The association between dividend payout and outside directorships

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Abstract

Purpose – The purpose of this paper is to examine whether the number of outside directors on the board of directors and dividend payout are substitutes or complements mechanisms applied by UK firms to control agency conflicts of interest within the firm.

Design/methodology/approach – The authors use tobit and logit regression models to examine the extent to which firms with a majority of outside directors on their boards experience significantly lower or higher dividend payout after controlling for insider ownership, profitability, liquidity, asset structure, business risk, firm size, firms' growth rate and borrowing ratio.

Findings – Based on a sample of 400 non-financial firms listed at London Stock Exchange for the period from 1991 to 2002, it was found that dividend payout is negatively associated with the number of outside directors on the board of directors.

Originality/value – The results suggest that firms pay lower dividends when higher number of outside directors is employed on the board. This evidence is consistent with the substitution hypothesis, which indicated that firms with weak corporate governance need to establish a reputation by paying dividends. In other words, dividends substitute for independent directors on the board. This finding offers novel insights to policy makers interested in agency conflicts of interest within the firm. It also provides evidence on the use of different substitute mechanisms for reducing agency costs.

Keywords Directors, Dividends, United Kingdom

Paper type Research paper

1. Introduction

We employ agency theory to examine the extent to which outside directorships and dividend payout are substitutes or complements mechanisms in reducing agency conflicts of interest within the firm.

Dividend payout is considered as one of effective mechanisms that can be used by managers to mitigate agency conflicts of interest within the firm (Bathala and Rao, 1995). Dividend payouts reduce agency conflicts within the firm for two reasons. First, dividend payout reduces the amount of free cash flow (FCF), which might be spent by insiders on projects for their own benefits at shareholder expense (DeAngelo *et al.*, 2006). Second, dividends expose firms to more frequent inspections by the capital markets as dividend payout increase the likelihood of new common stock issue (Easterbrook, 1984).

Outside directorships on the board of directors are also considered as a useful mechanism in agency conflicts of interest within the firm (Bathala and Rao, 1995). Outside directorships would help in monitoring and controlling executive directors' actions (Jensen and Meckling, 1976) and hence reducing agency costs.

The present paper examines whether outside directorships and dividend payout are substitutes or complements mechanisms in reducing agency costs. This issue has been examined in the US literature; however, the results are mixed.

Our results show the relationship between dividend policy and outside directorships on the board of directors is negative, i.e. firms with higher number of outside directors on the board are more restricted to pay higher dividends. This evidence is in favor of "the substitution hypothesis" (La Porta *et al.*, 2000).

Thus, the paper makes an important and novel contribution to the literature in four dimensions. First, this is the first set of comprehensive analyses that consider all available factors that might affect dividend decision. Second, it uses a large-scale dataset covering longer period of time. Third, it uses richer research methodologies (tobit and logit panel regression analyses). Finally, it uses UK institutional setting. To the best of our knowledge, this is the first study to present evidence of a link between dividend payout and outside directorships on the board of directors in the UK.

The paper proceeds as follows. Section 2 reviews prior literature and develops the research hypotheses. Sections 3-5 discuss the sample selection, the variables definitions and the methodology. Section 6 presents the empirical results. Section 7 concludes and suggests lines for future research.

2. Literature review and hypotheses

Although dividend payout is a major corporate decision faced by managers, it remains one of the puzzles in corporate finance. A large number of studies have examined the extent to which dividends provide value relevant information for investors to predict firms' future performance (Hanlon *et al.*, 2007), while others have explored the potential factors that drive a firm to pay dividends. For the purpose of the current paper, we will only survey papers that examined the potential factors affecting a firm decision to pay or not to pay dividend in a particular year.

The analysis of the determinants of firm dividend behavior has long been a key research field in the finance literature. Examples of the main determinants used in prior studies include firm specific characteristics (such as leverage, business risk, profitability, asset structure, liquidity, firm size and growth opportunity) and corporate governance characteristics (such as insider ownership and outside directorships). The selected variables in our models are based on the common variables which are argued by the previous literature to determine the dividend payout policy (Chang and Rhee, 1990; Holder *et al.*, 1998; Aivazian *et al.*, 2003; Ho, 2003). Outside directorships on boards are defined as the number of non-executive directors employed on the firm's board of directors. We choose this variable because prior research considers this variable as a key determinant of dividend policy (Schellenger *et al.*, 1989; Kaplan and Reishus, 1990; Bathala and Rao, 1995; Cotter and Silvester, 2003; Belden *et al.*, 2005; Borokhovich *et al.*, 2005). The next paragraphs briefly discuss these factors. We start with our main variable of interest. We then discuss other potential factors that might affect dividend policy.

2.1 Outside directorships on the board

Since, the publication of Miller and Modigliani's (1961) seminal work on dividend irrelevance, considerable research has been done to identify the determinants of corporate dividend policy. One crucial theory that has been extensively examined in

the literature and has received supporting evidence is agency theory. We employ agency theory to assist in determining potential factors that influence dividend policy.

Agency theory is concerned with the relationship between the principal (owner) and agent (manager) of the firms. Jensen and Meckling (1976, p. 308) define the agency relationship as:

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

Agency costs arise from the separation of ownership and control. Corporate insiders (managers) make their daily decisions about the firm's wealth (i.e. earnings). However, firm's earnings are owned by the shareholders, not the firm. Managers do not bear a substantial portion of the wealth effects of their decisions. Therefore, if they have priorities that differ from the shareholders priorities, then their decisions will be costly to the firm's owners. In addition, agency costs arise from the fact that shareholders have less information about the firm and the behaviour of its managers than managers have. This leads to conflicts of interest arise between managers and shareholders. Hence, managers may receive the full benefit of opportunistic and self-serving decisions, which shareholders bear a considerable cost because of these decisions. The agency theory-related literature recognises that dividend payout is considered as one of effective mechanisms that can be used by managers to mitigate agency conflicts within the firm (Rozeff, 1982; Harris and Raviv, 1991; Bathala and Rao, 1995). Dividend payout reduces agency conflicts of interest within the firm for at least two reasons. First, dividend payment reduces the amount of FCF, which might be spent by insiders on projects for their own benefits at shareholder expense (Grossman and Hart, 1982; Easterbrook, 1984; Jensen, 1986; DeAngelo et al., 2006). Second, dividend payment exposes firms to more frequent inspections by the capital markets as dividend payout increase the likelihood of new common stock issue (Easterbrook, 1984).

A limited number of studies have examined the association between dividend payout and outside directorships on the board of directors. These include Schellenger et al. (1989), Kaplan and Reishus (1990), Bathala and Rao (1995), Cotter and Silvester (2003), Belden et al. (2005) and Borokhovich et al. (2005). However, the results are mixed.

In Bathala and Rao (1995), the authors investigated the determinants of board composition in an agency theory framework. In particular, they examined the extent to which board composition is a substitute for alternative agency mechanisms such as debt, dividend policy and insider ownership. Based on a sample of 261 US firms in 1986, they found a negative association between outsider directors on the board and dividend policy. Similarly, Borokhovich et al. (2005) examined the association between the independence of directors on boards and dividend payout for a sample of 192 US firms in the period from 1992 to 1999. Their research findings were similar to those reported in Bathala and Rao (1995). These results suggest that firms pay lower dividends when higher number of outside directors is employed on the board. These findings are consistent with the substitution hypothesis (La Porta et al., 2000), which indicated that firms with weak corporate governance need to establish a reputation by paying dividends. This suggests that dividend payout is a substitute for outside directorships on the board. Therefore, to be able to raise external funds on attractive terms, a firm must establish a reputation either by dividends or by following a good governance mechanism (La Porta et al., 2000).

On the other hand, based on a sample of 525 US firms in 1986 Schellenger *et al.* (1989, p. 457) found a positive correlation between the percentage of outside directorships on boards and dividend payout. They concluded that:

> [...] the findings provide evidence that the composition of the board of directors affects dividend policy.

Schellenger *et al.* (1989) suggested that outside directors may be in a better position to protect shareholders' interests than inside directors. In addition, based on a sample of 160 US firms in the period from 1980 to 1983, Kaplan and Reishus (1990) found similar results. More recently, Belden *et al.* (2005) used a sample of 524 US firms in the sample period from 1998 to 2000 to examine the same issue. They found that companies with more outside directors on boards pay higher dividends.

Finally, a study by Cotter and Silvester (2003) tested the association between the independence of directors on boards and dividends payout for 109 Australian firms in 1997. Unlike prior US studies, Cotter and Silvester did not find any association between dividend payouts and independent directors.

To summarise, the above papers examined the same issue (the relationship between outside directors on boards and dividend policy), however, the results are mixed. In addition, none of these studies consider other factors that potentially affect the dividend payout. In particular, the studies neglect a number of factors – such as the firm specific characteristics – that could affect firms' decision to pay dividends. Moreover, the sample size of these studies was relatively small, so it is difficult to generalize the findings. Furthermore, some of these papers have some methodological problems (i.e. the use of a simple correlation analysis in Schellenger *et al.* (1989); the use of ordinary least square regression in Cotter and Silvester (2003); and the use of event study in Borokhovich *et al.* (2005)). Finally, these papers are based on US or Australian data, to the best of our knowledge, this research issue has not been explored in the UK[1].

Because of the mixed results in the above papers, we seek to re-examine the association between dividends payout and the number of outside directors on boards for large sample of UK firms covering longer period of time. We will also consider all potential factors that might affect dividend decision. We will use tobit and logit panel regression analyses to examine our hypotheses. Given the mixed results from prior literature, no directional prediction of the relationship between outside directorships on boards and dividend payout is hypothesized in our paper. We formulate our *H1* as follows:

H1. There is a relationship between the number of outside directors on boards and dividend payout ratio.

2.2 Profitability

Profitability measures the business performance. It is defined as the ability of a firm to generate profit. Our profitability measure is the cash flows to total assets ratio, which is an index for the percentage of the total assets to generate cash flows. A firm's profitability is considered to be an important factor that affects dividend policy. This is because profitable firms are willing to pay higher amounts of dividends and hence a positive relationship is expected between firm's profitability and its dividend payments. This result is also supported by the signalling theory of dividend policy.

Prior studies found that profitable firms pay dividends to convey their good financial performance (Chang and Rhee, 1990; Ho, 2003; Aivazian *et al.*, 2003). In the same vein, the pecking order hypothesis suggests that firms finance investment opportunities in a specific order: first with the retained earnings, second, with debt financing and third, from external financing sources (Myers, 1984; Myers and Majluf, 1984). If the costs of issuing debt and equity are considered, then less profitable firms are not willing to pay dividends. Thus, profitable firms will find it more significant to pay dividends and are more able to have retained earnings. We propose *H2* as follows:

H2. There is a positive relationship between profitability and dividend payout ratio.

2.3 Liquidity
Liquidity measures the extent to which a firm is able to meet its payment obligations. A firm's liquidity is an important factor that affects the firm decision to pay cash dividends. High-liquidity firms, i.e. firms with higher cash availability and near cash assets, pay higher dividends to shareholders than those with insufficient cash. This positive association between liquidity and cash is supported by prior literature and signalling theory (Ho, 2003). Therefore, our *H3* is formulated as follows:

H3. There is a positive relationship between liquidity and dividend payout ratio.

2.4 Assets structure
Asset structure is defined as the tangible assets, namely, total assets minus current assets divided by total assets. This definition is consistent with the previous literature (Aivazian *et al.*, 2003). Koch and Shenoy (1999, p. 26) argued that:

Firms with more tangible assets have greater tax benefits without relying on debt, and therefore might be more inclined to use dividend policy to influence information asymmetry and agency costs.

Therefore, a positive relationship between firm's assets structure and dividend payout is expected. On the contrary, Aivazian *et al.* (2003, p. 381) found that asset tangibility has an inverse relationship with dividend payout. They argued that:

[…] when the assets are more tangible, fewer short-term assets are available for banks to lend against. This imposes financial constrains on firms operating in more primitive financial systems, where the main source of debt is short-term bank financing than in more primitive financial systems, where the main source of debt is short-term bank financing.

It is worth noting that Ho (2003) has also supported this negative association between asset tangibility and dividend payout. Because of the mixed results, no directional prediction on the association between assets structure and dividend payout is hypothesized in our paper. Therefore, we formulate our *H4* as follows:

H4. There is a relationship between assets structure and dividend payout ratio.

2.5 Business risk
Business risk is defined as the risk associated with the unique circumstances of a particular company, as this might affect the share price of that company. It is the

probability of loss or any bad news inherent in a firm's operations and activities that might impair its ability to provide returns on investment.

Chang and Rhee (1990, p. 24) argued that:

> A firm with stable earnings can predict its future earnings with a greater accuracy. Thus, such a firm can commit to paying larger proportion of its earnings as dividends with less risk of cutting its dividends in the future.

Chang and Rhee (1990), Holder *et al.* (1998), Koch and Shenoy (1999), Ho (2003) and Aivazian *et al.* (2003) explain the association between business risk and dividends. They argued that a firm's business risk is considered an important factor in the dividend policy decision. In particular, they hypothesized that the higher the business risk, the higher the likelihood that the firm will be bankrupted and hence the lower the possibility for the firm to pay dividends. As a result, they argued that the dividend policy should be inversely related to business risk. Their empirical findings showed a negative association between business risk and dividend policy. Therefore, we propose our *H5* as follows:

H5. There is a negative relationship between business risk and dividend payout ratio.

2.6 Firm size

Firms can be categorised firms according to their size (measured by market capitalisation; total sales or total assets) for the purpose of statistical analyses. For the present paper, we use total assets as a proxy for the firm size. Firm size variable has become a key variable in prior literature to explain the firm's decision to pay dividends. More specifically, Holder *et al.* (1998), Gul and Kealey (1999), Koch and Shenoy (1999), Chang and Rhee (1990), Ho (2003) and Aivazian *et al.* (2003) argue that large firms are more likely to be mature and thus have easier access to capital markets, and should be able to pay more dividends. This indicates that large firms can afford to pay higher dividends than the smaller ones. In other words, they argued that firm size can serve as an index for the cost of external debt financing, and hence a positive relationship is expected between firm size and dividend policy, indicating that large firms will have less issuing costs. The findings of these papers support the hypothesized positive association between firm size and dividend policy. As a result, we formulate our *H6* as follows:

H6. There is a positive relationship between firm size and dividend payout ratio.

2.7 Growth opportunities

The concept of growth opportunities refers to the extent to which a firm sustains the level of growth at a rate which is deemed to be high in comparison to the majority of firms. Growth opportunities variable was used in prior research as a key determinant of dividend policy. In particular, Chang and Rhee (1990) found that the higher the firm's growth opportunities, the more the need for funds to finance expansion, and the more likely the firm is to retain earnings than pay them as dividends. In the same vein, Myers and Majluf (1984), Holder *et al.* (1998); Gul and Kealey (1999), Ho (2003) and Aivazian *et al.* (2003) argued that firms with high-growth opportunities would be expected to have different investment opportunity and hence they expected

low-dividend payments for high-growth firms. The findings of these studies support the negative association between dividends and growth opportunities. As a result, we formulate our *H7* as follows:

H7. There is a negative relationship between firms' growth opportunities and dividend payout ratio.

2.8 Debt level

Debt level is a ratio which shows total debt as a percentage of shareholders' funds. It measures the extent to which a firm is financed by external funds. Agency models suggest that dividend payments and capital structure can reduce the problems related to information asymmetry. Dividends and debt financing can serve as a mechanism to reduce cash flow under management control, and help to mitigate the agency problems. Therefore, a negative relationship is expected between dividend policy and capital structure. In the same vein, Jensen *et al.* (1992) and Aivazian *et al.* (2003, p. 380) argued that a firm's leverage is a key factor explaining the firm's decision to pay dividend. They found a negative association between firm's leverage and dividends. They argued that "Firms with relatively less debt and more tangible assets have greater financial slack and more able to pay and maintain their dividends." This means that firms with low-debt ratios are willing to pay more dividends. This result is supported by the agency costs theory of dividend policy. However, Chang and Rhee (1990, p. 23) found a positive association between leverage and dividend policy, suggesting that firms are borrowing money to pay dividends. This helps in signalling good news information for investors about a firm's future prospects. This result is supported by the signalling theory. They argued that:

> Firms with high payout ratios tend to be debt financed, while firms with low payout ratios tend to be equity financed.

Based upon the above discussion, we formulate our *H8* as follows:

H8. There is a relationship between debt level and dividend payout ratio.

2.9 Insider ownership

Insider ownership is defined as the percentage of a firm's common share held by insiders as a proportion of the number of shares outstanding. This variable is commonly used in prior research as a determinant of dividend policy (Mehar, 2002; Al-Malkawi, 2007). Mehar (2002) hypothesised and found that if a company has a large concentrated ownership then the chances of a dividend would be higher, because by such a manner dividend will go into the pockets of the directors. The chances of dividend payment will be low if a significant large amount is paid as a dividend to outsiders. In this case directors will compensate themselves through the executive compensatory benefits. The directors compare that how can they maximize their earnings, either through dividend or through executive salaries. On the other hand, Al-Malkawi (2007) hypothesised and found that insider ownership is negatively associated with dividends policy. He suggested that agency costs may be reduced if the percentage insider ownership is increased. Therefore, there is no need for firms with higher insider ownership to use dividends as a device to mitigate agency costs. Farinha (2003) explains these mixed results by showing evidence that dividend payouts are

negatively related to 'beneficial' insider ownership below an entrenchment level of ownership, while they are positively related above that level. Because of these mixed results; *H9* is formulated as follows:

H9. There is a relationship between insider ownership and dividend payout ratio.

3. Sample selection
The initial sample consists of firms in the International Centre for Corporate Social Responsibility (ICCSR) UK Environmental & Financial Dataset, which contained information for UK firms from 1991 to 2002[2]. The initial sample is restricted to ICCSR Dataset because it is the only available source of information for the number of outside directorships on the board of directors for a large sample of firms over long period of time[3], [4]. We delete financial firms from our analyses. The sample is also narrowed down by eliminating firms whose financial and accounting data do not exist on Datastream or Worldscope. This gives us a final sample of 400 non-financial firms for the period from 1991 to 2002 inclusive. It is worth noting that the number of firms-years observations in our tobit model is 3,270 and 3,515 in our logit model.

4. Variables definitions
To test the empirical hypothesis we need appropriate indicators for dividend measure. Following the corporate finance literature, we apply the dividend yield [dividends per share (Datastream Item No. 190) divided by earnings per share (Datastream Item No. 183)] as the main dividend measure in the tobit regression. We also use dividend dummy (one for dividend paying firms, zero otherwise) for the logit regression. Information related to this variable was collected from the ICCSR Dataset.

We also collect our main explanatory variable (the number of outside directorships on the board of directors, OUTSIDE.DRCTR) from the ICCSR Dataset. This represents the number of board directors employed in non executive roles (Datastream Item No. 243). We expect a negative association between OUTSIDE.DRCTR and dividends policy.

The set of variables that we incorporate in our model is in line with the existing empirical literature[5]. More precisely, we also include a measure of profitability (cash flow to assets, Worldscope Item No. 08311); a measure for liquidity (FCF per share, Worldscope Item No. 05507)[6]; a measure of asset tangibility [fixed assets (Datastream Item No. 392-Datastream Item No. 376/total assets (Datastream Item No 392)]; a measure of business risk (beta of the firm collected from Datastream); a measure of firm size (natural logarithm of total assets Datastream Item No. 392); a measure of firm growth opportunities (Datastream item PTBV defined as the price dividend by the book value or net tangible assets per share for the appropriate financial year end, adjusted for capital changes); borrowing ratio (Datastream Item No. 733 which is the total loans divided by equity capital and reserves minus total intangibles) and the percentage of a firm's common stock held by insiders as a proxy for insider power (Worldscope Item No. 08021)[7].

5. Research method
This section describes the empirical approach and presents the baseline models. The generally applied empirical modelling of dividend policy that has been used in the

literature is to apply different regression models. We examine the relationship between board independence and dividend payout in a panel multiple regression framework to control for firm specific characteristics other than governance. We apply the random-effects tobit model to investigate the drivers of dividend payment (level and amount). The reason behind using the logit model in our analysis is the fact that when firms decide their dividend policy they face two options, to pay dividends and not to pay dividends. Hence, the logit model is the best model to reflect such a decision. It is also worth noting that the tobit model is used to consider the fact that dividend payments has two outcomes either zero, in which firms do not distribute dividends or a positive value in case firms decide to pay dividends to their shareholders. In addition, dividends will never be negative and hence the tobit model is more preferable to be used.

The formula of the tobit model is expressed by the following equation:

$$\begin{bmatrix} D_{it} = \alpha + \beta' X_{it} + \varepsilon_{it} & \text{if the right-hand side} > 0 \\ = 0 & \text{otherwise} \end{bmatrix}$$

where D_{it} is the dividend payout ratio measured by:

$$\frac{\text{Dividend per share}}{\text{Earning per share}}.$$

In addition, the random-effect logit model is used to examine the factors that may affect the probability of paying dividends; it assumes that the response probability has the form of:

$$P_i = E\left(Y = \frac{1}{X_i}\right) = \frac{\exp\left(\mathbf{X}_i^{\mathrm{T}}\beta\right)}{1 + \exp\left(\mathbf{X}_i^{\mathrm{T}}\beta\right)} = \frac{1}{1 + \exp\left(-\mathbf{X}_i^{\mathrm{T}}\beta\right)}$$

where $\mathbf{X}_i^{\mathrm{T}}\beta$ is a matrix of unknown parameters. The above equation represents the logistic distribution function. $\mathbf{X}_i^{\mathrm{T}}\beta$ ranges from $-\infty$ to $+\infty$, P_i ranges between 0 and 1. In addition, P_i is nonlinear related to $\mathbf{X}_i^{\mathrm{T}}\beta$. If the probability of a firm to pay dividend is P_i, then $(1 - P_i)$ is the probability of not paying dividends is:

$$P_i = \frac{1}{1 + \exp\left(X_i^{\mathrm{T}}\beta\right)}.$$

Thus:

$$\frac{P_i}{1 - P_i} = \frac{1 + \exp\left(\mathbf{X}_i^{\mathrm{T}}\beta\right)}{1 + \exp\left(-\mathbf{X}_i^{\mathrm{T}}\beta\right)} = \exp\left(\mathbf{X}_i^{\mathrm{T}}\beta\right)$$

Knowing that $P_i/(1 - P_i)$ is the odds ratio in favour of paying dividends, the ratio of the probability that the firm will pay dividends to the probability that it will not pay dividends. Taking the natural log of this ratio:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = X_i^T \beta,$$

where L is called the logit, and so this model is called the logit model. To estimate the model, the following equation is used:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = \mathbf{X}_i^T \beta + \varepsilon_i.$$

The dependent variable is dummy variable takes 1 if the firm paid dividends and zero otherwise. $\mathbf{X}_{it}$ = column vector of financial variables of firm i at time t, this vector consists of the following variables:

- X_1(OUTSIDE.DRCTR) = The number of outside directorships on boards.
- X_2(CFA) = Cash flow/Total assets.
- X_3(FCF) = Free cash flow per share.
- X_4(TANG) = Fixed assets ratio.
- X_5(BETA) = Beta for the firm.
- X_6(SIZE) = The natural logarithm of the total assets.
- X_7(PTBV) = Price to book value.
- X_8(BORR) = Borrowing ratio.
- X_9(CHS) = Closely held shares.
- ε_{it} = Residual error for firm i at year t.

6. Empirical findings
Table I presents descriptive statistics for our regression variables. It shows that the average number of outside directors on the board is 4, with a maximum number of 18 outside members[8]. It also shows very low-dividend payments. On average UK firms pay £0.05 with a maximum payment of £3.3. In addition, the table shows that – on average – most of firms in our sample are profitable firms as the mean cash flow to total assets is 3.3. It is clear that most of firms in our sample have liquidity problems as the mean FCF is negative. This indicates that firms in our sample will not be able to meet their payment obligations to security holders and this will affect their decision to pay cash dividends.

Tables II and III show the results of the random-effect tobit and logit regressions analyses. Our main variable of interest is OUTSIDE.DRCTR. The tobit regression shows that the coefficient estimate on the OUTSIDE.DRCTR variable is negative and marginally significant ($t = -1.90$, $p < 0.10$). The logit regression shows similar results. In particular, it shows that the coefficient on OUTSIDE.DRCTR is negative and statistically significant ($t = -3.97$, $p < 0.05$). The results indicate there is negative relationship between the independence of board of directors and the extent of dividend payout. It is well-known that the main purpose of the inclusion of outside directors on the board is to reduce the conflict of interests between insiders (managers) and outsiders (shareholders). Another way on reducing this conflict of interests is the use of dividend signalling. Therefore, both forms of monitoring mechanisms are substitutes. This leads us to accept *H1*.

Variable	OBS	Mean	SD	Min	Max
Dividend yield	3,505	0.05	0.17	− 0.41389	3.34
OUTSIDE.DRCTR	3,779	4.34	1.99	0	18
CFA	3,689	3.31	176.81	− 8,665.86	90.52
FCF	3,698	− 0.03	0.50	− 13.57	8.15
TANG	3,867	0.53	0.23	− 0.04	0.99
BETA	3,860	0.65	18.91	− 1,115.52	199.21
SIZE	3,867	13.30	1.68	4.74	18.96
PTBV	3,784	5.86	111.07	− 444.17	6,431.85
BORR	3,867	0.79	13.72	− 197.79	638.52
CHS	3,720	78,045.34	411,442.50	0	13,668,963

Notes: Dividend yield measured by DPS, divided by EPS, OUTSIDE.DRCTR is the number of outside directorships in the board of directors, CFA is the return on assets, measured by cash flow to total assets, FCF, free cash flow per share, TANG is the tangible asset ratio measured by fixed assets to total assets ratio, Beta, is beta for the firm, SIZE is the natural logarithm firm size measured by total assets. PTBV is the market-to-book ratio measured by market price per share divided by book price per share, BORR is the borrowing ratio, and CHS is cross-holder ownership

Table I.
Descriptive statistics

Independent variables	Dependent variable: dividend payment
	Random effect tobit model
Intercept	0.45[*]
OUTSIDE.DRCTR	− 0.01[**]
CFA	− 0.01
FCF	− 0.01
TANG	− 0.02[*]
BETA	− 0.01[*]
SIZE	0.01[*]
PTBV	− 0.01
BORR	− 0.01
CHS	− 0.01[**]
Observations	3,265
Wald χ^2	20.27[*]

Notes: Significant at the [*]1 and [**]10 per cent levels (two-tail test), respectively. The dependent variable is dividend yield measured by DPS, divided by EPS. The independent variables: OUTSIDE.DRCTR is number of outside directorships in the board of directors, CFA is the return on assets, measured by cash flow to total assets, FCF, free cash flow per share, TANG is the tangible asset ratio measured by fixed assets to total assets ratio, BETA, is beta for the firm, SIZE is the natural logarithm firm size measured by total assets. PTBV is the market-to-book ratio measured by market price per share divided by book price per share, BORR is the borrowing ratio, and CHS is cross-holder ownership

Table II.
Tobit model

The tobit regression analysis in Table II shows no significant association between profitability and dividend yield. However, the logit regression analysis in Table III shows a strong significant positive relationship between profitability and the dividend payments status. The coefficient estimate on the profitability variable is positive and statistically significant ($t = 7.27$, $p < 0.05$). This means that profitable firms are more likely to pay dividends for their shareholders. This result is in line with the signalling

Independent variables	Dependent variable: dividend payment	Random effect logit model
Intercept		-5.85^*
OUTSIDE.DRCTR		-0.31^*
CFA		0.10^*
FCF		-0.01
TANG		-6.34^*
BETA		-1.27^*
SIZE		1.27^*
PTBV		-0.01
BORR		-0.01
HS		-0.01
Observations		3,515
Wald χ^2		120.20^*
Likelihood ratio		510.44^*

Notes: Significant at the [*]1 and [**]10 per cent levels (two-tail test), respectively. The dependent variable is a dummy variable which takes 1 if the firm pays dividend and zero otherwise. The independent variables: OUTSIDE.DRCTR is number of outside directorships in the board of directors, CFA is the return on assets, measured by cash flow to total assets, FCF, free cash flow per share, TANG is the tangible asset ratio measured by fixed assets to total assets ratio, BETA, is beta for the firm, SIZE is the natural logarithm firm size measured by total assets. PTBV is the market-to-book ratio measured by market price per share divided by book price per share, BORR is the borrowing ratio, and CHS is cross-holder ownership

Table III.
Logit model

theory of the dividend policy. Therefore, the more profitable the firm is, the higher the possibility to pay dividends. In the same vein, the pecking order hypothesis suggests that firms finance investment opportunities in a certain order: first with the retained earnings, second, with debt financing and third, from external financing sources (Myers, 1984; Myers and Majluf, 1984). Thus, profitable firms will find it more significant to pay dividends and to generate more retained earnings. Researchers in the financial literature arena found the same result such as Jensen *et al.* (1992) and Aivazian *et al.* (2003). Based on the logit regression results, we accept *H2*.

The results in Tables II and III show that there is no evidence of a relationship between assets liquidity and dividends payments. The negative association between liquidity and dividends means that the more firms payout cash dividends the less the cash and consequently less the firms asset liquidity (Darling, 1957; Baker *et al.*, 2001; Myers and Bacon, 2004). However, our results indicate that if a company has a good liquidity position, it does not mean that it will pay higher or lower dividends to shareholders. Therefore, we reject *H3*[9].

The results in Tables II and III show that there is strong evidence of a negative relationship between tangible assets and dividend ($t = -2.78$, $p < 0.05$ in Table II and $t = -6.06$, $p < 0.05$, in Table III). This negative relationship is supported by the agency theory (Ho, 2003) and consistent with prior literature (Aivazian *et al.*, 2003). Thus, the more the tangible assets in the firm the lower the size of the short-term assets which can be used as collateral for short-term debt financing and hence the lower debt financing. Therefore, firms will depend more on their retained earnings, which means that the lower the chance to pay dividends. Therefore, we accept *H4*.

The results in Tables II and III indicate that there is a significant negative relationship between business risk and dividend payments decision ($t = -1.97$, $p < 0.05$ in Table II and $t = -5.32$, $p < 0.05$ in Table III). The higher the business risk is the more the likelihood that the firm will be bankrupted and hence the lower the possibility for firms to pay dividends. This result is also consistent with agency theory and prior studies (Jensen *et al.*, 1992; Holder *et al.*, 1998; Ho, 2003; Aivazian *et al.*, 2003). Therefore, we accept *H5*.

The results in Tables II and III show that there is strong significant positive relationship between firm size and dividend payment decision ($t = 3.11$, $p < 0.05$ in Table II and $t = 9.73$, $p < 0.05$ in Table III). This means that large firms tend to be more diversified than smaller firms and hence less likely to be susceptible to financial distress, and more able to pay dividends to the shareholders. This relation is supported by the transaction cost theory of dividend policy and prior literature (Chang and Rhee, 1990; Holder *et al.*, 1998; Gul and Kealey, 1999; Koch and Shenoy, 1999; Ho, 2003; Aivazian *et al.*, 2003). Therefore, we accept *H6*.

The regression results do not support the argument that growth opportunities play a key role in the dividend policy decision. The results in Tables II and III show that there is a insignificantly negative association between firms' expected growth rate and dividend payments. Therefore, we reject *H7*.

Tables II and III also show a negative, but insignificant, association between the borrowing ratio and the dividend payout. This finding appears in both tobit and logit models and is in line with agency theory. This negative relationship may be because firms with low-debt ratios tend to pay more dividends. Thus, firms with high-debt ratios have lower financial slack and face difficulties in paying dividends to shareholders (Jensen *et al.*, 1992; Aivazian *et al.*, 2003). However, because the results are not statistically significant, we reject *H8*[10].

Finally, the tobit regression in Table II shows that the percentage of a firm's common share held by insiders is negatively associated with dividend yield. This result is marginally significant ($t = -1.73$, $p < 0.10$). The logit regression shows negative – but insignificant – association between dividend payments status and insider ownership. The negative association indicates that there is no need for firms with higher insider ownership to use dividends as a device to mitigate agency costs as both tools are substitute forms of monitoring mechanisms. Based on the tobit regression results, we accept *H9*.

7. Conclusion

The study used both panel tobit and logit models to investigate the determinants of the dividend policy and the factors that may affect the likelihood of paying dividends. The selection of both models is based on the fact that firms either pay dividends or not, and in case of paying dividends the value of such payment will never be negative. The dependent variable in the tobit model is the dividend payout ratio while it is a dummy variable that takes a value of (1) if the firm pays dividend and (0) otherwise in the logit model. The independent variables are: board independence, insider ownership, profitability, liquidity, asset structure, business risk, firm size, firms' growth rate and borrowing ratio.

Based on the regression results, the study finds that there is an effect for non-executive directors, asset structure, business risk, firm size, profitability, and the cross-holder ownership on firms' dividend policy. Our main contribution in this paper

is the fact that corporate governance mechanisms (such as board independence) and dividends are substitute forms of monitoring mechanisms. Hence, there is a significant effect outside directors have on the decision of paying dividends. It will be also interesting to know the relationship between corporate dividends policy and other corporate governance characteristics such as audit committee size, audit committee expertise, audit committee meetings, to see whether these are substitute or complementary forms to reduce conflict of interest between insiders and outsiders. However, such discussion is beyond the scope of our paper. Additional analysis could also be conducted to examine the extent to which institutional ownership has an effect on paying dividends. Finally, it is also worth noting that further analysis could be developed to investigate the interaction between capital structure and dividend policy, and the effect of such interaction on firms' corporate governance.

Notes

1. The majority of the reviewed studies were conducted in a US context where corporate governance data are available for large sample of firms at that time. This research issue has not been explored in the UK because of the limited access to corporate governance information on Datastream. It worth mentioning that Hussainey and Walker (2009) argued that the number of UK dividend-paying firms is greater than US dividends-paying firms during in the period of 1990s until the end of 2002 (73 per cent in the UK compared with 23 per cent in the USA). Therefore, it would be interesting to know what drives UK firms' decision to pay dividends.

2. The authors acknowledge the ICCSR, Nottingham Business School Nottingham University (UK) for allowing us to use Datastream item no. 243 which represents the number of outside directorships on the board of directors.

3. Information about the number of outside directors on boards is not available on Datastream after 2002. We believe that the 1991-2002 findings should remain applicable in years beyond 2002.

4. Before undertaking the analysis, we select a random sample of 100 firms from the ICCSR Dataset. For these firms, we collect total assets, PTBV and borrowing ratio from Datastream and we check these numbers with those reported in ICCSR Dataset. No errors are found. This ensures that ICCSR captures reliable and complete data.

5. Information related to asset tangibility, firm size, growth opportunity and borrowing ratio was collected from the ICCSR Dataset, while we collect information about profitability, liquidity and insider ownership from Datastream/Worldscope.

6. FCF is defined as the cash flow available for distribution among all security holders of a firm.

7. Insider power or insider ownership refers to the number of shares held by insiders (i.e. managers) as a proportion of the number of shares outstanding.

8. We believe that this number is too high for a given firm. This is because UK firms adopted the Cadbury Committee recommendations of at least three outside directors. This is confirmed by the mean number of outside directors on boards in Table I.

9. We also used different indexes for asset liquidity, such as the current ratio and working capital ratio. The results indicate that there is no significant association between asset liquidity and dividend policy.

10. We also used different capital structure indexes such as total debt to total assets ratio and total debt to total equity ratio and we have the same insignificant result.

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