DIVIDEND POLICY, CORPORATE GOVERNANCE AND THE MANAGERIAL ENTRENCHMENT HYPOTHESIS: AN EMPIRICAL ANALYSIS

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ABSTRACT

This paper analyses the agency explanation for the cross-sectional variation of corporate dividend policy in the UK by looking at the managerial entrenchment hypothesis drawn from the agency literature. Consistent with predictions, a significant U-shaped relationship between dividend payout ratios and insider ownership is observed for a large (exceeding 600 firms) sample of UK companies and two distinct periods. These results strongly suggest the possibility of managerial entrenchment when insider ownership reaches a threshold of around 30%. Evidence is also presented that non-beneficial holdings by insiders can lead to entrenchment in conjunction with shares held beneficially.

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1. Introduction

This paper provides an empirical analysis of the agency theory explanation for the cross-sectional distribution of dividend payouts in the United Kingdom (UK). This perspective asserts that cash payments to shareholders may help to reduce agency problems either by increasing the frequency of external capital raising and associated monitoring by investment bankers and investors (Easterbrook, 1984), or by eliminating free cash-flow (Jensen, 1986).

Although other theories have been proposed to explain cross-sectional dividend policy (notably those based on signalling and tax clienteles), the existing empirical literature typically finds that the observed dividend behaviour is consistent with more than a single theory, and therefore usually fails to dismiss alternative explanations. However, the managerial entrenchment hypothesis taken from the agency literature offers a distinctive set of predictions that cannot be found in other competing stories for the explanation of cross-sectional dividend policy behaviour. Consistent with such hypothesis, this paper finds evidence of a strong U-shaped relationship between dividend payouts and insider ownership in the UK. Specifically, these findings show that after a critical entrenchment level estimated in the region of 30%, the coefficient of insider ownership changes from negative to positive. In addition, the analysis suggests that directors' control over non-beneficial shares managed on behalf of other shareholders (typically the company's pension fund, charity trusts or employee stock ownership plans) can also lead to managerial entrenchment.

The remainder of this paper is organised as follows. Section 2 presents a summary of previous literature and outlines the research motivation. Section 3 describes the research design, sampling procedures and data characteristics. Main empirical results and several robustness checks are reported in Sections 4 and 5, respectively. The final section summarises the paper and its main conclusions

2. Previous literature and research motivation

Agency theory view of dividend policy

Easterbrook (1984) argues that dividends play a role in controlling equity agency problems by facilitating primary capital market monitoring of the firm's activities and performance. The reason is that higher dividend payouts increase the likelihood that the firm will have to sell common stock in primary capital markets. This in turn leads to an investigation of management by investment banks, securities exchanges and capital suppliers. Studies by Baghat (1986), Smith (1986), Hansen and Torregrosa (1992) and Jain and Kini (1999) have recognised the importance of monitoring by investment bankers in new equity issues. Recent theoretical work by Fluck (1998), and Myers (2000) also presents agency-theoretic models of dividend behaviour where managers pay dividends in order to avoid disciplining action by shareholders.

Additionally, Jensen (1986) sees expected, continuing dividend payments as helping to dissipate cash which might otherwise have been wasted in non-value maximising projects, therefore reducing the extent of overinvestment by managers.

In Rozeff's (1982) model, an optimal dividend policy is the outcome of a trade-off between equity agency costs and transaction costs. Consistent with such trade-off model, Rozeff reports evidence of a strong relationship between dividend payouts and a set of variables proxying for agency and transaction costs in a large sample composed of one thousand US firms for the period 1974 to 1980.

A cross-sectional analysis of dividend policy by Crutchley and Hansen (1989) also shows results consistent with dividend policy acting as a corporate monitoring vehicle and with substitution effects between dividend payments and two other control mechanisms, managerial ownership and leverage.

The managerial entrenchment hypothesis

Following Jensen and Meckling (1976), when managers hold little equity and shareholders are too dispersed to take action against non-value maximisation behaviour, insiders may deploy corporate assets to obtain personal benefits, such as shirking and perquisite consumption. As insider ownership increases, agency costs may be reduced since managers bear a larger share of these costs. However, as Demsetz (1983) and Fama and Jensen (1983) point out, managers holding a substantial portion of a firm's equity may have enough voting power to ensure that their position inside the company is secure. As a result, they may become to a great extent insulated from external disciplining forces such as the takeover threat or the managerial labour market. Stulz (1988) presents a model where high ownership by managers can effectively preclude the possibility of a takeover, in accordance with an entrenchment hypothesis. Consistent with this, Weston (1979) reports that firms where insiders held more than 30% have never been acquired in hostile takeovers.

Morck et al (1988) and McConnel and Servaes (1990) find an inverted U-shaped relationship between insider ownership and firm performance in accordance with the existence of managerial entrenchment above a critical level of ownership.

This entrenchment hypothesis taken from the agency literature is particularly interesting since it has consequences for dividend policy which are distinct from other competing theories of dividend behaviour. Specifically, the prediction is that below an entrenchment level insider ownership and dividend policies can be seen as substitute corporate governance devices, therefore leading to a negative relationship between these two variables. After such critical entrenchment level, however, when insider ownership increases are associated with additional, entrenchment-related, agency costs, dividend policy may become a compensating monitoring force and, accordingly, a positive relationship with insider ownership would be observed. This prediction is a distinctive one given that signalling, tax clienteles or other competing theories for dividend behaviour do not predict such U-shaped relationship between insider ownership and dividend policy.

Schooley and Barney (1994), using U.S. data, document a U-shaped relationship between dividend yield and CEO ownership. That study suffers from several limitations. CEO ownership is not always the best measure of insider ownership as in frequent cases board members other than the CEO hold significant amounts of a firm's equity. Apart from using a relatively small sample size (235 firms against our sample in excess of 600 firms) Schooley and Barney's data is confined to large firms with a small number of cases where the CEO holds substantial holdings (the average CEO ownership in their sample is 2.5% against our mean insider ownership of 16%

(in 1991) and 13% (in 1996). Finally, they do not control for alternative monitoring mechanisms on managers which have been recognised in the literature.

Also, no studies have analysed, in the context of dividend policy, the possibility that beneficial and non-beneficial insider holdings may be conducive to entrenchment. Such possibility has, however, been suggested by previous research from Gordon and Pound (1990), Chang and Mayers (1992) and Cole and Mehran (1998), who find evidence that manager's voting control over Employees Stock Ownership Plans (ESOPs) can contribute to managerial entrenchment.

3. Research design

3.1 General model specification

The general model specified for this analysis is represented by a single-equation cross-sectional regression between dividend payouts and a set of variables related to Rozeff's (1982) trade-off argument. This trade-off is between the marginal benefits of dividend payouts (a reduction in agency costs) and respective marginal costs (an increase in the so-called "transaction costs"). "Transaction costs" here relate to the direct or indirect costs of external equity financing and potential tax costs associated with dividend payouts. Implicit is the notion that dividend policy is set up optimally so as to minimise total agency and transaction costs[1].

Additionally, given that the presence of other managerial monitoring devices is likely to affect the usage of any particular mechanism for reducing agency costs (Hart,

1995), allowance is made for the presence of such variables when modelling dividend policy. In line with previous research, it is possible that not just inverse relationships, or substitution effects, exist between different governance mechanisms. In fact, Rediker and Seth (1995) argue that different control mechanisms may be complementary, and not just alternative, instruments for corporate governance. The other monitoring mechanisms considered in the analysis are debt, analysts following, institutional ownership, the presence of outsiders in the board and compliance with Cadbury (1992) Code of Best Practice.

The formal basic model used, along with the variables employed, is described in section 3.3.

3.2 Testable hypotheses

A particular concern of this paper is an attempt to distinguish the agency perspective of dividend policy from other competing explanations by focusing on the relationship between insider ownership and dividend payouts. Following the discussion above, it is likely that managers controlling large holdings in the firm can to a significant extent insulate themselves from other disciplining mechanisms. If dividend policy and insider ownership both perform a monitoring role, one might expect that before a critical level of entrenchment, dividend policy and insider ownership could be substitute monitoring mechanisms. As such, increasing insider ownership would be accompanied by decreasing dividend payouts. After a critical level of ownership, however, larger dividend payouts may be needed to compensate for entrenchment-related agency costs arising from larger (above critical level) insider holdings. This leads the following testable hypothesis:

Hypothesis 1: The cross-sectional distribution of dividend payouts, all else constant, is negatively related to beneficial insider ownership below an entrenchment level of ownership, and positively related above that level.

Hypothesis 1 can be modelled by using a second-degree polynomial specification for the insider ownership variable and testing the expectation of a negative sign for the first term and a positive one for the second. However, the positive sign predicted after the critical level of insider ownership could alternatively be explained by a managerial desire to diversify their wealth by increasing liquidity (Beck and Zorn, 1982) when their shareholdings in the firm are large, rather than by an entrenchment explanation. To control for this possibility, it is hypothesised that in a setting where insiders control shares on non-beneficial terms at the same time that their beneficial stakes are too small to enable entrenchment, a similar U-shaped relationship will still be observed between dividend payouts and total (beneficial or not) holdings with the turning point above the level of beneficial holdings. This is because both categories of holdings can bring control and, therefore, potential entrenchment. In other words, this hypothesis looks at the possibility that managers may use not just beneficial but also non-beneficial holdings to entrench themselves. This leads to the following testable hypothesis:

Hypothesis 2: For low (below critical entrenchment point) levels of beneficial insider ownership, dividend payouts have a U-shaped relationship with total (beneficial and non-beneficial) insider ownership, all else constant, as predicted in Hypothesis 1 for

beneficial ownership, with a turning point above the level of beneficial holdings.

Hypothesis 2 can thus also be seen not just as a test for an alternative explanation for the U-shaped relationship, but also as a test for the proposition that non-beneficial holdings can be conducive to entrenchment by insiders.

A final test is to analyse whether compliance with Cadbury (1992) Code of Best Practice affects dividend policy. Since the Code was published in 1992, this is done in the 1996 regression only. That document reviewed the role of corporate boards in corporate governance and provided a set of recommendations of best practice to enhance the accountability and monitoring function of the directors of UK firms. After publication of the report, the London Stock Exchange required listed firms to state their compliance, and reasons for not complying, with the Code's prescriptions. The analysis of the relationship between dividend policy and Cadbury (1992) compliance is a novel way of testing the agency explanation for dividend policy given the Cadbury (1992) recognised role in corporate governance in the UK[2]. If dividend policy is a substitute (complementary) disciplining mechanism to compliance with the Cadbury (1992) Code, then a negative (positive) association between dividend payouts and Cadbury (1992) compliance should be apparent. Since none of these two alternative possibilities can be ruled out, the null hypothesis is that there is no association between Cadbury (1992) compliance and dividend payouts. The corresponding testable hypothesis is thus:

Hypothesis 3: Compliance with the Cadbury (1992) Code of Best Practice has a zero impact on dividend payouts, all else constant.

The cross-sectional analyses in this paper are reported for 1991 and 1996. Using two periods provides a robustness check on the results obtained for a single year. It also enables a control for possible structural changes, particularly those potentially arising from the intense academic and public debate corporate governance in the UK since the early nineties. A five-year interval between the two cross-sections was considered because the construction of some variables, notably the dividend payout measure, required computations over five years.

3.3 Formal model and variables employed

The empirical mode model used in the analysis can be described as follows:

$$MNPAY_i = \alpha_0 + \alpha_1 INSBEN_i + \alpha_2 INSBEN_i^2 + \alpha_3 GROW1_i + \alpha_4 GROW2_i + \alpha_5 DEBT_i + \alpha_6 VARIAB_i + \alpha_7 CASH_i + \alpha_8 DISPERS_i + \alpha_9 INSTIT_i + \alpha_{10} NONEXPCT_i + \alpha_{11} IACT_i + \alpha_{12} SIZE_i + \alpha_{13} LANALYST_i + \alpha_{14} ROA_i + \alpha_{15} ROAxDUMNEG_i + \alpha_{16} CADBURY_i + \sum_{j=1}^{n} \beta_j INDUMMY_{j,i} + \varepsilon_i \quad (1)$$

where

α, β = regression coefficients
i = index of the ith firm
j = sector index
n = number of sector dummies (2-digit AIC codes)
ε_i = error term

The dependent variable, MNPAY is the dividend payout ratio, constructed as a five-year mean ratio of total ordinary annual dividends declared (interim plus final) to after-tax earnings (before extraordinary items)[3]. Similar to Rozeff (1982), a mean

payout ratio is preferred to annual payout figures, to reduce the effects of transitory and noisy components in short-term earnings. Thus, the focus is on a measure of long-term dividend payout, given the evidence, from a series of studies dating back to Lintner (1956), that firms typically stabilise dividends around a long-term payout objective[4]. Observations with mean dividend payout ratios in excess of one or negative are excluded due to the lack of economic significance of these values. The choice of a five-year period balanced the trade-off between the advantage of using of a longer period to provide a more accurate measure of the long term dividend payout ratio, and the costs associated to the survivorship bias problems arising from the requirement of longer series of data for each firm in the sample.

Beneficial insider ownership, INSBEN, is defined as the percentage of the company's shares directly or indirectly controlled by the firm's managers, their families or family trusts (as disclosed in firm's annual reports). Jensen and Meckling (1976) posit a negative relationship between insider equity ownership and agency costs while Morck et al (1988) and McConnel and Servaes (1990) present evidence consistent with that assertion. Within certain ownership ranges, higher insider ownership can reduce expected agency costs and hence dividend policy may becomes less important as a monitoring vehicle. Therefore, the expected sign for the coefficient of INSBEN in the regression is negative. A square term for insider ownership is included, as discussed above, to account for the possibility of managerial entrenchment, which translates into the expectation of a positive sign. This follows, in particular, arguments and evidence by Morck et al (1988) and McConnel and Servaes (1990) that the effect of insider ownership in the reduction of agency costs may change its sign after a certain critical level of ownership.

The remaining variables are control factors that either (i) have been observed in the literature to influence dividend payments, (ii) can be seen as alternative or complementary managerial monitoring vehicles or (iii) can proxy for the presence of potential agency problems.

Past growth (GROW1), defined as the geometric mean rate of growth of the firm's total assets for the last five years, is included on the grounds that higher historic growth may render dividend policy less relevant for inducing primary market monitoring vehicle given the likelihood that growth may already be inducing external fund raising (and associated monitoring). Hence, a negative sign is expected[5]. A similar argument applies to GROW2, a variable proxying for future growth opportunities, measured as the ratio of market to book value of equity). Consistent with these assertions, Rozeff (1982) reports a negative association between dividend payouts and variables proxying for past or future growth opportunities.

The inclusion of DEBT, the book value of total debt deflated by the market value of equity is mainly motivated by its potential monitoring role on managers. In particular, financial leverage has been argued by Jensen and Meckling (1976), Jensen (1986) and Stulz (1988), among others, to play a role in reducing agency costs arising from the shareholder-manager conflict. Debt may also have an impact on dividends because of debt covenants and related restrictions imposed by debtholders[6]. Thus a negative sign is expected.

The total variance of a firm’s stock returns, VARIAB, is also included in the analysis. High fixed operating costs or business risk may affect the firm's dividend payout, all else constant, to the extent that these will increase the frequency of costly additional

external financing. This is due to the greater variability in earnings and funding needs that high operating leverage or business risk may induce in a firm. The same reasoning applies to interest charges, which are characterised by Rozeff (1982) as "quasi-fixed costs". Both these operating and financial risks should translate into a high total risk (or variance) of the firm's stock returns. In addition, as observed by Holder et al (1998), transaction costs of new issues in the form of underwriting fees are usually larger for riskier firms. The expected sign of the coefficient of VARIAB in the regression is thus negative.

To the extent that high figures of CASH, defined as a five-year average of cash and cash equivalents as a percentage of a firm's assets represent, or are correlated with, a firm's free cash-flow in the Jensen (1986) sense and associated agency costs, expected dividend payouts will be higher. Thus, greater payouts might be associated with higher figures of CASH and so the expected sign for its regression coefficient is positive.

Shareholder dispersion (DISPERS), represents a measure of stock ownership diffusion. This variable is defined as 100% minus the accumulated sum of the ownership by individual entities with more than 3% of the firm's stock in 1991 or 1996. The existence of a large number of (small) shareholders (or a low level of ownership concentration) increases the potential agency costs given the free-rider problem associated with higher ownership diffusion. The predicted sign for the coefficient of DISPERS is thus positive.

INSTIT measures total institutional blockholder ownership of the firm's shares. Institutional blockholders may act as a monitoring device on the firm's managers, as

argued by Demsetz and Lehn (1985) and Schleifer and Vishny (1986), thus dampening in principle the need for high dividend payouts. However, it is possible that institutions may influence higher dividend payouts by a company to enhance managerial monitoring by external capital markets, namely if they believe their own direct monitoring efforts to be insufficient or too costly. In this case a complementarity between these alternative governance mechanisms could be apparent. Thus, the expected sign for this coefficient may be positive or negative.

Following Winter (1977), Fama (1980) and Weisbach (1988), the percentage of non-executives on the firm's board, NONEXPCT, is also included to account for the possibility that such outside directors may act as management monitors. Thus, the expected sign for this coefficient is negative, unless the same observations referred about INSTIT apply, in which case a positive relationship might emerge.

IACT is a control variable defined as the cumulative 5-year sum (1987-91 or 1992-96) of the amounts shown in a firm's accounts as irrecoverable Advance Corporate Taxation (ACT), deflated by total assets. The usage of a cumulative sum instead of single-year figures is mainly to account for the often observed situation of a firm declaring in one year surplus ACT which eventually is written off in following years. If a company has had significant irrecoverable ACT in the past then it is likely that this should translate into a higher perceived cost of paying dividends[7] (or dividend "transaction costs"). A negative sign is thus expected for this variable's coefficient.

The control variable firm size (SIZE) is defined as the log of market capitalisation. Size may be an important factor not just as a proxy for agency costs (which can be expected to be higher in larger firms) but also because transaction costs associated

with the issue of securities are also (negatively) related to firm size as documented, among others, by Smith (1977). However, as Smith and Watts (1992) point out, the theoretical basis for an impact of size on dividend policy is not strong, and indeed some negative relationships have been observed (Allen and Michaely, 1995, and Keim, 1985). Therefore, the inclusion of size may be best regarded as a simple control variable, with no particular sign expectation.

LANALYST is the log of the number of analysts (ANALYSTS) following a particular firm (as taken from I/B/E/S). Former research suggests that financial analysts may constitute a source of managerial monitoring. Specifically, Moyer, Chatfield and Sisneros (1989) and Chung and Jo (1996) present evidence consistent with the number of financial analysts following a firm having a negative impact on agency costs. The expected sign for the impact of analysts following can either be positive or negative, in accordance with the Rediker and Seth (1995) argument. A logarithmic transformation is used because it is likely that the impact of an additional analyst may become smaller as the number of analysts following a firm increases.

Return on assets, ROA, is defined as the mean ratio between after-tax earnings before extraordinary items and total assets calculated over a 5-year period (1987-91 or 1992-96). In general accordance with a signalling perspective (Miller and Rock, 1985), dividend payouts may be positively related with measures of profitability. Jensen et al (1992) find evidence of a positive association between return on assets and dividend payouts. To the extent, however, that there are links between past profitability and current or expected growth, such measures of profitability may have a different impact on payouts. For instance, past profitability may capture information on growth prospects missed by other variables (namely GROW2), possibly because more

profitable firms may be more (or less) likely to grow in the future. In addition, higher profitability may be evidence that agency problems are not very relevant so that monitoring mechanisms such as dividend policy are less needed. Therefore, the sign for this control variable can either be negative or positive. A problem arises, however, because firms may face constraints to pay dividends when their earnings are negative. DeAngelo and DeAngelo (1990) and DeAngelo et al (1992) document that a significant proportion of firms having losses over a five-year period tend to omit their dividends entirely. Similarly, Baker (1989) finds that an important reason cited by firms for not paying dividends is “poor earnings”. Therefore, small or zero dividend payouts could reflect not high levels of alternative monitoring mechanisms included in equation (1) but simply be the result of negative earnings. Given such possible non-linearities, ROA is included in the analysis along with a dummy (DUMNEG) accounting for the existence of any negative earnings during the period used for the calculation of ROA, as well as an interactive term between such dummy and the ROA measure.

The final independent variable is CADBURY, which consists of a dummy term taking the value of 1 if the firm states its full compliance, in the 1996 regression, with the Cadbury (1992) Code of Best Practice. Since the purpose for the introduction of this Code was the improvement of firm’s corporate governance practices, an impact may be expected on firm’s dividend payouts. The sign of this impact is, however, unclear, as discussed in the statement of Hypothesis 3.

INDUMMY represents industry dummies using two-digit AIC–Actuaries Industry Classification codes published by the London Stock Exchange and obtained from LSPD. Michel (1979), among others, shows evidence that industry classification may

have an impact on dividend policy, an effect which is usually attributed to industry-related growth opportunities but that also can be related to industry-specific level of competition or takeover threat.

4. Sample selection and data sources

The sample of firms used for the subsequent analysis was taken from Standard and Poor's (S&P) *Global Vantage* Database. Financial data was obtained from *Global Vantage*, *Datastream* and from companies' annual reports. Market statistics were drawn from *LBS Risk Measurement Service*. Ownership data was compiled from companies' annual reports. Board data was drawn from *Datastream* and companies' reports. Information on the number of analysts following a particular firm was drawn from the *I/B/E/S* database.

The selection procedure can briefly be described as follows. In a first stage, all firms incorporated in the United Kingdom and listed on the London Stock Exchange with complete data were taken from the Industrial Active and Industrial Research (Dead) *Global Vantage* files. Firms with Sector Index Codes (SIC) between 6000 and 6999 (financials) and between 4800 and 4941 (regulated utilities) were excluded. Also excluded were firms that were involved in major mergers or demergers in the period 1987-91 or 1992-96. The final number of firms the sample are 693 in 1991 and 609 in 1996. Table 1 depicts the sector distribution of the final samples

5. Empirical Results

5.1 Descriptive statistics

The sector distribution of the sample is shown in Table 1. Comparison with the sector distribution of LSPD's non-financial constituents (not shown) reveals no obvious differences between this and our sample's. Descriptive statistics are presented in Table 2, while Table 3 provides a detailed breakdown of insider ownership variables. The dependent variable shows considerable cross-sectional variation, as does the insider ownership variables. In particular, it should be noticed the large number of firms with relatively high levels of ownership by insiders. For example, in more than 20% (or 152 firms) of the sample in 1991 beneficial insider ownership exceeds 25%, while in 1996 such figure is around 15% (or 92 firms).

5.2 Ordinary least-squares (OLS) results

Table 4 reports the results of cross-sectional OLS regressions of dividend payouts (MNPAY) on the set of variables defined in section 3.3. Different specifications are considered (models 1, 2, 3, 4 and 5). It can be seen, in models 2 to 5, that the insider ownership variable (INSBEN) and its square are signed as expected (in models 4 and 5 the p-values are in the region of 1% in 1996, and even lower in 1991). Overall, the regressions yield remarkably high adjusted R-squares (around 33% in 1991 and 44% in 1996). Such results are in accordance with the notion that an alignment of interests caused by increased levels of insider ownership makes dividends less needed for monitoring purposes, but only up to a certain point. Indeed, after a critical level of holdings by managers, companies feel the need to compensate potential managerial entrenchment with increased dividend payouts to shareholders. In other words, the results are consistent with the expected U-shaped relationship between dividend payouts and the level of ownership by managers as predicted in our Hypothesis 1.

Given the link between dispersion and associated potential agency costs, an important result to the agency perspective of dividends is also the positive and significant (p-value close to 1%) impact of shareholder dispersion variable on dividend payouts, either for 1991 or 1996. In economic terms, an increase in dispersion of 10 p.p. increases on average the dividend payout ratio in about 1 p.p..

Other variables included in the regressions are, in general terms, either signed as expected or insignificant. An exception to this is the Irrecoverable Advance Corporate Taxes variable, where its transaction cost role for dividends generated the expectation of a positive sign but the results yield a positive coefficient (in the 1991 regression only). Such result is, however, consistent with Adedeji (1998), who finds a similar association between irrecoverable ACT and dividend payouts and interprets that evidence as related to firms seeing irrecoverable ACT as a tax allowance that can enhance distributable earnings. It also should be mentioned that modelling the impact of profitability with a ROA variable, a dummy for negative earnings and an interactive term provides a significantly better fit, either for 1991 or 1996, but particularly so in 1991 (where adjusted R-square increases from 20.64% in model 3 to 32.93% in model 4).

Consistent with Allen and Michaely (1995) and Keim (1985), a significant negative relationship between firm size and dividend payouts is observed for 1991 and 1996. An interesting result also is that full compliance with the Cadbury (1992) Report has a positive impact on dividend payouts (with a p-value close to 1%) as well as economic significance (compliance with Cadbury increases payouts in around 4% of earnings)[8]. This result is consistent with the idea that firms with better internal corporate governance rules are also those that use dividend payouts more intensely,

suggesting that these two monitoring forces act as complements rather than substitutes. This is similar in spirit to findings by Laporta et al (2000), who observe that in countries where investor protection is greater, dividend payouts tend to be higher as well, suggesting that the legal environment and dividend policy may complement each other in terms of their disciplining effects on managers. Thus, Hypothesis 3 of no impact of compliance with Cadbury on dividend policy can be rejected.

5.3 Critical entrenchment levels

From the results in Table 4, critical entrenchment levels can be derived as the turning points in the U-shaped relationship between dividend payouts and beneficial insider ownership. The estimated critical entrenchment levels for beneficial insider ownership are approximately 32% in 1991 (model 4) and 25% in 1996 (model 5). These numbers are intuitively plausible and in line with Weston's (1979) observation of no hostile takeovers occurring in firms where insiders hold 30% or more of the equity.

An important question that could be asked is whether the number of firms above the estimated critical entrenchment level is sufficiently significant to make the results reliable. In 1991, 120 firms have beneficial insider ownership in excess of the estimated critical level of 32%, which corresponds to about 17% of the firms in the sample. In 1996, 92 firms (15% of the sample) have ownership above the 25% threshold. Overall, this suggests that the estimated turning points are driven by a non-negligible number of observations.

The hypothesis that size may affect the critical level of entrenchment was investigated as one might expect that in larger firms less ownership would be needed to achieve entrenchment. This could happen, for instance, because larger firms may be more difficult to acquire by means of hostile takeovers, so that insulation from such disciplinary force could eventually be possible with a smaller share ownership by insiders. Accordingly, and using a procedure employed by Peasnell et al (1998), a dummy variable was created taking the value of 1 if a company's measure of size is above the sample median and zero otherwise. This binary variable was then made to interact with the insider ownership variables as for 1991 and 1996. Results are reported in Table 5 (Panel A). Contrary to the hypothesis that critical entrenchment levels vary according to firm size, small and large firms have virtually identical estimated critical entrenchment levels in 1991 (around 32%). In 1996, however, it can be observed that the U-shaped relationship between dividend payouts and insider ownership is confined to larger firms (above the size median), where it is significant at the 1% level, with an estimated entrenchment level almost identical to that of 1991. The number of firms in 1996 where insider ownership level are higher than 32% is 66 (about 11% of the sample). Thus, results suggest that an entrenchment level slightly above 30% is a consistent feature for all firms in 1991 and large firms in 1996. From the findings above it can be inferred that either some structural change affected the U-shaped relationship between insider ownership and dividend policy for small firms or that some empirical problems might be affecting the significance of the estimated coefficients for small firms in 1996.

To analyse this issue in a somewhat different way, the sample was split in two according to size. Regressions were then re-run separately for firms below and above

the size median in 1991 and 1996. Results are reported in Panel B of Table 5 and it can be seen they are very close to those presented in Panel A.

5.4 Entrenchment versus liquidity hypothesis

A possible alternative explanation to the entrenchment hypothesis for the U-shaped relationship between dividend payouts is the possibility of liquidity motivations. In firms where insider holdings are relatively high, managers could be tempted to increase dividend payouts to obtain liquidity in order to diversify their personal wealth by investing elsewhere the cash received without reducing their share of the firm. However, this liquidity argument would lose most of its power if one could demonstrate a similar upward swing driven by shareholdings that were controlled (in terms of voting power), but not beneficially owned, by insiders. This is the basis for the statement of Hypothesis 2.

To test for this hypothesis, models 4 in 1991 and 5 in 1996 were re-run with the restriction that beneficial insider ownership is below the estimated entrenchment level and by substituting beneficial insider ownership with total (beneficial and non-beneficial) holdings by directors. If again a U-shaped relationship is observed with the turning point above the maximum level allowed for beneficial holdings, one would conclude that the upward swing in the dividend/insider ownership curve can only be driven with the contribution of non-beneficial holdings. This would then contradict the liquidity hypothesis.

Table 6 reports the results. Regressions from Table 4 are re-run with the substitution of beneficial insider ownership for total (beneficial and non-beneficial) holdings by insiders. The results in model 1 (1991) and 2 (1996) show that the U-shaped

relationship between dividend payouts and insider ownership is still strong for the new definition of insider ownership. The new critical entrenchment points are now 36.43% and 30.47% for 1991 and 1996, respectively. Next, in regressions 3 and 4, the calculations are repeated with the exclusion of firms for which beneficial ownership by insiders (INSBEN) is below estimated entrenchment levels (given that these levels are estimated with a degree of error, the restriction on INSBEN was arbitrarily set at 1.5 p.p. below the estimated entrenchment levels[9]. One can see that the U-shaped relation is still apparent, with the crucial difference that the upward movement in the dividend-insider ownership curve cannot now be driven without the contribution of non-beneficial holdings. The number of firms for which, in regressions 3 and 4, total insider ownership exceeds the critical turning is around 3% of the sample in either 1991 (16 firms) or 1996 (18 firms). Although the number of observations above the turning points is not large, the consistent results across the two cross-sections and the significance of the coefficients lend some support to Hypothesis 2, i.e., the proposition that liquidity is not behind the upward movement in dividend policy after the turning points.

The results above also offer an interesting insight on the role of non-beneficial insider ownership that has been little addressed in the literature. Specifically, they show that non-beneficial holdings where insiders can control voting rights (but not cash-flow rights) can be used as an entrenchment tool, along with their beneficial holdings. Such findings are consistent with Gordon and Pound's (1990) and Cole and Mehran's (1998) results that manager can use their voting control over ESOPs (Employee Stock Ownership Plans) as a management entrenchment device against takeovers. They are also in accordance with Chang and Mayers' (1992) finding that the usage of ESOPs is especially prone to provoke entrenchment when insiders already have substantial

voting rights. However, our results are more general than these given that our data on non-beneficial holdings includes holdings owned not just by ESOPs but also by a number of other entities (like charity trusts, founder trusts and company pension funds).

Since our results on the liquidity hypothesis, although consistent along the two cross-sections, rely on a relatively small number of observations above the turning points, an additional test was made to test the robustness of the findings. Specifically, if diversification driven-liquidity needs are deemed to increase dividend payouts when holdings by insiders are large, then one should expect that the larger the market value of insider holdings, the larger dividend payouts should be, all else constant. Therefore, a positive relationship between dividend payouts and the market value of insider holdings should emerge.

Accordingly, regressions were re-run with the inclusion of MKVINS, a variable constructed as the product between SIZE (the market value of the company) and INSBEN, while keeping in the regression the ownership variables INSBEN and $INSBEN^2$. The null hypothesis to test is whether MKVINS enters the regression with a significant positive slope. Also, if the documented positive coefficient of $INSBEN^2$ is due to liquidity rather than entrenchment, one would expect that the inclusion of MKVINS would alter the significance of $INSBEN^2$. Unreported results show that MKVINS has either an insignificantly different from zero coefficient (in 1991) or a significantly negative one (in 1996), and in this last case the slope of INSBEN is no longer significant (most likely as a result of the correlation between MKVINS and INSBEN). As for $INSBEN^2$, its slope remains positive and significant throughout. Also, an attempt was made to see if results would change with the omission of

$INSBEN^2$, so as to analyse if potential correlation problems between $INSBEN^2$ and MKVINS are affecting the significance of MKVINS. Results show, however, that MKVINS remains insignificantly different from zero in 1991 and significantly negative in 1996. The slope on INSBEN in 1996 becomes significantly positive but this is most likely biased due to the misspecification arising from the omission of $INSBEN^2$. One can thus conclude that, once again, the liquidity hypothesis stated above is contradicted by the data.

To summarise, our tests offer some support for the notion that liquidity is not behind the U-shaped relationship documented between dividend payouts and insider ownership. Results show in fact that the same relationship can be observed for a restricted sample where non-beneficial holdings are essential to achieve total insider holdings above the critical turning points. Secondly, the quadratic term for $INSBEN^2$ remains significantly positive when a variable controlling for the market value of insider holdings (MKVINS) is entered in the regressions and this variable, when significant, is negatively, not positively, signed.

5.5 Alternative specifications

The general reasoning behind the way the variables were defined above was to consider contemporaneous variables (at 1991 or 1996) in both sides of equation (1). However, in the definition of the dividend payout and cash variables, the annual figures were observed to be remarkably unstable so in those cases a mean was judged, as referred above, to be the best estimate for the value of each of those variables in 1991 or 1996. Given that the dividend payout variable was thus defined as a mean

over a five-year period (1987-91 or 1992-96), while some of the variables (e.g., debt, the number of analysts or ownership variables) relate to either 1991 or 1996, a degree of look-ahead bias could occur, although the direction of such potential bias is undetermined. However, when alternative definitions of dividend payout were attempted (defining it, in the 1991 cross-section, as either the mean over the 1989-93 or the 1991-95 period), the results were similar so any possible look-ahead bias was dismissed as not serious.

Several other robustness checks were made to see if the conclusions above were sensitive to the usage of other specifications or when considering other potentially relevant factors. Regressions were thus repeated by excluding firms having close company tax status[10] which could affect the relative transaction costs of dividends. Results were, however, unchanged.

A piecewise linear regression was also performed allowing for one turning point in the vicinity of the estimated critical entrenchment levels in Table 4. The hypothesis of changing slopes under this new specification was confirmed with significance levels and R-squares very close to those under the quadratic specification. The usage of switching regimes to analyse alternative critical entrenchment points under the piecewise linear regression did not produce results that could contradict the existence of a negative slope followed by a positive one after a critical level. Such alternative specifications did not yield, however, higher R-squares than the quadratic specification used before. Since it is reasonable to think that in general terms a piecewise linear regression imposes a much stricter structure than the quadratic specification used above, our preference goes to this one.

Collinearity diagnostics prescribed by Belsley et al (1980) and VIF (variance inflation factors) analysis were used to observe if multicollinearity problems could be obscuring some of the results. The conclusion was that the statistically insignificant variables in Table 4 were not significantly affected by collinearity problems.

In addition, log transformations was used in all variables for which skewness was seen as relatively high but again no relevant departures from former results were observed. Also, since some evidence of non-normality in the residuals was observed that could be a symptom of misspecification, a robust estimation analysis was performed. Specifically, a rank regression procedure by which all variables (except dummies) were converted into their respective ranks (and $INSBEN^2$ was redefined as the square of the rank of INSBEN). The results of using this procedure revealed that the insider ownership variables were still highly significant at the 1% level or very close to it.

Finally, no evidence of significant heteroskedasticity was found when using a White (1980) test, which is also a test for misspecification. In spite of this, White (1980) adjusted t-statistics were used but, as expected, did not reveal any significant departures from the significance levels observed before.

7. Summary and discussion of findings

This paper provides an empirical examination of the agency theory explanation for the cross-sectional distribution of dividend policies in the UK. Using data for two five year periods (1987-91 and 1992-96) and a considerably large sample (in excess of 600 firms), it tests the hypothesis that insider ownership affects dividend policies in a

manner consistent with a managerial entrenchment perspective, drawn from the agency literature.

In line with predictions, and controlling for other factors, strong evidence is found that after a critical entrenchment level of insider ownership estimated in the region of 30%, the coefficient on insider ownership changes from negative to positive.

The hypothesis that liquidity needs on the part of insiders are responsible for the positive association between dividend payouts and insider ownership after the critical turning point was also investigated. The conclusion was the rejection of the liquidity explanation given that a similar relationship is also observed when insiders hold non-beneficial holdings in addition to beneficial holdings that alone are below the critical turning point. This point was also reinforced when no positive association was observed between dividend payouts and the market value of beneficial insider holdings. The analysis suggested that holdings over which insiders have control, but not cash-flow rights, can be conducive to entrenchment.

Consistent with the existence of links between corporate governance and dividend policy, compliance with the Cadbury (1992) Code of Best Practice was observed to have a statistically and economically significant impact on dividend payouts. Also in accordance with an agency perspective, strong evidence was produced that shareholder dispersion has a significant positive impact on dividend policy.

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The main results presented in this paper vindicate the agency explanation for cross-sectional dividend policy. Some limitations of the analysis should, however, be kept in mind. First, the non-insider ownership data does not include ownership levels below

3%. In principle, it is possible that allowing for a finer partition could alter the significance of some of the ownership variables. In addition, the results may not be easily extrapolated to the smallest firms. Indeed, the analysis of interactions between insider ownership and size for the 1996 sample suggested that in smaller firms a U-shaped relationship between dividend policy and insider holdings might not hold[11]. Finally, the results on the usage by managers of non-beneficial holdings as an entrenchment vehicle rely on a relatively small number of observations above the critical levels of insider ownership, suggesting therefore a degree of caution in the interpretation of these particular findings.

A final issue regards the existing literature on the simultaneous determination, or endogeneity, of several alternative or complementary corporate governance mechanisms (see for instance Agrawal and Knoeber, 1996). Specifically, and in the spirit of Jensen et al (1992), a simultaneous specification for the joint determination of dividend policy and other monitoring devices with allowance for the entrenchment effects suggested in this paper, might yield some incremental explanatory power.

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TABLES

Table 1

Sector distribution of sample according to AIC-Actuaries Industry Classification codes

		1991		1996	
AIC	***Sector Name***	Frequency	%	Frequency	Percent
12	Extractive Industries	6	0.9	4	0.7
15	Oil, integrated	4	0.6	3	0.5
16	Oil exploration and production	14	2.0	9	1.5
21	Building and construction	37	5.3	39	6.4
22	Building materials and merchants	38	5.5	33	5.4
23	Chemicals	23	3.3	21	3.4
24	Diversified industrials	25	3.6	10	1.6
25	Electronic and electrical equipment	58	8.4	39	6.4
26	Engineering	89	12.8	79	13.0
27	Engineering, vehicles	10	1.4	10	1.6
28	Paper, packaging and printing	31	4.5	26	4.3
29	Textiles and apparel	47	6.8	0	0.0
32	Alcoholic beverages	8	1.2	4	0.7
33	Food producers	37	5.3	29	4.8
34	Household goods	21	3.0	58	9.5
36	Health care	15	2.2	15	2.5
37	Pharmaceuticals	6	0.9	8	1.3
41	Distributors	39	5.6	40	6.6
42	Leisure and hotels	25	3.6	16	2.6
43	Media	28	4.0	34	5.6
44	Retailers, food	19	2.7	14	2.3
45	Retailers, general	37	5.3	38	6.2
47	Breweries, pubs and restaurants	14	2.0	15	2.5
48	Support services	45	6.5	50	8.2
49	Transport	***17***	***2.5***	15	2.5
	Total	***693***	***100.0***	***609***	***100.0***

Table 2

Summary descriptive statistics

Variable	Mean	Std	Max	Q3	Med	Q1	Min	Skew	Kurt
Panel A: 1996 Sample (N=609)									
MNPAY	0.373	0.228	0.999	0.517	0.379	0.205	0.000	0.295	-0.305
INSBEN	10.804	15.747	75.243	14.000	3.585	0.347	0.001	1.848	2.692
INSNONB	2.333	7.163	67.489	0.813	0.000	0.000	0.000	5.050	30.115
INSIDER	13.137	17.861	82.861	18.916	4.410	0.417	0.001	1.574	1.565
GROW1	0.108	0.188	1.921	0.147	0.078	0.018	-0.374	3.575	25.633
GROW2	1.820	1.217	12.664	2.050	1.515	1.123	0.555	3.742	21.642
DEBT	0.819	11.233	276.412	0.354	0.161	0.057	0.000	24.376	598.737
VARIAB	37.036	16.394	110	46	32	25	16	1.264	1.577
CASH	11.102	10.981	70.209	15.294	8.025	3.155	0.000	1.886	4.557
DISPERS	55.273	21.348	99.985	71.247	54.175	38.840	5.838	0.062	-0.765
INSTIT	23.665	16.767	78.770	35.890	21.300	9.990	0.000	0.483	-0.567
DIR	7.433	2.531	25	9	7	6	2	1.447	4.585
NONEX	3.174	1.550	10	4	3	2	0	0.972	1.510
NONEXPCT	0.424	0.144	0.857	0.500	0.429	0.333	0.000	-0.048	0.260
IACT	0.120	1.119	22.722	0.000	0.000	0.000	-3.661	14.081	276.736
MKCAP	720.350	3,055.271	39,544	336	87	24	0.31	9.679	105.307
SEQ	228.586	953.304	14,887	125.4	33.852	11.411	-1,034.4	10.744	143.768
AT	559.758	1,961.07	32,572	298.8	81.517	31.730	0.562	9.635	129.445
ANALYSTS	5.814	5.945	27	9	3	1	0	1.086	0.167
LANALYST	1.509	0.948	3.332	2.303	1.386	0.693	0.000	-0.059	-1.085
SIZE1	4.560	1.933	10.585	5.817	4.466	3.178	-1.171	0.268	-0.072
SIZE2	4.646	1.707	10.391	5.700	4.401	3.457	-0.576	0.411	0.246
ROA	3.844	12.960	31.414	8.424	5.643	2.199	-217.692	-9.650	146.947
DUMNEG	0.388	0.488	1	1	0	0	0	0.463	-1.792
CLOSE	0.084	0.277	1	0	0	0	0	3.013	7.101
CADBURY	0.486	0.500	1	1	0	0	0	0.056	-2.003
Panel B : 1991 Sample (N=693)									
MNPAY	0.375	0.194	0.997	0.481	0.355	0.247	0.000	0.537	0.440
INSBEN	14.412	19.487	79.570	21.370	5.290	0.410	0.000	1.511	1.179
INSNONB	2.166	5.848	50.910	1.150	0.000	0.000	0.000	4.464	24.944
INSIDER	16.578	20.656	79.570	26.640	6.760	0.530	0.000	1.287	0.504
GROW1	0.201	0.218	2.202	0.251	0.152	0.083	-0.260	3.220	18.224
GROW2	1.421	0.790	9.123	1.622	1.252	0.957	0.420	3.792	24.175
DEBT	0.987	8.247	209.378	0.542	0.248	0.091	0.000	23.611	592.204
VARIAB	40.329	12.973	92	46	38	31	13	1.111	1.457
CASH	10.022	10.373	70.994	13.282	6.973	2.825	0.000	2.073	5.704
DISPERS	50.361	22.333	99.900	65.810	49.160	33.000	0.470	0.163	-0.772
INSTIT	22.667	16.415	90.430	32.900	20.360	9.600	0.000	0.746	0.350
DIR	7.339	2.613	21	9	7	6	3	1.188	2.594
NONEX	2.657	1.716	9	4	2	1	0	0.803	0.710
NONEXPCT	0.349	0.170	0.800	0.462	0.375	0.250	0.000	-0.176	-0.275
IACT	0.093	0.826	6.926	0.000	0.000	0.000	-5.135	1.519	23.079
MKCAP	399.560	1,626.134	25,638	176	46	15	0.54	9.487	114.211
SEQ	199.929	757.814	11,561	96.790	30.442	10.886	-455.883	9.968	128.868
AT	470.385	1,740.742	31,792	218.6	68.556	25.141	1.356	11.042	167.806
ANALYSTS	5.023	5.501	21	8	3	1	0	1.019	-0.192
LANALYST	1.336	0.999	3.091	2.197	1.386	0.693	0.000	0.055	-1.327
SIZE1	3.988	1.882	10.152	5.170	3.829	2.708	-0.616	0.374	0.007
SIZE2	4.423	1.714	10.367	5.387	4.228	3.225	0.305	0.510	0.112
ROA	6.472	6.949	24.885	9.520	6.749	4.362	-49.127	-3.282	21.119
DUMNEG	0.227	0.419	1	0	0	0	0	1.309	-0.286
CLOSE	0.121	0.327	1	0	0	0	0	2.326	3.421

Definitions:

MNPAY=5-year mean of the ratio of interim plus final ordinary dividends divided by after-tax earnings before extraordinary items; INSBEN=Percentage of the firms's shares controlled beneficially by board directors; INSNONB= Percentage of the firm's shares controlled on non-beneficial terms by board directors; INSIDER=Sum of INSBEN and INSNONB; GROW1=5-year geometric mean rate of growth in total assets; GROW2=market to book value, defined as market capitalisation of equity plus book value of assets minus book value of equity, divided by book value of total assets; DEBT=Total debt deflated by market capitalisation; VARIAB=5-year volatility of stock returns; CASH: 5 year mean of the ratio of cash plus cash equivalents deflated by total assets; DISPERS=Percentage of the firm's shares owned collectively by entities (non-insiders) with less than 3% individual stakes; INSTIT=Percentage of firm's shares owned collectively by institutions with 3% or more of the firm's stock; DIR=Number of directors in the board; NONEX=Number of external directors in the Board; NONEXPCT=Percentage of external directors on the board; IACT=Sum of consecutive five years of irrecoverable advance tax deflated by total assets; MKCAP=Market capitalisation of a firms's equity as of 31st December; SEQ=Book value of equity; AT=Book value of total assets; ANALYSTS; Number of one year ahead earnings forecasts by analysts; LANALYST=Natural log of ANALYSTS; SIZE1=Natural log of the firms's market capitalisation; SIZE2: Natural log of the book value of total assets; ROA: five-year mean return on assets; DUMNEG: Dummy of 1 if at least some of the earnings are negative in the 5-year period and 0 otherwise; CLOSE: Dummy taking the value of 1 if the company has a close company status, and zero otherwise; CADBURY: Dummy taking the value of 1 of the company complies in full with the Cadbury (1992) Code of Best Practice, and zero otherwise.

Table 3

Beneficial and non-beneficial insider ownership statistics

Ownership Range	1991 beneficial nr.firms	%	1996 beneficial nr.firms	%	1991 non-beneficial nr.firms	%	1996 non-beneficial nr.firms	%
0%	3	0.4	0	0.0	392	56.6	331	54.4
>0%-5%	335	48.3	337	55.3	216	31.2	206	33.8
>5%-10%	91	13.1	79	13.0	36	5.2	33	5.4
>10%-15%	57	8.2	48	7.9	19	2.7	13	2.1
>15%-20%	29	4.2	27	4.4	13	1.9	7	1.1
>20%-25%	26	3.8	26	4.3	7	1.0	7	1.1
>25%-30%	25	3.6	18	3.0	4	0.6	2	0.3
>30%-35%	21	3.0	11	1.8	2	0.3	1	0.2
>35%-40%	13	1.9	9	1.5	1	0.1	1	0.2
>40%-45%	12	1.7	11	1.8	0	0.0	3	0.5
>45%-50%	8	1.2	14	2.3	2	0.3	2	0.3
>50%-55%	18	2.6	12	2.0	1	0.1	2	0.3
>55%-60%	21	3.0	7	1.1	0	0.0	0	0.0
>60%-65%	12	1.7	6	1.0	0	0.0	0	0.0
>65%-70%	14	2.0	2	0.3	0	0.0	1	0.2
>70%-75%	6	0.9	1	0.2	0	0.0	0	0.0
>75%	2	0.3	1	0.2	0	0.0	0	0.0
Total	693	100.0	609	100.0	693	100.0	609	100.0

Table 4

OLS Regression Results: All firms

Dependent variable: Dividend Payout Ratio (MNPAY),

Variable	Expected Sign	1991 (1) Coefficient *p-value*	(2) Coefficient *p-value*	(3) Coefficient *p-value*	(4) Coefficient *p-value*	1996 (1) Coefficient *p-value*	(2) Coefficient *p-value*	(3) Coefficient *p-value*	(4) Coefficient *p-value*	(5) Coefficient *p-value*
INTERCEPT		***0.5485 *0.0001*	***0.5893 *0.0001*	***0.5362 *0.0001*	***0.6052 *0.0001*	***0.6433 *0.0001*	***0.6942 *0.0001*	***0.6747 *0.0001*	***0.7033 *0.0001*	***0.7129 *0.0001*
INSBEN	(-)	-0.0003 *0.5726*	***-0.0041 *0.0019*	***-0.0044 *0.0009*	***-0.0049 *0.0001*	0.0004 *0.5445*	*-0.0031 *0.0926*	**-0.0042 *0.0930*	**-0.0042 *0.0107*	**-0.0039 *0.0157*
INSBEN^2	(+)		***0.0001 *0.0018*	***0.0001 *0.0012*	***0.0001 *0.0001*		**0.0001 *0.0368*	**0.0001 *0.0404*	***0.0001 *0.0028*	***0.0001 *0.0045*
GROW1	(-)	***-0.1318 *0.0001*	***-0.1182 *0.0005*	***-0.1271 *0.0002*	***-0.1443 *0.0001*	-0.0316 *0.4792*	-0.0190 *0.6729*	-0.0229 *0.6092*	**-0.0859 *0.0354*	**-0.0780 *0.0560*
GROW2	(-)/(+)	**-0.0252 *0.0169*	**-0.0237 *0.0240*	***-0.0273 *0.0093*	0.0046 *0.6801*	0.0027 *0.7366*	0.0036 *0.6545*	0.0024 *0.7638*	0.0097 *0.2237*	0.0104 *0.1923*
DEBT	(-)	-0.0010 *0.2571*	-0.0011 *0.1878*	-0.0010 *0.2347*	-0.0006 *0.4532*	0.0001 *0.8703*	0.0000 *0.9629*	0.0001 *0.9069*	-0.0003 *0.6390*	-0.0002 *0.7156*
VARIAB	(-)	***-0.0038 *0.0001*	***-0.0039 *0.0001*	***-0.0028 *0.0001*	*-0.0012 *0.0730*	***-0.0076 *0.0001*	***-0.0077 *0.0001*	***-0.0072 *0.0001*	***-0.0037 *0.0001*	***-0.0036 *0.0001*
CASH	(+)	-0.0006 *0.4217*	-0.0006 *0.3574*	-0.0011 *0.1178*	-0.0005 *0.4111*	0.0001 *0.9143*	0.0001 *0.9042*	0.0001 *0.9454*	0.0007 *0.3659*	0.0007 *0.3295*
IACT	(-)	**0.0186 *0.0280*	**0.0173 *0.0394*	*0.0163 *0.0514*	**0.0197 *0.0105*	0.0000 *0.9980*	-0.0009 *0.8971*	-0.0008 *0.9114*	0.0071 *0.2784*	0.0080 *0.2176*
DISPERS	(+)	0.0008 *0.1021*	*0.0008 *0.0936*	*0.0009 *0.0682*	**0.0010 *0.0192*	**0.0014 *0.0200*	**0.0014 *0.0216*	**0.0015 *0.0166*	**0.0014 *0.0109*	**0.0013 *0.0146*
INSTIT	(-)/(+)	0.0005 *0.3758*	0.0004 *0.4852*	0.0003 *0.5605*	0.0005 *0.2619*	0.0009 *0.1589*	0.0007 *0.2300*	0.0008 *0.2143*	**0.0014 *0.0116*	**0.0014 *0.0097*
NONEXPCT	(-)/(+)	0.0566 *0.1856*	0.0451 *0.2907*	0.0513 *0.2265*	0.0470 *0.2278*	-0.0174 *0.7707*	-0.0360 *0.5492*	-0.0327 *0.5852*	-0.0087 *0.8717*	-0.0431 *0.4362*
LANALYST	(-)/(+)	0.0208 *0.1237*	0.0211 *0.1174*	0.0163 *0.2239*	0.0076 *0.5419*	**0.0335 *0.0478*	**0.0340 *0.0445*	*0.0326 *0.0534*	**0.0376 *0.0129*	**0.0340 *0.0246*
SIZE	(-)/(+)	-0.0103 *0.2181*	*-0.0146 *0.0833*	*-0.0142 *0.0899*	**-0.0190 *0.0142*	***-0.0290 *0.0022*	***-0.0329 *0.0007*	***-0.0331 *0.0006*	***-0.0357 *0.0001*	***-0.0381 *0.0001*
ROA	(-)/(+)			***0.0039 *0.0013*	***-0.0116 *0.0001*			**0.0015 *0.0420*	***-0.0112 *0.0001*	***-0.0111 *0.0001*
DUMNEG	(-)/(+)				***-0.2762 *0.0001*				***-0.3094 *0.0001*	***-0.3086 *0.0001*
ROAxxDUMNEG	(-)/(+)				***0.0158 *0.0001*				***0.0120 *0.0001*	***0.0120 *0.0001*
CADBURY	(-)/(+)									**0.0423 *0.0163*
R^2		*22.54%*	*23.68%*	*24.88%*	*36.71%*	*32.89%*	*33.40%*	*33.88%*	*47.21%*	*47.74%*
Adjusted R^2		*18.41%*	*19.49%*	*20.64%*	*32.93%*	*28.79%*	*29.21%*	*29.60%*	*43.59%*	*44.06%*
N		*693*	*693*	*693*	*693*	*609*	*609*	*609*	*609*	*609*
F		*5.462*	*5.654*	*5.864*	*9.711*	*8.024*	*7.969*	*7.909*	*13.047*	*12.973*
F test for signif. of ind.dummies (p-value)		*2.7495* *0.0001*	*2.7519* *0.0001*	*2.2381* *0.0010*	*2.2657* *0.0009*	*1.6349* *0.0344*	*1.7009* *0.0244*	*1.5779* *0.0460*	*2.5958* *0.0001*	*2.6132* *0.0001*
Estimated critical entrenchment level (Nr Firms above critical level)		*-*	*33.14%* *(111)*	*34.26%* *(107)*	*31.99%* *(120)*	*-*	*23.93%* *(98)*	*24.34%* *(98)*	*25.37%* *(90)*	*25.25%* *(92)*

*,** and *** indicate two-tailed significance at the 10%, 5% and 1% levels, respectively.

Definitions:

MNPAY=5-year mean of the ratio of interim plus final ordinary dividends divided by after-tax earnings before extraordinary items; INTERCEP: Intercept term; INSBEN=Percentage of the firms's shares controlled on beneficial terms by board directors; GROW1=5-year geometric mean rate of growth in total assets; GROW2=market to book value, defined as market capitalisation of equity plus book value of assets minus book value of equity, divided by book value of total assets; DEBT=Total debt deflated by market capitalisation; VARIAB=5-year volatility of stock returns; CASH: 5 year mean of the ratio of cash plus cash equivalents deflated by total assets; DISPERS=Percentage of the firm's shares owned collectively by entities (non-insiders) with less than 3% individual stakes; INSTIT=Percentage of firm's shares owned collectively by institutions with 3% or more of the firm's stock; NONEXPCT=Percentage of external directors on the board; IACT=Sum of

consecutive five years of irrecoverable advance tax deflated by total assets; LANALYST=Natural log of ANALYSTS; SIZE=Natural log of the firms's market capitalisation; ROA: five-year mean return on assets; DUMNEG: Dummy of 1 if at least some of the earnings are negative in the 5-year period and 0 otherwise; CADBURY: Dummy taking the value of 1 of the company complies in full with the Cadbury (1992) Code of Best Practice, and zero otherwise. The critical entrenchment level (last line) is computed as the turning point where the relationship between the dividend payout ratio (MNPAY) and beneficial insider ownership changes from negative to positive, as implied by the estimated coefficients for INSBEN and $INSBEN^2$.

Table 5

Critical Entrenchment levels: Small (below median size) versus large (above median size) firms
Panel A: estimates from the inclusion of an interactive term between a size dummy and beneficial insider ownership (INSBEN) variables
Panel B: estimates from restricting the regression to either large or small firms

	1991			1996		
	Estimated critical level	p-value of INSBEN	p-value $INSBEN^2$	Estimated critical Level	p-value of INSBEN	p-value of $INSBEN^2$
Panel A						
All firms	31.99%	0.0001	0.0001	25.25%	0.0157	0.0045
Small	32.03%	0.0017	0.0011	16.48%	0.4688	0.1989
Large	31.45%	0.0014	0.0044	32.08%	0.0003	0.0181
Panel B						
Small	30.92%	0.0142	0.0062	20.44%	0.1707	0.0406
Large	31.07%	0.0030	0.0037	33.40%	0.0072	0.0251

The model used in Panel A is

$MNPAY = \alpha_1 INSBEN + \alpha_2 INSBEN^2 + \alpha_3 INSBEN * DUMMYLARGE + \alpha_4 INBEN^2 * DUMMYLARGE +$ control variables

where DUMMYLARGE = 1 if SIZE > median SIZE, else DUMMYLARGE = 0

Expected coefficient on INSBEN:

- for small firms: α_1
- for large firms: $\alpha_1 + \alpha_3$

Expected coefficient ON $INSBEN^2$:

- for small firms: α_2
- for large firms: $\alpha_2 + \alpha_4$

P-values are obtained from computing the following t-statistics:

$$\frac{\alpha_1 + \alpha_3}{STD(\alpha_1 + \alpha_3)} \text{ and } \frac{\alpha_2 + \alpha_4}{STD(\alpha_2 + \alpha_4)}$$

where STD = standard deviation, and

$$STD(\alpha_i + \alpha_j) = \sqrt{VAR(\alpha_i) + VAR(\alpha_j) + 2 * COV(\alpha_i, \alpha_j)}$$

VAR = variance

COV = covariance

Table 6

OLS regression results with insider ownership defined as total (beneficial and non-beneficial) (models 1 and 2) and with the restriction that INSBEN<turning points (models 3 and 4)
Dependent Variable: MNPAY

Variable	Expected Sign	1991 (1) Estim.Coefficient *p-value*	1996 (2) Estim.Coefficient *p-value*	1991 (3) Estim.Coefficient *p-value*	1996 (4) Estim.Coefficient *p-value*
Restriction on INSBEN		None	None	<35%	<29%
INTERCEP		***0.6509	***0.7282	***0.6993	***0.7419
		0.0001	*0.0001*	*0.0001*	*0.0001*
INSIDER	(-)	***-0.0053	**-0.0036	***-0.0068	**-0.0043
		0.0001	*0.0140*	*0.0005*	*0.0169*
$INSIDER^2$	(+)	***0.0001	***0.0001	*0.0001	*0.0001
		0.0001	*0.0097*	*0.0569*	*0.0751*
GROW1	(-)	***-0.1439	**-0.0804	***-0.1376	-0.0615
		0.0001	*0.0482*	*0.0001*	*0.1562*
GROW2	(-)/(+)	0.0038	0.0107	-0.0034	*0.0159
		0.7328	*0.1795*	*0.7899*	*0.0687*
DEBT	(-)	-0.0006	-0.0003	-0.0006	-0.0002
		0.3970	*0.7047*	*0.4165*	*0.7472*
VARIAB	(-)	**-0.0014	***-0.0036	**-0.0019	***-0.0041
		0.0417	*0.0001*	*0.0159*	*0.0001*
CASH	(+)	-0.0005	0.0007	-0.0008	-0.0001
		0.4541	*0.3601*	*0.2748*	*0.8826*
IACT	(-)	**0.0197	0.0080	**0.0205	0.0085
		0.0101	*0.2189*	*0.0169*	*0.1939*
DISPERS	(+)	0.0008	**0.0012	*0.0008	*0.0011
		0.1010	*0.0486*	*0.0931*	*0.0683*
INSTIT	(-)/(+)	0.0002	**0.0012	0.0001	*0.0011
		0.6743	*0.0391*	*0.8255*	*0.0774*
NONEXPCT	(-)/+)	0.0421	-0.0373	0.0363	-0.0274
		0.2776	*0.5005*	*0.3982*	*0.6513*
LANALYST	(-)/(+)	0.0069	**0.0351	0.0045	***0.0431
		0.5741	*0.0202*	*0.7416*	*0.0083*
SIZE1	(-)/(+)	**-0.0198	***-0.0383	**-0.0218	***-0.0416
		0.0103	*0.0001*	*0.0118*	*0.0001*
ROA	(-)/(+)	***-0.0114	***-0.0110	***-0.0113	***-0.0098
		0.0001	*0.0001*	*0.0001*	*0.0014*
DUMNEG	(-)/(+)	***-0.2752	***-0.3080	***-0.2787	***-0.2851
		0.0001	*0.0001*	*0.0001*	*0.0001*
ROAxDUMNEG	(-)/(+)	***0.0154	***0.0120	***0.0147	***0.0105
		0.0001	*0.0001*	*0.0001*	*0.0009*
CADBURY	(-)/(+)		**0.0399		**0.0424
			0.0243		*0.0253*
R^2		*37.14%*	*47.60%*	*39.00%*	*48.44%*
Adjusted R^2		*33.39%*	*43.91%*	*34.65%*	*44.25%*
N		*693*	*609*	*587*	*533*
F		*9.895*	*12.899*	*8.967*	*11.555*
Estimated critical entrenchment level (Nr. Firms above critical level)		*36.43% (124)*	*30.47% (99)*	*37.90% (16)*	*33.76% (18)*

*,** and *** indicate two-tailed significance at the 10%, 5% and 1% levels, respectively.

Definitions:

MNPAY=5-year mean of the ratio of interim plus final ordinary dividends divided by after-tax earnings before extraordinary items; INTERCEP: Intercept term; INSIDER=Percentage of the firms's shares controlled on beneficial and non beneficial terms by board directors; GROW1=5-year geometric mean rate of growth in total assets; GROW2=market to book value, defined as market capitalisation of equity plus book value of assets minus book value of equity, divided by book value of total assets; DEBT=Total debt deflated by market capitalisation; VARIAB=5-year volatility of stock returns; CASH: 5 year mean of the ratio of cash plus cash equivalents deflated by total assets; DISPERS=Percentage of the firm's shares owned collectively by entities (non-insiders) with less than 3% individual stakes; INSTIT=Percentage of firm's shares owned collectively by institutions with 3% or more of the firm's stock; NONEXPCT=Percentage of external directors on the board; IACT=Sum of consecutive five years of irrecoverable advance tax deflated by total assets; LANALYST=Natural log of ANALYSTS; SIZE=Natural log of the firms's market capitalisation; ROA: five-year mean return on assets; DUMNEG: Dummy of 1 if at least some of the earnings are negative in the 5-year period and 0 otherwise; CADBURY: Dummy taking the value of 1 of the company complies in full with the Cadbury (1992) Code of Best Practice, and zero otherwise. The critical entrenchment level (last line) is computed as the turning point where the relationship between the dividend payout ratio (MNPAY) and insider ownership changes from negative to positive, as implied by the estimated coefficients for INSIDER and $INSIDER^2$.

[1] In the UK, dividends are proposed by directors and no dividends can be approved by shareholders if they exceed the amount proposed (see Companies Act 1985, Table A, article 102).
[2] For an analysis of the Cadbury (1992) report in the context of UK corporate governance see Sheikh and Rees (1995).
[3] DeAngelo et al (1992) point out that, consistent with arguments by Modigliani and Miller (1959), discarding unusual income items provides a better explanation for firm's dividend decisions.
[4] An attempt was also made to use annual cross-sections as an alternative to the specification above. As predicted, the noisiness of dividend payout ratios in the short term reduced dramatically the overall significance of the equation. Results became, however, closer to those presented in the text (albeit with much lower significance levels), when annual regressions were restricted so as to exclude firms whose short-term earnings were more volatile.
[5] In a questionnaire survey of companies' reasons for not paying dividends, Baker (1989) observes that growth and expansion through investment is a reason listed by 76% of the respondents.
[6] Baker (1989) documents that 22% of companies inquired on the reasons for paying no dividends cite debt covenants and restrictions.
[7] Surplus ACT can arise when dividends are paid in excess of the maximum amount of taxable profits that the UK tax system allowed ACT to be set against. This surplus can be the result of a variety of situations, namely when the company pays dividends out of reserves, when the tax system allows capital to be written off at a different rate than that used in the accounts, or when dividends are paid out of foreign income. Although this surplus can, with some limitations, be relieved by carrying it back or forward, permanent differences between dividends paid and taxable profits can occur that lead to structural irrecoverable ACT surplus. See Freeman and Griffith (1993) for a description of the mechanics of ACT.
[8] It should be noted, however, that one cannot reject the possibility of inverse causality.
[9] Using or benchmarks set at 0.5, 1, or 2 p.p. below estimated entrenchment levels yielded similar results.
[10] For a description of this tax condition see, for instance, Whitehouse et al (1993), pp.514-518.
[11] Also, in a (unreported) more detailed analysis of the sample, comparison between firms in the LSPD-London Share Price Database (excluding utilities and financials) suggests that the proportion of small firms in the sample is lower than in the LSPD, although firms from basically all size categories are present.