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Agency costs, corporate governance mechanisms and ownership structure in large UK publicly quoted companies: A panel data analysis

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Abstract

This paper examines the impact of governance and ownership variables on agency costs for a panel of large UK quoted companies. We use three measures of agency costs: the ratio of sales to total assets, the interaction of free cash flows and growth prospects and the number of acquisitions. We employ a range of techniques to analyse the data: fixed-effects, instrumental variables, and Tobit regressions. We find that the changes in board structures that have occurred in the post-Cadbury period have not, generally, affected agency costs. This suggests a range of mechanisms are consistent with firm value maximisation. We also find that having a nomination committee increases agency costs, which indicates that there are costs associated with certain governance mechanisms. Increasing board ownership also helps to reduce agency costs. We also find that debt reduces agency costs. Our results raise questions about the usefulness of the information sent to shareholders when firms adopt a recommended governance framework.

Classification: G30, G34
Key words: Agency costs, Governance mechanisms, Codes of Best Practice

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Agency Costs, Corporate Governance Mechanisms and ownership structure in large UK Publicly Quoted Companies: a panel data analysis

1. Introduction

Agency costs arise from the misalignment of the interests of the owners and managers of firms when the separation of ownership and control occurs, Jensen (1986). The agency model identifies a number of governance mechanisms which realign the interests of agents and principals and so reduce agency costs. Recent changes in the UK, for example through the Cadbury and Hampel Committees, have stressed the importance of corporate governance mechanisms that take specific forms. In the UK, firms are expected to adopt board structures consistent with a Combined Code of Best Practice.

In contrast Coles et al (2005), Coles et al (2007) and Boone et al (2007) argued that companies adopt a range of governance mechanisms, each of which is consistent with maximising firm value. They, therefore, question the usefulness of moving towards governance systems that identify preferred mechanisms. Such a system may force a firm to move away from a value maximising structure and to adopt a non-optimal structure.

The paper makes a number of contributions to the agency costs debate. First, we present a UK analysis of the theory that firms choose value-maximising governance structures. There is evidence of that UK firms have increasingly adopted the Combined Code. Does this change therefore represent a move away from existing value-maximising governance mechanisms to another

combination of maximising mechanisms? Alternatively, does the adoption of recommended governance structures cause firms to end up with inappropriate governance structures?

Second, the few studies that have attempted to directly measure agency costs have analysed the US context. Ang et al (2000) looked at small unquoted US companies and Singh and Davidson (2003) analysed quoted US companies. We undertake the first direct study of agency costs in large quoted UK companies.

Third, we present the first UK study of agency costs that uses panel data, a technique which enables us to isolate both cross section and time series effects. Our analysis also explicitly differentiates between fixed and random effects models. In contrast, Singh and Davidson (2003) did not distinguish between these effects but merely reported results for both approaches. This is important because their results differ between fixed and random effects. Fourth, we investigate the endogeneity issue through the use of instrumental variables. Singh and Davidson (2003) do not address this issue.

We find that there has been an increasing adoption of the key board structural recommendations of the Combined Code. In UK quoted companies, nomination committees are becoming more common, duality is rare, and becoming rarer. The percentage of non-executive directors has been increasing and now constitutes around 50% of boards.

Using a range of agency cost measures, we find that the changes to board governance mechanisms brought about by adopting the Combined Code's recommendations have had little effect on agency costs. Consistent with Coles et al (2005) and Coles et al (2007) this suggests that UK firms have been able to move costlessly to new governance structures consistent with value-maximisation. However, we find that the nomination committee, and its structure, has had an unexpectedly negative impact on agency costs. This shows that setting up such a committee creates an ineffective mechanism and is not a component of the value maximising alternatives.

This paper is structured as follows. The following section discusses the literature relating to agency costs and optimal board structures within the context of the UK Combined Code of Best Practice. It also discusses ownership and debt issues in relation to agency costs. Section 3 provides a discussion of the methodology and variable definition. Section 4 discusses the results of the study and in Section 5 some conclusions are drawn.

2. Literature review and hypotheses

This study provides a UK context for assessing the work of Demsetz and Villalonga (2001), Himmelberg (2002), Coles et al (2005), and Coles et al (2007). The traditional agency model identifies governance mechanisms that yield better governance relative to other less effective mechanisms. However, the above argue that there is a range of optimal governance structures each consistent with performance-maximising (agency cost minimising) outcomes and that performance and governance are endogenously determined.

The optimal structures model therefore assumes that the pre-Combined Code position represents a value-maximising outcome for UK firms. The adoption of the Code, with the move away from existing governance structures, will therefore enable firms to move to another value-maximising situation. Alternatively, they will incur costs as they adopt the non-optimal structures recommended by the Code. If this is the case, as McConnell (2002) argues, it may not be helpful to compel firms to adopt a prescribed set of board composition characteristics.

The null hypothesis therefore is that firms incur trivial costs associated with changing governance structures in response to the Combined Code's recommendations. In this case, the Combined Code neither harms nor benefits shareholders and so will not affect agency costs. Therefore no relationship is expected between the governance mechanisms and agency costs.

The alternative hypotheses set out in the paper are consistent with a traditional agency perspective that the Combined Code recommends 'good governance' structures as predicted by the agency model. The implicit assumption here is that governance structures that are different from the recommended structures represent a non-optimal outcome. In other words, adopting the Code's recommendations should reduce agency costs.

A. Agency costs

We directly measure agency costs in three ways; first, using the assets-to-sales ratio; second, by means of the interaction of free cash flow and growth prospects; and third, by means of the number of acquisitions undertaken by an individual firm. The assets-to-sales ratio has been used in two US studies as a direct measure of agency costs, Ang et al (2000) and Singh and Davidson (2003). Both studies argue that the ratio measures the efficiency with which management uses the firm's assets to generate sales. A high ratio shows that assets are generating significant sales and therefore suggests low agency costs. In contrast, a low ratio suggests that management is implementing policies such as poor investment decisions or consuming excessive perquisites. A low ratio therefore indicates high agency costs and inefficient asset utilisation.

This measure does, however, have a number of potential drawbacks. First, sales generation may not be synonymous with shareholder wealth because the sales may not actually come from profitable activities. Second, the sales may be generating cash flows that are being expropriated by the management and not being distributed to shareholders. Third, as Coles et al (2005) showed, productivity can vary even between firms within the same industry. Nevertheless, we argue, as Ang et al (2000) and Singh and Davidson (2003), that the measure provides a useful indicator of agency costs.

The second measure of agency costs is the interaction of free cash flow and growth prospects. Jensen (1986) proposed that agency costs are high when high free cash flows are combined with poor growth opportunities. Retaining

free cash flows reduces the ability of the capital market to monitor the decisions of management and hence large free cash flows suggest greater managerial discretion and higher agency costs.

Opler and Titman (1993) argued that firms that have high growth prospects are more likely to be better managed. They are also less likely to have excess free cash flows because the available cash will be spent on positive net present value projects. Thus, as Doukas et al (2000) argued, agency costs may be regarded as a function of the interaction of growth opportunities and free cash flow. Firms that combine low growth prospects and high free cash flow can therefore be regarded as suffering from high agency costs.

The third measure of agency costs is the number of firms acquired by a firm. Acquisitions are consistent with the managerial objectives such as power, Jensen (1986), and pay, Murphy (1985). Denis and McConnell (2003) argued that takeovers may therefore be undertaken to maximise managerial utility rather than to maximise shareholder wealth. Acquisitions are one way in which funds can be spent by managers rather than distributed to shareholders.

There is a significant literature that shows acquisitions decrease, rather than increase, shareholder wealth, particularly from the perspective of the acquirer's shareholders. For example, significant negative short run returns to acquirers have been found by Servaes (1991), Kaplan and Weisbach (1992), Walker (2000) and Houston et al (2001). There is also evidence of negative

long run returns, for example, Agrawal et al (1992), Gregory (1997), Rau and Vermaelen (1998) and Kohers and Kohers (2001). Accounting studies such as Ravenscraft and Scherer (1987), Dickerson et al (1997) and Sharma and Ho (2002) also show poorer post-acquisition performance. Finally, survey evidence such as Kelly et al (1999) found that 53% of acquisitions were believed to have destroyed value. Given the extensive evidence that indicates a lack of positive returns to acquiring firms' shareholders, we argue that acquisitions can represent agency costs as directors use funds on negative net present value projects.

B. Board characteristics

Board governance mechanisms have been the focus of a number of reports in the UK, the key ones being the Cadbury Report (1992), and the Hampel Report (1998). Out of these, and Greenbury (1996), came the Combined Code of Best Practice. In the UK, firms are expected to adopt board structures consistent with the Combined Code. As a condition of listing on the London Stock Exchange, companies must provide a statement in their annual reports about the ways in which they apply the principles expressed in the Code. This illustrates the 'comply or explain' approach of the UK. The Code identifies three key governance mechanisms, the percentage of non-executive directors, duality and the setting up of board subcommittees.

There is a substantial literature that illustrates that boards should consist of a balance of executive and non-executive directors. This suggests that existing board structures represent an optimal outcome given the costs and benefits

associated with different types of director. Raheja (2005) argued that executive directors benefit the company because of the extent of their firm-specific information. Numerous studies support the view that non-executive directors have a positive effect and find that boards dominated by non-executive directors are more likely to act in shareholders' best interests (for example, Weisbach 1988, Borokhovich et al 1996, Hermalin and Weisbach 1988, Byrd and Hickman 1992, Brickley et al 1994).

In addition, Fama (1980), Fama and Jensen (1983) and Kaplan and Reishus (1990) showed that reputation concerns, fear of lawsuits and the market for their services motivate non-executive directors to be effective monitors of the board's decisions. Brickley et al (1999) find evidence that boards take account of ability, based on previous performance, when appointing outside directors. Gilson (1990) reports that directors that resign following a firm's bankruptcy achieve fewer directorships in the future than other directors. Coles and Hoi (2003) further support the importance of reputation by finding that non-executive directors that limit managerial discretion, by means of rejecting anti-takeover provisions, are rewarded by gaining additional directorships.

The UK Combined Code of Best Practice recommended that non-executive directors should make up at least one third of the board. As a result there have been significant increases in the proportion of non-executive directors on UK boards since the Cadbury Report in 1992. For example, Dayha et al (2003) found that the percentage increased from 36.5% pre-Cadbury to 46% post-Cadbury. Therefore, the first hypothesis is:

H1: the greater the percentage of non-executive directors on the board, the lower the agency costs.

The second specific governance mechanism identified in the UK Combined Code is duality. Consistent with Jensen (1993), the Combined Code regards duality as undesirable because it potentially gives one person too much power over the decision-making process. The incidence of duality has remained much higher in the US relative to the UK. Brickley et al (1997) reported that 80.94% of their sample had the same person as CEO and chairman. Over the period, 1994-2000, Linck et al (2007) found the figure to be 58.3%. In contrast, in the UK the figure has dropped significantly from 54% in 1988, Conyon (1994), to 10% in 1996, (see table 1).

Prior research examining the impact of duality on firm performance, however, has found little relationship between the two. For example, Vafeas and Theodorou (1998) and Weir et al (2002) reported that duality did not have a detrimental effect on the performance of UK firms, a finding supported by US studies (for example Baliga et al 1996, Brickley et al 1997 and Dalton et al 1998). Consistent with the Combined Code's recommendations, however, the second hypothesis is:

H2: the separation of the posts of CEO and chairman should lead to lower agency costs.

The third specific governance mechanism is the setting up of board subcommittees. The adoption of a formal nomination committee has been

much slower than other committees such as the audit and remuneration. Weir and Laing (2000) found that 95% of quoted UK companies had a remuneration committee in 1995 and Weir et al (2002) reported that 96% had an audit committee by 1996. In contrast, only 50% had a nomination committee in 1996 (see Table 1). Given that most of the firms had an audit and remuneration committee, we focus on the nomination committee.

The nomination committee's key function is to ensure that director appointments, whether executive or non-executive, are made on merit rather than by patronage. An effective nomination committee should therefore ensure the appointment of non-executive directors whose interests are aligned with those of the shareholders and so help reduce agency costs. Therefore the third hypothesis is:

H3a: the presence of a nomination committee should reduce agency costs.

The Combined Code also proposes that the nomination committee's structure should have a majority of non-executive directors. An effective and efficient committee should therefore have a balance of executive and non-executive directors. The hypothesis therefore is:

H3b: the presence of an executive director on the nomination committee will lead to lower agency costs

In relation to CEO tenure, Jensen (1993) and Hermalin and Weisbach (1998) argued that the CEO is in a position to control the make-up of the board and hence reduce its monitoring capability. One way of addressing this is through

the length of time served as a CEO. As tenure increases, the CEO may become more entrenched, and more powerful, and less likely to pursue shareholder interests. The Combined Code recommends that all directors should be re-elected every three years. Thus:

H4: the longer the CEO tenure, the higher the agency costs.

The Combined Code stresses the importance of director quality which may be measured by his or her reputation within the business community. One indicator of reputation is the number of additional directorships held by the CEO. A CEO that runs a successful company will be highly regarded and in demand as a non-executive director for other firms. Thus sitting on additional boards is associated with promoting shareholders interests, and hence lower agency costs. Studies by Dowen (1995) and Klein (1998) found that the average number of additional directorships held by board members had a positive impact on firm performance. Therefore:

H5: the higher the number of additional directorships held by the CEO, the lower the agency costs.

C. Ownership characteristics

Within the agency model, Jensen and Meckling (1976) argue that there is a convergence of interests between shareholders and managers as the manager's ownership increases. Kren and Kerr (1997) show that board shareholdings provide an incentive to directors to act like owners in terms of the rigour of their monitoring efforts. Hence higher managerial ownership should reduce agency costs. Some support for the agency model comes from

Singh and Davidson (2003) who find weak evidence that higher managerial ownership reduces agency costs. However, they only tested the linear relationship.

A number of studies have found a non-linear relationship between internal ownership and performance which, under the agency model, indicates managerial entrenchment. For example, Morck et al (1988); McConnell and Servaes (1990); Dennis and Sarin (1999) in the US and Short and Keasey (1999) and Weir et al (2002) in the UK all find significant non-linear relationship between internal ownership and performance. The sixth hypothesis therefore consists of two parts, 6a, the agency expectation and 6b, the entrenchment prediction:

H6a: agency costs will be lower the higher the managerial ownership.

H6b: agency costs will be higher at both low and high levels of managerial ownership.

Externally owned equity which is held principally by institutions provides an additional method of monitoring the actions of management. For example, Brickley et al (1988) show that institutional investors vote more actively on anti-takeover amendments than do other shareholders, and that they are more likely to oppose proposals that appear to be harmful to shareholders. Based on the efficient monitoring hypothesis, Pound (1988) argued that institutional investors have greater expertise and resources and can monitor management at lower costs than the average, less well informed, private shareholder.

Singh and Davidson (2003) found no evidence that outside block ownership affects agency costs, measured by asset utilisation, for US public companies. This is consistent with Doukas et al (2000) who argued that institutions may have neither the time nor expertise to act as effective monitors.

In the UK, the Combined Code encourages institutions to enter into dialogue with companies and should be aware of any departure form the Code. The greater the ownership, the more involved institutions will become. Therefore:

H7: agency costs will be lower at higher levels of institutional ownership

We further test the incentive-monitoring aspects of the agency model by analysing the relative board and institutional shareholdings. By looking at the difference between institutional and board shareholdings we can gauge how far external monitoring may outweigh any potential entrenchment. No sign is predicted because we do not know which effect is stronger.

D. Debt

Jensen and Meckling (1976) argued that debt is an important influence on agency costs. Firms with higher levels of debt are more closely monitored by debt-holders and thus managers have fewer opportunities to pursue non-value maximising activities. In contrast McConnell and Servaes (1990) argued that an increase in the proportion of debt may result in increased investment in high-risk projects in an attempt to cover the interest payments. Therefore as

debt increases, there is a greater incentive for lenders to improve their monitoring and hence reduce agency costs. Thus:

 H8: agency costs will be lower the higher the indebtedness of the firm

Consistent with Singh and Davidson (2003), we control for firm size using firm sales. As Doukas et al (2000) showed, larger firms are more likely to have higher agency costs given their greater complexity and the greater informational difficulties faced by owners,

3. Data, empirical design and variable measurement

A. Data

The sample consists of the UK non-financial firms incorporated in FTSE 350 Share Index Companies. We use a panel dataset covering the period 1996 to 2000 inclusive. The data therefore cover a period when both the Code and Combined Codes applied. The minimum number of years of data for each firm is 2 years with a maximum of 5. The mean is 4.2 years, generating an unbalanced panel dataset. Financial companies were excluded from the sample because they are subject to externally imposed scrutiny from organisations such as the Financial Services Authority. After adjustments, the dataset provided 534 firm observations from a total of 128 companies. Our data are taken from a number of sources. Company annual reports provided details for non-executive director representation and whether or not the posts of CEO and chairman were separated. They also provided information on the presence of a nomination committee and its composition. They were also used to gather data on CEO tenure and the number of additional directorships

held by the CEO. The reports also provided information on board ownership and institutional ownership. Acquisition data were taken from annual reports and Extel. Data on sales and debt were taken from DataStream.

B. Empirical design

A number of techniques are utilised to test our measures of agency costs and given that the data are in a panel, we must first determine whether the fixed-effects or random effects model is appropriate. Wooldridge (2002) provides a clear discussion of the issues.

(i) Assets-to-Sales

The general fixed-effects model may be written

$$y_{it} = \alpha_i + x'_{it}\beta + u_{it}$$

where i=1….N firms, t=1….T time periods with k regressors in x_{it} and u_{it} is a normal error term and y_{it} is agency costs.

The constant α_i represents unobservable individual firm-specific effects which differ between firms and are time invariant. In a random effects model, however, the constant is a random outcome variable which has a cross section specific error component which is uncorrelated with the errors of the regressor variables. Thus

$$\alpha_i = \alpha + \varepsilon_i$$

and ε_i has a zero conditional mean.

The Hausman specification test enables us to differentiate between random and fixed effects models by testing for correlation between the x variables and

the individual random effects ε_i. It is a test of strict exogeneity. If there is no correlation, random effects should be used but if correlation exists, fixed-effects should be used,

For example, in Model 1, table 3, the Hausman test gave a chi square of 170.82 (p=0.000) so we reject the null hypothesis of no correlation and accept that the fixed-effects model is appropriate with the assets-to-sales agency cost measure.

(ii) The Q-free cash flow interaction

 As Doukas et al (2000), we construct a dummy variable whereby high growth firms are given the value zero and low growth firms the value one. High growth is defined as industry adjusted Tobin's Q greater than the sample median. This is then multiplied by the actual free cash flow figure for each firm which enables us to identify low growth-high free cash flow firms. All firms that are not low growth-high free cash flow are censored at zero whereas agency costs for the low growth-high free cash flow firms is measured by their free cash flows. An OLS would yield biased and inconsistent parameter estimates so a panel Tobit regression is used.

(iii) The number of acquisitions

This variable includes a non-trivial number of zero values because a number of firms did not make any acquisitions. Given that this is a count variable, that is it takes only non-negative integer values, we use the Poisson regression model.[1]

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[1] We are grateful to Jeffery Wooldridge for this very helpful comment.

In Model 1, table 6, the Hausman test gives a chi square of 14.04 (p=0.17), hence the random effects model is used.

(iv) Endogeneity

Himmelberg (2002) argued that corporate governance is determined exogenously by environmental factors such as legal efficiency, regulation and the rules relating to the market for corporate control. In the UK, the crucial exogenous environmental factor is the Combined Code of Best Practice. As Coles et al (2007) argue, firm-level governance must therefore be treated as endogenous. If it is not, we are estimating a reduced form model rather than a structural one.

There is a significant literature that recognises that models containing corporate governance or ownership variables suffer from endogeneity, for example, Hermalin and Weisbach (1991), Himmelberg et al (1999), Weir et al (2002) and Coles et al (2005). If present, ignoring endogeneity will yield inconsistent estimates. The particular form of endogeneity faced in governance and ownership models is simultaneity whereby agency costs and the right hand side variables may be simultaneously determined.

One solution to the endogeneity problem is to use instrumental variables, Himmelberg et al (1999). We adopt the approach used by Hermalin and Weisbach (1991), Himmelberg et al (1999), Coles et al (2007) and Linck et al (2007) and use the lagged values of the endogenous variables as instruments. In the analysis, all board structure, ownership and CEO

characteristics are treated as endogenous. An alternative possible solution to the endogeneity problem is the use of simultaneous equations. However, Coles et al (2007) report similar results when using simultaneous equations and instrumental variables, as do Hermalin and Weisbach (1991).

The Hausman test gave a chi square of 80.45 (p=0.000), for model 1, table 4, suggesting we reject the null hypothesis of no correlation and therefore report the instrumental variables fixed effects model for sales-to-assets.

C. Variable measurement

    i.   Agency costs measures

a) Sales to assets – is the natural log of one plus the industry adjusted ratio of sales-to-total assets. For each year we calculate the median of sales-to-assets based on a two digit SIC code using all firms in the FTSE AllShare Index. We then subtract the industry adjusted figure from the company figure. Industry adjusted dependent variables have been used by Gompers et al (2003). Coles et al (2007) report stronger results when using the industry adjustment.

b) Q*FCF - growth opportunities are measured by Tobin's Q which is defined as market capitalisation plus total debt divided by total assets, McConnell and Servaes (1990). For each year we calculated the median Tobin's-Q based on a two digit SIC code using all firms in the FTSE AllShare Index. The median was then subtracted to create an industry adjusted Q ratio. A Q dummy is constructed which takes the value of 1 if the firm's industry adjusted Tobin's-Q is less than the sample mean and zero if above the mean. Creating a dummy

variable for growth prospects is consistent with Doukas et al (2000). Free cash flows (FCF) are defined as operating income before depreciation minus the sum of taxes plus interest expense and dividends paid standardised by total assets, Lehn and Poulsen (1989). When multiplied, a high value for the interactive agency variable indicates higher agency costs.

c) The number of acquisitions undertaken each year by a firm.

ii.   independent variables

NOMCOM is a dummy variable that takes a value of 1 if a firm has a formal nomination committee and zero otherwise. NOMXD is a binary variable that takes a value of 1 if an executive director sits on the committee and zero otherwise. DUALITY is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors to total directors of the firm. BUSYCEO is defined as the number of boards a CEO serves on as a non-executive director. BOARDOWN is the proportion of ordinary shares owned by the board. INSTITOWN is the percentage of total ordinary shares held by institutions is in excess of three percent. Shareholdings below this level do not have to be disclosed in the UK. BOARDOWN^2 is board shareholdings squared and controls for a possible non-linear relationship. RELOWN is defined as the institutional ownership minus board ownership. DEBT is the percentage of total debt to total assets. SIZE is the natural log of firm sales.

 D. Empirical results

Table 1 reports the descriptive statistics for the data. It was found that, over the period, the percentage of firms having a formal nomination committee increased from 47% to 85%. Of those firms with a nomination committee, the percentage that had an executive director sitting on it remained around 81% over the period. The incidence of duality fell from 10% to 6%. These figures therefore show that firms had been adopting the board structures as recommended by the Combined Code. We also find that firms were increasing the percentage of non-executive directors, from 45.2% to 50%, a figure higher than specified in the Combined Code.

CEOs sat on an increasing number of boards over the period, rising from 0.73 to 0.88. CEO tenure increased slightly during the period but fell back to an average of 5.97 years by 2000 compared to an average of 6.43 years in 1998. Board shareholdings increased from 3.6% to 4.9% whereas institutional ownership fell slightly from 25.4% to 24.8%. The difference between institutional and board ownership, RELOWN, fell from an average of 22.3% to 19.3% indicating a slight increase in the ownership of boards relative to institutions. We also find that DEBT increased over the period as did SALES.

Insert table 1 about here

Table 2 reports the correlation matrix and is used to examine the relationship between all variables within the analysis. High collinearity exists between the NOMCOM and NOMXD (Pearson correlation = 0.72) and between RELOWN and institutional ownership (Pearson correlation = 0.84). These variables were therefore, included in separate regression models.

<Insert Table 2 about here>

Table 3 presents the results for the sales-to-assets measure of agency costs. A positive coefficient indicates low agency costs and a negative one high agency costs. The presence of a nomination committee is found to be negative and statistically significant for all models. We also find that having an executive director sitting on the committee is associated with higher agency costs. Agency costs are also higher the longer a CEO holds office. There is also evidence that the greater the difference between board and institutional ownership, RELOWN, the lower the agency costs. All other board structure and ownership variables remain statistically insignificant.

<Insert Table 3 about here>

In Table 4 we address the issue of potential endogeneity by means of instrumental variables. The coefficient for the NOMCOM variable is negative and statistically significant at the 1% level for all models. This finding runs counter to the argument put forward in the Combined Code which recommended that firms should establish sub-committees to ensure transparency within the process of appointing new directors. It also shows that committee adoption represents a move away from the frictionless transaction cost model and that significant costs are incurred. In economic terms, the committee coefficient of -0.23 translates into £159 million lower sales for the median firm that has a nomination committee relative to a firm not having a committee.

As model 2 shows, committees that have an executive director as a member also experienced higher agency costs, rather than the hypothesised lower costs. The presence, and structure, of an audit committee therefore

represents a change of governance structure that is consistent with a move to a potentially non-optimal situation. It may be that the board as a whole is better equipped to deal with the director nomination process. The board's overall experience, including the expertise of the executive directors, may be more able to identify better quality directors, given the other governance checks and balances.

The UK's framework regards duality as undesirable because it could give one person too much power over board decisions. The insignificant results reported in Table 4 suggest, however, that duality does not influence agency costs and is consistent with a relatively costless change in that governance mechanism.

We also find no evidence that non-executive director representation affects agency costs with NXRATIO being positive but insignificant in both equations. Table 1 shows that the average, board comprised 48% non-executive directors. This figure is well in excess of the one third proposed in the Combined Code and suggests that the higher proportion of non-executive directors does not bring clear benefits to shareholders in the form of lower agency costs.

In relation to our other measures of board effectiveness, we find that there is no association between the length of CEO tenure and agency costs. Thus the potential costs associated with longer serving CEOs is offset by the potential benefits gained by greater experience. The result is consistent with firms

choosing the tenure of their CEO according to how effective the CEO is perceived to be. This supports the Coles et al (2007) argument that firms choose their governance structures to maximise value and that this is achieved by means of a range of governance mechanisms. We also find no evidence that sitting on additional boards, BUSYCEO, is associated with higher agency costs. This suggests that CEOs are not spending too much time on outside activities and is also consistent with a value-maximising position.

In terms of ownership, we find that higher board shareholdings are associated with lower agency costs. No association is found for institutional ownership which is insignificant, as is relative ownership.

Debt is positive and statistically significant at the 1% level for all models suggesting that firms with more debt tend to have lower agency costs, which is consistent with Jensen (1986). As Singh and Davidson (2003), we find that the higher sales variable is associated with lower levels of agency costs.

<Insert Table 4 about here>

Table 5 presents the results for the Q dummy-free cash flow measure of agency costs. With this measure, a positive coefficient means high agency costs and a negative one implies low agency costs. The coefficient for nomination committee is positive and statistically significant for all Tobit regressions. NOMXD is also positive and significant. These findings are consistent with those presented in Tables 3 and 4 and indicate that firms are

being put under pressure to adopt non-value maximising structures so that they conform to the Combined Code.

We also find that the percentage of non-executive directors on a company's board and duality have no impact on agency costs. These findings are also consistent with the results reported in Tables 3 and 4. We also report that BUSYCEO and CEOTENURE are insignificant. These results suggest that any changes in these board-related mechanisms have been relatively costless in terms of transaction costs and that the new structures are consistent with value maximisation.

We also find that higher board ownership reduces agency costs, but only at the 10% level. Given the insignificant quadratic term, there is no evidence of entrenchment which suggests that incentive effects appear to work as proposed by Jensen and Meckling (1976). The INSTITOWN variable is positive and significant which suggests that at higher levels of institutional ownership, institutions become less effective in monitoring board actions. The finding that higher levels of institutional ownership may not mitigate the agency cost problem is consistent with Doukas et al (2000).

The RELOWN variable provides a measure of the effectiveness of internal incentive effects as opposed to external monitoring. Its coefficient is positive and significant which indicates that the greater the extent to which institutional ownership exceeds board ownership, the poorer the monitoring and the higher the agency costs.

<Insert Table 5 about here>

The results for our third measure of agency costs are reported in Table 6. Positive values indicate higher agency costs. We find that the nomination committee remains positive and significant and hence is associated with increases agency costs, as does the presence of an executive director on the committee. These findings are consistent with our other measures of agency costs. They show that firms appear to be moving away from company-specific value-maximising governance structures and adopting less effective structures. We also find that increasing the percentage of non-executive directors significantly reduces agency costs. This effect is not identified in our other measures of agency costs and may indicate that boards with significant non-executive director representation view acquisitions as a good thing. For example, they may be regarded as a means of reducing uncertainty or as a means of becoming more competitive. On the other hand, our results indicate ownership, DUALITY, BUSYCEO and CEOTENURE are not statistically significant.. Finally, we find that increased debt is associated with lower agency costs.

Insert Table 6

5. Conclusion remarks

In this paper we analyse the relationship between agency costs and corporate governance characteristics within large UK quoted companies. Although, as Singh and Davidson (2003), we report that the results are sensitive to the definition of agency costs, we also find consistent results across the different

measures. Our modelling is therefore identifying key elements of the exogenous environment.

In the UK, quoted firms are expected to 'comply or explain' their internal governance board structures against a Combined Code of Best Practice benchmark. Our data show that firms are moving towards compliance and hence the panel nature of the data can identify how this movement affects agency costs. The results therefore offer insights into the usefulness of a governance system that should result in firms having similar structures.

Using a number of agency cost measures, we find that changes in board structural characteristics have little, or no, effect on agency costs in the UK. This shows that firms have moved to new structures that are consistent with value maximisation. This supports the theoretical framework proposed by Coles et al (2005), Coles et al (2007) and Boone et al (2006) that there is a range of board structures that are consistent with value-maximisation and that adopting the Combined Code has brought about little change in the effectiveness of governance structures. The process of 'box-ticking' has, generally, neither harmed nor benefited shareholders but has left them unaffected.

This raises the issue about the extent to which firms should be allowed to determine their own preferred governance structures. For example, we find that one of the key governance mechanisms identified in the Combined Code, the setting up of a nomination committee, is associated with higher, rather

than lower, agency costs. Further, having a majority of the committee being non-executive directors is also associated with higher costs. It may be that this specific governance mechanism is, given the other mechanisms in place, more effective if undertaken by the whole board. The knowledge and expertise of the executive directors should be regarded as a positive rather than a negative. Given that UK firms have boards consisting of, on average, almost half non-executive directors, it will be harder for the executive directors to force through nominations unacceptable to the board as a whole. A committee that has a minority of executive directors will lose a significant element of expert knowledge.

These findings show that the increasing adoption of recommended governance structures provides shareholders with potentially greater information asymmetry issues. Evidence of increasing compliance appears to be consistent with good governance but widespread adoption makes it more difficult to ascertain the impact of governance on agency costs. This may be because firms have adopted a 'tick box' approach to governance knowing that compliance will send a message to shareholders that accountability and transparency are being taken seriously. Thus shareholders of firms with the appropriate internal governance structures do not appear to benefit from lower agency costs.

There is also some evidence that higher board ownership reduces agency costs which, consistent with Coles et al (2005), suggests that model does not account for all of the relevant exogenous factors affecting agency costs. A

similar conclusion may be drawn about debt given our finding that it reduces agency costs.

The study identifies a number of areas for further study. First, the UK system makes it difficult for firms not to adopt the Code of Best Practice. Therefore a deeper understanding of the potential advantages of a less prescriptive system may provide important insights into the issue corporate governance. Second, the results are generally consistent with the theory that understanding the exogenous environment is crucial to interpreting the agency cost-governance relationship. However, the results also show that further work is required to develop our understanding of the environmental factors.

REFERENCES

Agrawal, A., Jaffe, J., & Mandelker, G. (1992) The post-merger performance of acquiring firms: a re-examination of an anomaly, Journal of Finance, 47, 1605-1621

Ang, J., Cole, R., & Lin, J. (2000) Agency costs and ownership structure, The Journal of Finance, Vol. 55, Is. 1, pp: 81-106.

Baliga, B., Moyer, R., & Rao (1996) CEO duality and firm performance: what's the fuss? Strategic Management Journal, 17, 41-53.

Boone, A., Field, L., Karpoff, J., & Raheja, C. (2007) The determinants of corporate board size and composition: An empirical analysis Journal of Financial Economics (forthcoming)

Borokhovich, K. A., Parrino, R. & Trapani, T. (1996) Outside Directors and CEO Selection, Journal of Financial and Quantitative Analysis, Vol. 31, Is. 3, pp: 337-355.

Brickley, J. A., Coles, J. L., & Terry, R. L. (1994) Outside directors and the adoption of poison pills, Journal of Financial Economics, Vol. 34, pp: 371-390.

Brickley, J., Coles, J. & Jarrell, G. (1997) Leadership Structure: Separating the CEO and Chairman of the Board, Journal of Corporate Finance, Vol. 3, pp: 189–220.

Brickley, J., Lease, R. C. & Smith, C. W. (1988) Ownership structure and voting on antitakeover amendments, Journal of Financial Economics, Vol. 20, pp: 267-291.

Brickley, J.,Coles, J., & Linck, J. (1999) What Happens To CEOs After They Retire? New Evidence on Career Concerns, Horizon Problems, and CEO Incentives. Journal of Financial Economics , 52, 341-377

Byrd, J. W. & Hickman, K. A. (1992) Do outside directors monitor managers? Journal of Financial Economics, Vol. 32, pp: 195-221.

Cadbury Committee (1992) Report of the Committee on the Financial Aspects of Corporate Governance, London: Gee.

Coles, J., & Hoi, C. (2003) New evidence on the market for directors: board membership and Pennsylvania Senate Bill 1310, Journal of Finance, LVIII, 197-230.

Coles, J., Lemmon, M., & Mescke, J. (2005) Structural models and endogeneity in corporate finance: the link between managerial ownership and corporate performance, Arizona State University working paper.

Coles, J., Daniel, N., & Naveen, L. (2007) Boards: does one size fit all? Journal of Financial Economics (forthcoming)

Conyon, M. (1994) Corporate governance changes in UK companies between 1988 and 1993, Corporate Governance: An International Review, 2, 87-99.

Dalton D. R., Daily C. M., Ellstrand A. E., & Johnson J. L. (1998) Meta-analytic reviews of board composition, leadership structure and financial performance. Strategic Management Journal, Vol. 19, Is. 3, pp: 269–290.

Dayha, J., McConnell, J. & Travlos, N. (2003) The Cadbury Committee, corporate performance and top management turnover, Journal of Finance, LVII, 461-483.

Demsetz, H., & Villalonga, B. (2001) Ownership structure and corporate performance, Journal of Corporate Finance, 7, 209-233.

Denis, D., & McConnell (2003) International corporate governance, Journal of Financial and Quantitative Analysis, 38, 1-36.

Denis, D. J. & Sarin, A. (1999) Ownership and board structure in publicly traded corporations, Journal of Financial Economics, Vol. 52, Is. 2, pp: 187-223.

Dickerson, A., Gibson, H., & Tsakalotos, E. (1997) The impact of acquisitions, on company performance: evidence from a large panel of IK firms, Oxford Economic Papers, 49, 344-361.

Doukas, J., Kim, C., & Pantzalis, C. (2000) Security Analysts, Agency Costs, and Company Characteristics, Financial Analysts Journal, Vol. 56, Is. 6, pp: 54-63.

Dowen, R. (1995) Board of directors quality and firm performance, International Journal of the Economics of Business, Vol. 2, Is. 1, pp: 123-132.

Fama, E. F. (1980) Agency problems and the theory of the firm, Journal of Political Economy, Vol. 88, pp: 288-307.

Fama, E. F. & Jensen, M. C. (1983) Separation of ownership and control, Journal of Law and Economics, Vol. 26, pp: 327-349.

Gilson, S. (1990) Bankruptcy, Boards, Banks, and Blockholders. Journal of Financial Economics 27, 355-387

Gompers, P. Ishii, J., & Metrick, A. (2003) Corporate governance and equity prices, Quarterly Journal of Economics, 118, 107-15

Greenbury, R. (1996) Directors' Remuneration Report of the Study Group Chaired by Sir Richard Greenbury, Gee, London.

Gregory, A. (1997) An examination of the long run performance of UK acquiring firms, Journal of Business Finance and Accounting, 24, 971-1002.

Hampel, R. (1998) Committee on Corporate Governance: Final Report. Gee, London.

Hermalin, B. E. & Weisbach, M. S. (1988) The determinants of board composition, Rand Journal of Economics, Vol. 19, pp: 589-606.

Hermalin, B. E. & Weisbach, M. S. (1991) The effects of board composition and direct incentives on firm performance, Financial Management, Vol 21, pp: 101-112.

Hermalin, B. E. & Weisbach, M. S. (1998) Endogenously chosen boards of directors and their monitoring of the CEO, The American Economic Review, Vol. 88, Is. 1, pp: 96-118.

Himmelberg, C. (2002) Measuring the real effects of corporate governance, working paper, Columbia University.

Himmelberg, C., Hubbard, R. & Palia, D. (1999) Understanding the determinants of managerial ownership and the link between ownership and performance, Journal of Financial Economics, Vol 53, pp 353-384.

Houston, J., James, C., & Ryngaert, M. (2001) Where do merger gains come from? Bank mergers from the perspective of insiders and outsiders, Journal of Financial Economics, 60, 285-311.

Jensen, M. C. (1986) Agency costs of free cash flow, corporate finance and takeovers, American Economics Review, Vol 76, pp:323-339.

Jensen, M. C. (1993) The modern industrial revolution, exit, and the failure of internal control systems, Journal of Finance, Vol. 43, Is. 3, pp: 831-880.

Jensen, M., & Meckling, W. (1976) Theory of the firm: Managerial behaviour, agency costs and ownership structure, Journal of Financial Economics, Vol. 3, pp: 305-360

Kaplan, S. N. & Reishus, D. (1990) Outside directorships and corporate performance, Journal of Financial Economics, Vol. 27, Is. 2, pp: 389-410.

Kaplan, S., & Weisbach, M. (1992) The success of acquisitions: evidence from divestitures, Journal of Finance, 47, 107-138.

Kelly, J., Cook, C., & Spitzer, D. (1999) Unlocking shareholder value: the keys to success, New York, KPMG LLP.

Klein, A. (1998) Firm Performance and Board Committee Structure, Journal of Law & Economics, 1998, Vol. 41, issue 1, pp 275-303.

Kohers, N., & Kohers, T. (2001) Takeovers of technology firms: expectations vs. reality, Financial Management, 30, 35-54.

Kren, L. & Kerr, J. (1997) The effects of outside directors and board shareholdings on the relation between CEO compensation and firm performance, Accounting and Business Research, Vol. 4, pp: 297-309.

Lehn, K. & Poulsen, A. (1989) Free cash flow and stock holder gains in going private transactions, Journal of Finance, Vol. 44, pp: 774-789.

Linck, J., Netter, J. & Yang, T. (2007) The determinants of board structure, Working Paper, University of Georgia,

McConnell, J. (2002) Outside directors, Keynote address to annual meeting of the Eastern Finance Association.

McConnell, J. J. & Servaes, H. (1990) Additional evidence on equity ownership and corporate value, Journal of Financial Economics, Vol. 27, pp: 595-612.

Morck, R., Shleifer, A. & Vishny, R. (1988) Management ownership and market valuation: An empirical analysis, Journal of Financial Economics, Vol. 20, pp: 293-315.

Murphy, K. (1985) Corporate performance and managerial remuneration: an empirical analysis. Journal of Accounting and Economics, 7, 11-42.

Opler, T. & Titman, S. (1993) The determinants of leveraged buyout activity: free cash flow vs financial distress costs, Journal of Finance, XLVIII, pp:1985-1999.

Pound, J. (1988) Proxy contests and the efficiency of shareholder oversight, Journal of Financial Economics, Vol. 20, pp: 237-265.

Raheja, C. (2005) The interaction of insiders and outsiders in monitoring: a theory of corporate boards, Journal of Financial and Quantitative Analysis, 40, 283-306.

Rau, R., & Vermaelen, T. (1998) Glamour, value and post-acquisition performance of acquiring firms, Journal of Financial Economics, 49, 223-253.

Ravenscraft, D., & Scherer, F. (1987) Life after takeovers, Journal of Industrial Economics, 36, 147-156.

Servaes, H. (1991) Tobin's Q and the gains from takeovers, Journal of Finance, 46, 409-419.

Sharma, D., & Ho, J. (2002) The impact of acquisitions on operating performance: some Australian evidence, Journal of Business Finance and Accounting, 29, 155-200.

Short, H. & Keasey, K. (1999) Managerial ownership and the performance of firms: evidence from the UK, Journal of Corporate Finance, Vol 5, pp. 79-101.

Singh, M. and Davidson, W. A. (2003) Agency costs, ownership structures and corporate governance mechanisms, Journal of Banking and Finance, Vol 27, pp:793-816.

Vafeas, N. & Theodorou, E. (1998) The relationship between board structure and firm performance in the UK, British Accounting Review, Vol. 30, Is. 4, pp: 383-407.

Walker, M. (2000) Corporate takeovers, strategic objectives and acquiring firm shareholder wealth, Financial management, 29, 53-66.

Weir, C., & Laing, D. (2000) The performance-governance relationship: the effects of Cadbury compliance on UK quoted companies, 4, 265-281.

Weir, C., Laing, D. & McKnight, P. (2002) Internal and external governance mechanisms: their impact on the performance of large UK public companies, Journal of Business Finance and Accounting, Vol. 29, Is. 5&6, pp: 579-611.

Weisbach, M. S. (1988) Outside directors and CEO turnover, Journal of Financial Economics, Vol. 20, Is. 1, pp: 431-460.

Wooldridge, J. (2001) Econometric analysis of cross section and panel data, MIT Press.

Table 1. Descriptive Statistics

Descriptive statistics for selected board and ownership structure variables for the FTSE-350 companies over the period of 1996-2000. Data are collected from Annual Reports, DataStream and FAME (Financial Analysis Made Easy) and the net number of observations is 534. NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise; and is the percentage of firms with key directors sitting on established nomination committees. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the CEO as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. Sales is total sales.

Variables	1996 Mean (Median)	1997 Mean (Median)	1998 Mean (Median)	1999 Mean (Median)	2000 Mean (Median)
NOMCOM	0.470	0.580	0.720	0.860	0.850
	(0.000)	(1.000)	(1.000)	(1.000)	(1.000)
NOMXD	0.809	0.810	0.764	0.826	0.824
	(1.000)	(1.000)	(1.000)	(1.000)	(1.000)
DUALITY	0.100	0.120	0.060	0.070	0.060
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NXRATIO	0.452	0.469	0.487	0.488	0.500
	(0.440)	(0.500)	(0.470)	(0.500)	(0.500)
BUSYCEO	0.730	0.740	0.740	0.780	0.880
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CEOTENURE	6.110	6.330	6.430	6.250	5.970
	(4.000)	(4.000)	(4.000)	(4.000)	(4.000)
BOARDOWN	0.036	0.041	0.040	0.050	0.049
	(0.005)	(0.003)	(0.004)	(0.003)	(0.003)
INSTITOWN	0.254	0.253	0.261	0.252	0.248
	(0.232)	(0.242)	(0.247)	(0.228)	(0.221)
RELOWN	0.223	0.216	0.227	0.205	0.193
	(0.221)	(0.190)	(0.210)	(0.195)	(0.180)
DEBT	0.194	0.191	0.225	0.235	0.251
	(0.184)	(0.178)	(0.231)	(0.241)	(0.260)
SALES*	1,526	1,487	1,995	2,124	3,361
	(582)	(540)	(1,015)	(1,212)	(1,454)

*£000,000 omitted.

Table 2. Pearson Correlations Matrix

.NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the Board as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. LnSALES is the natural log of firm total sales.

Variables	NOMCOM	NOMXD	Duality	NXRATIO	BUSYCEO	CEO Tenure	RELOWN	Board Own	Board Own^2	INSTITO WN	Debt	LnSALES
NOMCOM	1											
NOMXD	0.723**	1										
DUALITY	-0.086*	0.003	1									
NXRATIO	0.204**	0.146**	-0.101*	1								
BUSYCEO	0.214**	0.209**	0.097*	0.102**	1							
CEOTENURE	-0.167**	-0.022	0.265**	-0.086*	-0.013	1						
RELOWN	-0.089*	-0.055	0.059	-0.130**	-0.092*	0.041	1					
BOARDOWN	-0.193**	-0.093	0.165**	-0.088**	-0.206**	0.190**	0.473**	1				
BOARDOWN^2	-0.129**	-0.057	0.171**	-0.063	-0.138**	0.120**	0.417**	0.921**	1			
INSTITOWN	0.002	0.011	0.028	0.095*	-0.020	0.062	-0.840**	0.060	0.074	1		
DEBT	0.009	0.001	0.016	0.168**	0.223**	-0.022	-0.215**	-0.175**	-0.126**	0.137**	1	
LnSALES	0.020	0.006	0.005	0.163**	0.233**	-0.026	-0.190**	-0.162**	-0.111**	0.115**	0.270**	1

 * - Correlation is significant at the 0.05 level (2-tailed), **- Correlation is significant at the 0.01 level (2-tailed)

Table 3. Panel-Data Fixed-effects Regressions of Governance Mechanisms and Agency Costs – Sales to Assets

The dependent variable is the industry adjusted natural log of sales to total assets (S/A), defined as the firms total sales scaled by the firms total assets. The predicted sign of the relation between dependent and independent variables are indicated in the third column. NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the Board as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. LnSALES is the natural log of firm total sales. This model provides t-statistics which are in parentheses.

Variables	AGENCY lnS/A Model 1	AGENCY lnS/A Model 2	AGENCY lnS/A Model 3	AGENCY lnS/A Model 4
Intercept	-10.388***	-10.518***	-10.358***	-10.507***
	(7.13)	(7.28)	(7.09)	(7.24)
NOMCOM	-0.228***	-0.227***	__	__
	(3.40)	(3.41)		
NOMXD	__	__	-0.217***	-0.214***
			(2.88)	(2.86)
DUALITY	-0.133	-0.129	-0.128	-0.124
	(0.43)	(0.79)	(0.77)	(0.75)
NXRATIO	0.119	0.115	0.101	0.095
	(0.50)	(0.49)	(0.42)	(0.40)
BUSYCEO	-0.010	0.012	0.012	0.010
	(0.32)	(0.32)	(0.31)	(0.31)
CEOTENURE	-0.018***	-0.018***	-0.018***	-0.017***
	(2.73)	(2.68)	(2.68)	(2.62)
BOARDOWN	-1.282	__	-1.321	__
	(1.10)		(1.13)	
BOARDOWN^2	1.469	__	1.541	__
	(0.67)		(0.70)	
INSTITOWN	0.253	__	0.222	__
	(1.13)		(0.99)	
RELOWN	__	0.361*	__	0.338*
		(1.82)		(1.70)
DEBT	3.627***	3.581***	3.673***	3.625***
	(3.99)	(3.95)	(4.02)	(3.99)
LnSALES	0.487***	0.491***	0.484***	0.489***
	(6.08)	(6.16)	(6.03)	(6.11)
Observations	534	534	534	534
Groups@	128	128	128	128
R^2 (Overall)	0.370	0.366	0.358	0.376

*** - significant at .01 level, ** - significant at .05 level, *- significant at .1 level
Note: @ unbalanced panel.

Table 4. Panel-Data Fixed-effects Instrumental Variable Regressions of Governance Mechanisms and Agency Costs – Sales to Assets

The dependent variable is the industry adjusted natural log of sales to total assets (lnS/A), defined as the firms total sales scaled by the firms total assets. The predicted sign of the relation between dependent and independent variables are indicated in the third column. NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the Board as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. LnSALES is the natural log of firm total sales. This model provides t-statistics which are in parentheses.

Variables	AGENCY lnS/A Model 1	AGENCY /nS/A Model 2	AGENCY lnS/A Model 3	AGENCY lnS/A Model 4
Intercept	-8.668***	-8.985***	-8.810***	-9.150***
	(6.14)	(6.40)	(6.27)	(6.55)
$NOMCOM_{iv}$	-0.237***	-0.241**	__	__
	(3.55)	(3.58)		
$NOMXD_{iv}$	__	__	-0.296***	-0.304**
			(3.97)	(4.06)
$DUALITY_{iv}$	-0.136	-0.060	-0.151	-0.081
	(0.79)	(0.35)	(0.88)	(0.48)
$NXRATIO_{iv}$	0.091	0.115	0.132	0.158
	(0.35)	(0.44)	(0.51)	(0.60)
$BUSYCEO_{iv}$	0.011	0.004	0.012	0.006
	(0.30)	(0.12)	(0.33)	(0.17)
$CEOTENURE_{iv}$	-0.014	-0.012	-0.015*	-0.0213
	(1.58)	(1.38)	(1.67)	(1.49)
$BOARDOWN_{iv}$	-1.876	__	-1.896	__
	(1.61)		(1.63)	
$BOARDOWN^2_{iv}$	4.964**	__	4.931**	__
	(2.30)		(2.30)	
$INSTITOWN_{iv}$	0.233	__	0.172	__
	(0.98)		(0.73)	
$RELOWN_{iv}$	__	-0.040	__	0.002
		(0.19)		(0.01)
DEBT	4.582***	4.388***	4.482***	4.276***
	(5.09)	(4.89)	(5.01)	(4.79)
LnSALES	0.389***	0.407***	0.398***	0.417***
	(5.00)	(5.24)	(5.13)	(5.38)
Observations	408	408	408	408
Groups@	128	128	128	128
R^2 (Overall)	0.427	0.434	0.412	0.420

iv = Instrumental Variables

*** - significant at .01 level, ** - significant at .05 level, *- significant at .1 level

Table 5. Panel-Data Tobit Regressions Results of Governance Mechanisms and Agency Costs – Tobin's-Q and Free Cash Flows

The dependent variable is QDummyxFCF, where the Q Dummy takes the value of 1 if the firm's Tobin's-Q (industry adjusted) is less than the sample median and zero otherwise. FCF represents Free Cash Flows which is based on Lehn and Poulsen's model (Journal of Finance, 1989), where FCF is scaled by market capitalisation. The predicted sign of the relation between dependent and independent variables are indicated in the third column. NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the Board as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. LnSALES is the natural log of firm total sales. This model is for censored outcomes of which z-statistics are in parentheses.

Variables	AGENCY QDummy Model 1	AGENCY QDummy Model 2	AGENCY QDummy Model 3	AGENCY QDummy Model 4
Intercept	-0.504*	-0.482*	-0.559**	-0.543*
	(1.68)	(1.72)	(2.01)	(1.89)
NOMCOM	0.028**	0.035***	__	__
	(2.36)	(2.61)		
NOMXD	__	__	0.031**	0.033***
			(2.43)	(2.61)
DUALITY	0.006	0.022	0.008	0.016
	(0.28)	(0.99)	(0.69)	(0.51)
NXRATIO	-0.044	-0.015	-0.030	-0.019
	(1.07)	(0.37)	(0.74)	(0.39)
BUSYCEO	-0.007	-0.008	-0.007	-0.050
	(0.80)	(1.19)	(0.86)	(0.39)
CEOTENURE	-0.001	-0.001	-0.001	-0.001
	(0.10)	(0.66)	(0.14)	(0.84)
BOARDOWN	-0.353*	__	-0.254	__
	(1.69)		(1.22)	
BOARDOWN^2	0.171	__	0.034	__
	(0.32)		(0.06)	
INSTITOWN	0.077*	__	0.070*	__
	(1.83)		(1.77)	
RELOWN	__	0.100***	__	0.096*
		(2.82)		(1.82)
DEBT	0.125	0.188	0.107	0.140
	(0.70)	(1.00)	(0.61)	(0.73)
LnSALES	0.023	0.020	0.026*	0.024
	(1.43)	(1.27)	(1.68)	(1.43)
Observations	534	534	534	534
Groups	128	128	128	128
Wald Chi^2	91.48	74.30	90.13	70.64
Log-Likelihood	114.31	112.12	114.08	112.11

*** - significant at .01 level, ** - significant at .05 level, *- significant at .1 level

Table 6. Panel-Data Random Effects Model Poisson Regressions Results of Governance Mechanisms and Agency Costs – Bidder Acquisitions

The dependent variable is the number of acquisitions undertaken by the bidding firm. The predicted sign of the relation between dependent and independent variables are indicated in the third column. NOMCOM (Nomination Committee) is a dummy variable that takes a value of 1 if such committee is formed and 0 otherwise. NOMXD is a dummy variable that takes the value of 1 if a key executive director sits on the committee and 0 otherwise. Duality is a binary variable that takes a value of 1 if the posts of CEO and Chairman are undertaken by the same person and 0 otherwise. NXRATIO is the percentage of non-executive directors on the board of each firm. BUSYCEO is the number of boards the CEO serves as a non-executive director. CEO tenure is the number of years served as the CEO of the company. BOARDOWN (Board ownership) is the number of ordinary shares held by the Board as a proportion from total ordinary shares of the company. INSTITOWN (Institutional Ownership) is the number of shares held by institutions as a proportion from total ordinary shares of the company. RELOWN is measured by the difference between institutional ownership and board ownership. Debt is the percentage of total debt to total assets. LnSALES is the natural log of firm total sales. z-statistics are in parentheses.

Variables	Bidder Acquisitions Model 1	Bidder Acquisitions Model 2	Bidder Acquisitions Model 3	Bidder Acquisitions Model 4
Intercept	-5.962**	-5.837**	-6.001**	-5.883**
	(2.03)	(1.99)	(2.05)	(2.01)
NOMCOM	0.529***	0.520***	—	—
	(3.80)	(3.77)		
NOMXD	—	—	0.466***	0.467***
			(3.45)	(3.47)
DUALITY	-0.184	-0.239	-0.231	-0.276
	(0.62)	(0.82)	(0.78)	(0.95)
NXRATIO	-1.212***	-1.224***	-1.180***	-1.191***
	(3.10)	(3.14)	(3.02)	(3.05)
BUSYCEO	0.008	0.002	0.004	-0.001
	(0.15)	(0.03)	(0.08)	(0.03)
CEOTENURE	0.006	0.007	0.005	0.006
	(0.52)	(0.60)	(0.43)	(0.50)
BOARDOWN	4.024	—	3.465	—
	(1.42)		(1.25)	
BOARDOWN^2	-10.242	—	-9.113	—
	(1.38)		(1.25)	
INSTITOWN	-0.019	—	-0.038	—
	(0.01)		(0.09)	
RELOWN	—	0.060	—	0.055
		(0.16)		(0.14)
DEBT	-2.936*	-2.939*	-3.067*	-3.032*
	(1.65)	(1.65)	(1.72)	(1.70)
LnSALES	0.350**	0.349**	0.361**	0.357**
	(2.16)	(2.15)	(2.23)	(2.21)
Observations	469	469	469	469
Groups	115	115	115	115
Wald Chi^2	32.99***	31.80***	30.42***	29.59
Log-Likelihood	-745.80	-746.96	-747.19	-748.13

*** - significant at .01 level, ** - significant at .05 level, *- significant at .1 level