GROWTH	+/-	-	-0.010 (-0.05)	-	-
BANK* GROWTH	+/-	-	0.026 (0.22)	-	-
SALARY * GROWTH	+/-	-	0.605 (0.15)	-	-
SALARY ² * GROWTH	+/-	-	8.132 (0.33)	-	-
Industry Dummies		Yes	Yes	Yes	Yes
R ²		0.217	0.236	0.177	0.281
Number of firms		667	667	301	300

Notes: This table presents cross-sectional regressions predicting agency costs, using the SG&A ratio as a proxy for agency costs. The independent variables are defined in Table 1. 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