Determinants of the Likelihood to Pay Dividends: Evidence from Saudi Arabia

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Abstract: The purpose of this study is to examine the determinants of the likelihood to pay dividends of firms listed on the Saudi Stock Exchange (SSE). The analysis is based on panel data techniques covering the period from 2005 to 2011 with 483 firm-year observations. The study develops ten testable research hypotheses and uses the general-to-specific modelling approach to choose between the rival hypotheses. We estimate the determinants for a given firm to pay dividends to its shareholders through the binary response model, namely Logit regression. The results show that larger, profitable and mature firms are more likely to pay dividends while firms with high leverage and business risk are less likely to pay dividends in the Saudi context. The results also reveal that ownership structure, growth opportunities and asset tangibility are not statistically significant determinants of corporate dividend decisions in Saudi Arabia. These results are generally consistent with the agency costs and the transaction costs hypotheses. The evidence also lends some support for the signalling and the pecking order arguments.
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1. Introduction

The topic of dividend policy remains one of the most controversial issues in corporate finance. For more than five decades financial economists have engaged in modelling and examining corporate payout policy. In their pioneering work, Miller and Modigliani (1961) demonstrate that under the assumptions of perfect capital market, dividend policy is irrelevant and has no impact on firm's value. Since then, many financial researchers challenge Miller and Modigliani's proposition and argue that once the assumptions of perfect capital market are relaxed dividend policy may matter.

The patterns of corporate payout policies not only vary over time but also across countries, especially between developed and developing economies (Al-Malkawi, 2008). For example, Glen et al. (1995) find that dividend policies in emerging markets differed from those in developed markets. They report that dividend payout ratios in developing countries are only about two thirds that of developed countries. By and large, firms in emerging capital markets face more financial constraints and limited resources to finance their investment opportunities, which may result in more reliance on retained earnings and accordingly lower payout ratios. In the case of Gulf Cooperation Council (GCC) countries in general and Saudi Arabia in particular, companies operate in a quite unique environment. For instance, there are no personal taxes, relatively low corporate taxes and companies have less financial constraints than their counterparts in other emerging markets. Moreover, emerging markets including Saudi Arabia are usually characterized by concentrated ownership and financial systems that are bank rather than market-based. In this case, banks can play an important role in closing the information gap between firm's management and the market, rendering the role of dividends as a device for signalling or reducing agency costs less important. These differences and the peculiarities of the Saudi market raise the question about the extent to which competing dividend policy theories can apply to such market. Thus, the current study will attempt to answer this question.

Although dividend policy is not a new area of research, it is still attracting the attention of financial economists and for many researchers it remains one of the most interesting and puzzling topic in modern corporate finance. Furthermore, despite the emergence of numerous research on dividend policy, an examination of what determines corporate dividend decision in emerging equity markets such as Saudi Stock Exchange is currently not well established in the literature. Moreover, the existing work on emerging markets has also produced conflicting results. Therefore, the current study contribute to the literature by shedding more light on what factors determine corporate dividend decisions in a major emerging market namely Saudi Arabia. In addition, the paper provide direct test of the impact of ownership structure, such as government, institutional and family shareholdings, on the dividend policy of Saudi public holding companies. To the best of our

knowledge, the present paper is the first of its type to examine these factors within the Saudi context.

The main purpose of this paper therefore is to identify the factors that influencing dividend decision of firms listed on the Saudi Stock Exchange (SSE). The paper examines 69 non-financial companies with 483 firm-year observations for seven-year period from 2005-2011. The general-to-specific modelling approach is employed to choose between the competing hypotheses and the random effects Logit model on panel data is used to estimate those factors affecting the likelihood of paying dividend in Saudi Arabia.

This paper proceeds as follows. Section 2 elaborates on the theoretical background and hypotheses development. The data and research methodology are described in Section 3. The results are presented in Section 4. The final section concludes the paper.

2. Theoretical Background, Hypotheses Development and Relevant Literature

This section presents the theoretical background of the possible factors that might influence corporate dividend policy supported by the relevant literature which in turn is used to formulate the research hypotheses.

2.1 Profitability

Dividends are the distribution of a firm's profits to shareholders. Thus, it can be argued that profitability of a firm is the key determinant in making dividend policy decisions. It is expected that profitable firms are more likely to pay dividend as compared to non-profitable firms. The pecking order hypothesis, proposed by Myers (1984) and Myers and Majluf (1984), suggests that firms finance their investments with the internally generated (retained earnings) and if external financing is needed they prefer to issue debt before issuing equity to reduce the costs of information asymmetry and other transactions costs. This financing hierarchy thesis might also have an effect on the dividend decision. That is, taking into account the costs of issuing debt and equity financing, less profitable firms will not find it optimal to pay dividends, ceteris paribus. On the other hand, highly profitable firms are more able to pay dividends and to generate internal funds to finance investments. Therefore, the pecking order hypothesis provides a plausible explanation for the relationship between profitability and dividends. Prominent scholars such Fama and French (2001) interpret their results of the positive impact of profitability on the likelihood to pay dividends for US firms as consistent with the pecking order hypothesis (see also Fama and French, 2002).

In his classical study on how U.S. managers make dividend decisions, Lintner (1956) finds that the current earnings and previous dividends are the primary factors affecting dividend decision. Further, Baker, Farrelly and Edelman (1986) survey 318 firms listed on New York Stock Exchange and reached to a result consentient with Linter's findings. In more recent study, Baker et al. (2007) find that the level of current and future earnings is one of the key factors affecting dividend policy of Canadian dividend-paying firms. For emerging markets, Al-Malkawi (2007 and 2008) finds that profitability is the main determinant of both the level of dividend payments and the likelihood to pay dividends for companies listed on the Amman Stock Exchange, respectively. In the Saudi context, Al-Ajmi and Abo Husain (2011) report positive relationship between profitability, measured by earnings per share, and the likelihood of paying dividends.

In the current study, we employ the return on equity (ROE) as a measure for profitability. Based on the above discussion and consistent with prior research, ROE is expected to be an important determinant of corporate dividend decision in Saudi Arabia and increase the likelihood to pay dividends. Thus, the following hypothesis is proposed:

H_1: Ceteris paribus, profitability increases the likelihood of paying dividends.

2.2 Earnings Variability (Risk)

Consistent with dividend signalling hypothesis, Chang and Rhee (1990) argue that "a firm with stable earnings can predict its future earnings with greater accuracy. Thus, such a firm can commit to pay larger portion of its earnings as dividends with less risk of cutting dividends in the future" (p.24). This suggests an inverse relationship between variability in earnings and dividend payouts. Baker et al. (2007) show that, the stability of earnings is considered to be very important factor influencing dividend policy of Canadian dividend-paying firms. More recently, Baker and Powell (2012) report similar finding for Indonesian firm.

Furthermore, as agency theory predicts, dividend payments can mitigate the agency problem between principals (owners) and agents (managers). However, high payout ratios force companies to rely on external financing which in turn increases the transaction costs (Rozef, 1982). Thus, the benefits of agency costs mitigation are offset by higher transaction costs associated with the external financing. Holder, Langrehr and Hexter (1998) maintain that "underwriters charge more for issues of riskier firms" (p.77). Therefore, firms with higher business risk should pay less dividends. Several empirical studies have reported negative relationship

between business risk and dividend payouts including Crutchely and Hansen (1989), Holder et al. (1998), and Al-Najar (2009), among others. However, Aivazian et al., (2003) find mixed results for the relationship between business risk and dividend payouts in emerging markets (see also Chang and Rhee, 1990).

Following Crutchely and Hansen (1989) we use the standard deviation of the return on assets as a measure for earnings variability i.e. business risk (see also Chang and Rhee, 1990, Aivazian et al., 2003 and Al-Najar 2009). We refer to this variable as RISK. Based on the foregoing discussion, the following hypothesis is proposed:

H_2: Ceteris paribus, the firm risk decreases the likelihood of paying dividends.

2.3 Firm size

Firm size may also affect corporate dividend decision. It has been argued that a large firm has better access to capital markets and finds it easier to raise funds with lower cost and fewer constraints compared to a smaller firm. This indicates that, other things being equal, larger firms have less reliance on the internally generated funds and therefore are more able to pay higher dividends (see, for example, Lloyd, Jahera and Page, 1985, Chang and Rhee, 1990 and Holder et al., 1998). The above assertion is, to a large extent, consistent with transaction costs explanation of dividend policy.

In addition, larger firms exhibit higher level of information asymmetry and therefore higher agency costs. This implies that larger firms should pay higher dividends to mitigate this cost (see Zeng, 2003). Crutchely and Hansen (1989) argue that "to control equity agency costs, managers of larger firms should use ownership less (due to liquidity costs) and should use dividends more (due to reduced floatation costs)" (p.43).

A wide range of financial literature has documented that size is a significant determinant of corporate dividend policy and is positively related to dividend payout ratios in developed as well as emerging markets (see, among others, Crutchely and Hansen, 1989, Chang and Rhee, 1990, Reeding, 1997, Holder et al., 1998, Fama and French, 2002, Deshmukh, 2003, Al-Malkawi, 2008, and Al-Najar, 2009). In the Saudi context, however, Al-Ajmi and Abo Husain (2011) find mixed results. Using two measures for size namely the natural logarithm of both total assets and market capitalization, the coefficient on size is found to be insignificant in relation to dividend payments but positive and significant with the likelihood of paying dividends. Aivazian et al., (2003) examine the determinants of dividend policy for various emerging markets and concluded that "there is little evidence that business risk or size affects dividend policy in a significant and consistent way" (p. 386). Such inconclusive evidence warrants further investigation.

To examine the impact of firm size on dividend decision the current paper employs the natural logarithm of total assets (LNTA). This proxy is widely used in the literature (see, Alli, Khan and Ramirez, 1993, Fama and French, 2002, Al-Najar, 2009, and Al-Ajmi and Abo Husain, 2011, among others). Based on the aforesaid discussion and consistent with previous research LNTA is expected to have a positive impact on the likelihood of paying dividends. This suggests the following hypothesis:

H_3: *Ceteris paribus, larger firms are more likely to pay dividends.*

2.4 Leverage

When a firm acquires debt financing it commits itself to fixed financial charges embodied in the interest payments and the principal amount, and failure to meet these obligations may lead the firm into liquidation. The risk associated with high degrees of financial leverage may therefore result in low dividend payments because, ceteris paribus, firms need to maintain their internal cash flow to pay their obligations rather than distributing the cash to shareholders. Moreover, Rozeff (1982) points out that, firms with high financial leverage tend to have low payout ratios to reduce the transaction costs associated with external financing. Therefore, other things being equal, an inverse relationship between financial leverage ratio and dividends is expected. Numerous studies have found a negative association between leverage and dividends (see, for instance, Jensen, Solberg and Zorn 1992, Crutchley et al., 1999, and Al-Malkawi, 2008).

To test this hypothesis the present study uses debt to equity ratio as a proxy for financial leverage (LEVER). This measure has been frequently used in the literature (see, for example, Ho, 2003, and Al-Malkawi, 2008). Thus, the following hypothesis is proposed:

H_4: Ceteris paribus, high degree of leverage decreases the likelihood to pay dividends.

2.5 Growth

Firms with high growth and investment opportunities will need the internally generated funds to finance those investments, and thus tend to pay little or no dividends. This prediction is consistent with the pecking order hypothesis proposed by Myers and Majluf (1984). Also, both residual and signalling theories have different explanation towards growth opportunities. Under residual theory, companies with high growth opportunities tend to pay lower dividends

because they may use the available funds to finance their investments with positive net present values. Under signaling perspective, high investment opportunities may be associated with high dividends as high quality firms basically may pay dividend to signal their quality to the market. Furthermore, the transaction costs hypothesis predicts negative relationship between growth and dividend payouts. That is, firms experiencing high growth need the internal funds to avoid transaction costs associated with the external financing (Holder et al., 1998).

Researchers such as Rozeff (1982), Jensen et al. (1992), Alli et al., (1993), Deshmukh (2003), and many others, have found a significant negative relationship between dividends and firms' investment opportunities. Barclay, Smith, and Watts (1995) document that, investment opportunities are significant determinant of corporate dividend policy. Fama and French (2001) affirm that investment opportunities influenced dividend decision. They find that firms with better growth and investments opportunities have lower payouts. Accordingly, we expect the firm's growth and investment opportunities to be negatively related to dividend payouts. To test this hypothesis the current study employs the market value of equity to the book value of equity normalized by the number of shares outstanding (M/B) as a proxy for growth opportunities (see, for example, Barclay et al., 1995, Aivazian et al., 2003, A-Malkawi, 2007 and Al-Najar, 2009). Based on the aforesaid discussion the following hypothesis can be formulated:

H_5: Ceteris paribus, firm growth decreases the likelihood to pay dividends.

2.6 Ownership structure

In countries with weak corporate governance and low level of protection for minority shareholders, ownership structure can play a significant role in monitoring managers and therefore reducing agency costs. This suggests less reliance on dividends as a mechanism to reduce agency costs. However, different types of controlling owners may have different influences on corporate dividend payouts (Maury and Pajuste, 2002).

2.6.1 Government shareholdings

The government or its agencies own and control a large number of publicly traded firms in many countries around the world including Saudi Arabia. Having the government (or its agencies) as a firm's largest shareholder may influence its dividend policy. In state-controlled firms, the government acts on behalf of the citizens (the ultimate owners) who are not directly in control. Therefore, in such firms, "a double principal-agent [conflict] even exists" (Gugler, 2003, p.1301). That is, on the one hand agency problems may arise between citizens and government representatives, as they might not work for the citizens' best interests, and on the other hand between state-owner and other managers. The payment of dividends may reduce the cash flow available to managers, and hence help to alleviate agency problems. Several studies report positive relationship between dividend payouts and government ownership. For example, using Austrian data, Gugler (2003) finds that state-controlled firms have large target payout ratios. More recently, Al-Malkawi (2007) documents that state-controlled firms pay higher dividends in Jordan. In the context of Saudi Arabia, Al-Ajmi and Abo Husain (2011) find no evidence of the relationship between government ownership and dividend policy.

Therefore, consistent with agency costs theory, other things being equal, state-controlled firms is expected to pay more dividends. The percentage held by the government (GOVT) is used as a measure for government ownership and the following hypothesis is formulated:

H_6: Ceteris paribus, government shareholding increases the likelihood to pay dividends.

2.6.2 Institutional shareholdings

As far as ownership structure of the firm is concerned, institutional investors can play a significant role in monitoring corporate managers, therefore reducing agency costs (See, for example, McConnell and Servaes, 1990, and Crutchley, et al., 1999).

The economies of scale of large shareholders (such as institutions) enable them to perform the monitoring role more effectively and at relatively low cost. Moreover, institutional investors are in a better position, compared to small investors, to takeover inefficient firms, which may oblige managers to be more efficient. Shleifer and Vishny (1986) argue that small shareholders favour high dividend payments to attract and compensate large shareholders in order to perform the role of monitoring the management. However, Short, Zhang, and Keasey (2002, p.108), suggest "the arm's length view of investment held by many institutional investors, coupled with the incentives to free ride with respect to monitoring activities, suggests that institutional shareholders are unlikely to provide direct monitoring themselves". Numerous studies have documented that corporate or institutional investors tend to be attracted to high-dividend stocks (see for example Han, Lee and Suk, 1999, Dhaliwal, Erickson and Trezevant, 1999, Allen, Bernardo and Welch, 2000, and Short et al., 2002). Redding (1997) argues that, institutional investors are more likely to invest in dividend-paying stocks for tax and fiduciary reasons. Black (1976) points out that certain portfolio managers deem that it is imprudent to invest in non-dividend-paying stocks.Thus; a positive

relationship between institutional ownership and dividend payouts is hypothesised. The percentage held by the institutional investors (INST) is used to measure the institutional ownership and the following hypothesis is proposed:

H_7: Ceteris paribus, institutional shareholding increases the likelihood to pay dividends.

2.6.3 Family shareholdings

In family-controlled firms, shareholder-manager conflict is significantly reduced since the managers and the ultimate owners are usually the same and large shareholders (families) have strong incentives and an ability to perform the monitoring role. As a result, the use of dividends as a tool to reduce agency costs or information asymmetry between managers and owners is less valuable, and accordingly, family-owned and controlled firms are expected to have low dividend payout ratios. However, it is worth mentioning that in such firms a potential agency problem may arise between non-family shareholders and controlling family shareholders. The percentage held by the family owners (FAML) is used to measure the family ownership and the following hypothesis is formulated:

H_8: Ceteris paribus, family shareholding decreases the likelihood to pay dividends.

2.7 Asset Structure / Tangibility

In general, the firm's assets are divided into short-term (current) and long-term (fixed) assets. Long-term assets in turn can be either tangible or intangible. The firm's tangible assets can be used as collateral against debt financing, especially in securing long-term debt (see, for example, Booth et al., 2001, and Bevan and Danbolt, 2004). Thus, ceteris paribus, a high level of tangibility in a firm's asset structure increases its debt capacity. This suggests less reliance on retained earnings, which in turn implies that there will be more cash to be paid as dividends. Therefore, firms with more tangible assets are more likely to pay dividends.

This assertion suggests that asset tangibility and dividend payouts should be positively correlated. Aivazian et al. (2003) provide empirical supporting evidence for this relation for US firms. However, for firms operating in emerging markets they find the opposite, i.e. a negative relationship between tangibility of firm assets and dividends. The authors attribute this result to the peculiarity of the financial system of these countries, where short-term bank financing is more prevalent. They argue that, since the short-term bank debt is dominating in those markets, a greater proportion of tangible assets will reduce firms' short-term borrowing capacity. In other words, a large percentage of long-term tangible assets will reduce the share of short-term assets that can be used as collateral for short-term bank financing. Al-Ajmi and Abo Husain (2011) support Aivazian et al.'s (2003) explanation for the negative relationship between assets tangibility and dividends and report negative coefficients on tangibility, but statistically not different from zero in the case of Saudi Arabia. Other studies including Ho (2003), Al-Najar (2009) predict negative relationship between assets tangibility and dividend payouts. To test this hypothesis we use the ratio of fixed asset to total assets (ATANG) to measure the tangibility of the firm's assets (see, Ho, 2003 and Al-Najar, 2009). Consistent with the above discussion and the relevant literature the following hypothesis can be proposed:

H_9: Ceteris paribus, the tangibility of the firm's asset decreases the likelihood to pay dividends.

2.8 Firm's age (control variable)

Generally speaking, mature companies are likely to be in their low-growth phase with less investment opportunities (see Barclay et al., 1995, Grullon et al., 2002, and Deshmukh, 2003). These companies are relatively older and do not have the incentives to build-up reserves as a result of low growth and few capital expenditures, which enable them to follow a liberal dividend policy. On the contrary, new or young companies need to build-up reserves to face their rapid growth and financing requirements. Hence, they retain most of their earnings and pay low or no dividends. Other things held constant, as a firm gets older its investment opportunities decline leading to lower growth rates, consequently reducing the firm's funds requirements for capital expenditures. Hence, dividend payout should be positively related to the firm's age. In the present study, therefore, the age of the firm (AGE) is used as a control variable and as a proxy for the firm's maturity or growth opportunities (see, for example, Huergo and Jaumandreu, 2004 and Al-Malkawi, 2008). Based on the foregoing discussion, the following hypothesis is proposed:

H_{10}: Ceteris paribus, mature firms are more likely to pay dividends.

3. Data and Methodology

3.1The data

The main objective of this study is to examine the determinants of corporate dividend decisions in Saudi Arabia. More specifically, the purpose of this research is to examine the factors that affect the likelihood to pay dividends of Saudi companies. Due to different financial reporting our sample includes only non-financial companies. The current study covers seven-year period from 2005 to 2011.

In order to gain the maximum possible observations, pooled cross-section and time-series data is used. The analysis is based on balanced panel data with 483 firm-year observations (69 firms × 7

years). The present paper includes both dividend-paying as well as non-dividend-paying firms. The exclusion of non-dividend-paying firms results in a well-known selection bias problem (see, for example, Deshmukh, 2003).

3.2 The General-to-Specific Modelling

In order to choose between the competing hypotheses the general-to-specific modelling approach is employed (see for example, Hendry,1995 and Hendry and Krolzig, 1999). This approach begins with the "general" unrestricted model, which includes all the variables that are identified and supported by theories of dividend policy. This process takes the following form of Model 1

$$y_{it} = \alpha_i + \sum_{j=1}^{n} \beta_j x_{i,j,t} + \varepsilon_{it}, \quad (1)$$

where y_{it} is the dependent variable for firm i in period t, and $x_{i,j,t}$ is explanatory variable j for firm i in period t, α and β are parameters, n is the number of explanatory variables, and ε_{it} is the error term, which is assumed to be iid $N(0,\sigma^2)$.

Next, from the general model a more specific (restricted) model can be obtained by eliminating the variables with insignificant t-statistics. An appropriate test statistic (Wald test) is conducted to test the validity of these restrictions. That is, to ensure that the coefficients of the dropped variables are jointly not different from zero. This step will produce the more parsimonious model, Model 2:

$$y_{it} = \alpha_i + \sum_{j=1}^{n-k} \beta_j x_{i,j,t} + \varepsilon_{it}, \quad (2)$$

where k is the number of restrictions or the variables eliminated from the general model.

The previous step is repeated and other jointly insignificant variables are removed until the model specification contains all variables that are statistically significant. Further, in testing the competing models the likelihood-ratio (LR) test is carried out. The statistic can be described as

$$LR = -2\left[\log L_r - \log L_{ur}\right] \quad (3)$$

where $\log L_r$ is the log-likelihood value for the restricted model, and $\log L_{ur}$ is the log-likelihood value for the unrestricted model. The LR follows a chi-square distribution with J degrees of freedom, or J is number of restrictions and the null model (H_0) is the restricted model. This test enables us to see whether the additional parameters in the unrestricted model significantly increase the likelihood. In other words, to confirm whether or not the unrestricted model is statistically different from the restricted model.

3.3 The Likelihood to Pay Dividends

An important question to be answered in this paper is what are the determinists of the likelihood to pay dividends of firms listed on the SSE? In order to answer such a question the binary response model is used, i.e. Logit model. Here, our interest is in the response probability

$$P\left\{PAY_{it} = 1 \middle| x_{it}\right\} = G\left(x_{it}, \beta\right) \quad (4)$$

From (4) P is the probability of firm i to pay dividends (PAY) in year t depends on the set of individual exogenous characteristics x_i (such as profitability, size, risk etc.), β is a vector of corresponding coefficients, and $G(.)$ is a function that should take on values between 0 and 1 for all real numbers ω (see Wooldridge, 2009). The logistic function G is given by

$$G(\omega) = \frac{\exp(\omega)}{1+\exp(\omega)} = L(\omega) \quad (5)$$

The general logit model can be defined as:

$$y_{it}^{*} = \beta_0 + \beta' x_{it} + \varepsilon_{it} \quad (6)$$

The dichotomous variable y, observed, is related to the latent variable y_{it}^{*} by the relation:

$$y_{it}\begin{cases} = 0 & \text{if } y_{it}^{*} \le 0 \\ = 1 & \text{if } y_{it}^{*} > 0 \end{cases} \quad (7)$$

with $y_{it} = 1$ if the firm i paid dividends at period t, and $y_{it} = 0$ otherwise, where i indexes individuals (firms) i=1,…,N, t indexes time periods (years) t=1,…,T, x_{it} is a vector of explanatory variables, represents the set of the individual exogenous characteristics of the firms that are assumed to condition the firms' decisions on dividend policy, β is a vector of corresponding coefficients, and ε is the error term, which is assumed to be iid $N(0,\sigma_\varepsilon^2)$. To estimate β is the maximum likelihood estimation method (MLE) is used. The probability to pay dividends is estimated using the random effects Logit specification on panel data (see, for instance, Al-Najjar and Hussainey, 2009).

3.4 The Empirical Model

Based on the research hypotheses developed above, the general empirical model to be estimated using the Logit specification, for firm i in period t (mathematical signs indicate the hypothesised impact on the likelihood to pay dividends, PAY) can be written as:

$$PAY = \alpha_0 + \alpha_1 ROE - \alpha_2 RISK + \alpha_3 LNTA - \alpha_4 LEVER - \alpha_5 M/B + \alpha_6 GOVT + \alpha_7 INST - \alpha_8 FAML - \alpha_9 ATANG + \alpha_{10} AGE + \varepsilon \quad (8)$$

where the variables are described in Table 1 below.

Table 1. Description of variables

Variable	Description
PAY	Equals one if the firm paid dividends in year *t*, and zero otherwise;
ROE	Return on equity as a measure for profitability;
RISK	Standard deviation of the return on assets as a measure for earnings variability;
LNTA	Size of the firm measured by natural logarithm of total assets;
LEVER	Leverage measured by the debt to equity ratio;
M/B	Market to book ratio as a proxy for growth and investment opportunities;
GOVT	Government ownership measured by percentage of shares held government;
INST	Institutional ownership measured by percentage of shares held institutions;
FAML	Family ownership measured by the percentage of shares held by family;
ATANG	Assets tangibility measured by the ratio of net tangible fixed assets to total assets;
AGE	Age of the firm.

4. Results and Discussion

Table 2 presents the summary statistics of all the variables used in the analysis. The table reports the number of observations, minimum, maximum, standard deviation, mean, median, skewness, and kurtosis for each variable. As can be seen from the table, the mean dividend-paying observations (PAY) are 56% suggesting that there are 44% of observations are zero (non-dividend-paying). The skewness and kurtosis of the variable PAY almost fall between -1 and +1 (-0.2631 and 1.0692, respectively) suggesting that it is reasonably close to normal distribution. The other variables seem to be not normally distributed as their absolute values of the skewness and kurtosis statistics do not fall between -1 and +1, the rule of thumb.

Table 2 also shows that, for our sample, on average 18.55% of the shares of the Saudi non-financial firms held by institutions followed by family ownership (3.5%) and government (1.1%). The table also reveals that the mean (median) debt to equity ratio (LEVER) of Saudi non-financial firms is 0.7066 (0.0416). The average age of the sample firms examined in the current research is 21.5 years which implies that Saudi firms are mature and well-established.

Table 3 presents the correlation matrix for all explanatory variables used in the analysis. The low intercorrelations among the explanatory variables used in the regressions indicate no reason to suspect serious multicollinearity.

Table 4 presents the results of the maximum likelihood estimation (MLE) of the random effects Logit models for the decision to pay dividends or the likelihood that a firm will pay dividends. It reports the statistical significance of each variable along with economic significance (marginal effects). The likelihood ratio test statistics reject the null hypothesis that the parameters in the regression equations are jointly equal to zero (Models 1 and 2). The likelihood-ratio test of rho provides a test for pooled (Logit) estimator against the random effects panel estimator. The test statistics are significant at 1% level which indicates that the panel-level variance component is important and, therefore, the pooled estimation is different from the panel estimation.

Table 2. Summary statistics for the dependent and explanatory variables

Variable	Obs	Min	Max	SD	Median	Mean	Skew	Kurt
PAY	483	0.000	1.000	0.4962	1.000	0.5652	-.2631	1.0692
GOVT	483	0.000	0.743	0.0888	0	0.01076	8.1249	67.0147
INST	483	0.000	0.835	0.2038	0.146	0.1855	1.2426	4.0194
FAML	483	0.000	.49	.0974	0	0.0353	3.4530	14.6087
LNTA	483	7.7745	11.5221	0.7184	9.1565	9.1700	0.8176	4.1550
LIQ	483	0	357.814	22.4740	1.2671	3.4917	15.0877	232.1717
ROE	483	-2.9374	3.1775	0.2526	0.1048	0.10707	-0.4427	92.6697
RISK	483	0.0021	0.5026	0.0713	0.0441	0.0606	4.0347	23.0729
LEVER	483	0.002	7.168	.7844	0.0416	0.7066	2.8878	16.3187
ATANG	483	-0.00136	1	.1783	0.7842	0.7391	-1.5004	5.6517
AGE	483	5	57	11.4858	21.5	24.13354	0.8784	3.3414
M/B	483	.0941	133.5746	6.8153	2.3501	3.8549	14.6081	273.5524

Notes: Variables are described in Table 1. Obs = number of observations. Min=minimum. Max=maximum. SD=standard deviation . Skew = skewness. Kurt = Kurtosis

Table 3. Correlation matrix of the explanatory variables

	GOVT	INST	FAML	LNTA	ROE	RISK	LEVER	ATANG	AGE	M/B
GOVT	1.000									
INST	-0.0692	1.000								
FAML	-0.0439	-0.0871	1.000							
LNTA	0.3406	0.4153	0.0662	1.000						
ROE	-0.0357	0.1763	0.1070	0.1350	1.000					
RISK	-0.0996	-0.2403	-0.1003	-0.2027	-0.3202	1.000				
LEVER	0.2295	-0.0603	0.2663	0.3284	0.1907	-0.1053	1.000			
ATANG	0.0705	0.0172	-0.0566	0.0647	-0.0949	0.0233	-0.1517	1.000		
AGE	-0.1600	0.2135	-0.1682	0.0353	0.1339	-0.0128	-0.0837	0.1589	1.000	
M/B	-0.0457	-0.0186	0.0473	-0.1231	0.4858	0.0437	0.3343	-0.0522	0.0454	1.000

Note: Variables are described in Table 1.

Table 4. Random effects Logit regression for the likelihood to pay dividends

Dependent Variable = PAY						
Independent Variables [Expected sign]		**General Model (1)**		**Specific Model (2)**		
		Coefficient Estimates	**Z-stat**	**Coefficient Estimates**	**Z-stat**	**Marginal Effects**
Constant		-18.7650	-3.92 ***	-20.1215	-4.94***	
GOVT	[+]	23.5756	.01	—	—	—
INST	[+]	1.2762	.83	—	—	—
FAML	[-]	3.7952	1.45	—	—	—
LNTA	[+]	1.8910	3.59***	2.0475	4.65***	0.4895
ROE	[+]	7.1812	3.75***	8.1029	4.83***	1.9371
RISK	[-]	-11.7352	-2.08**	-14.3364	-2.57**	-3.3933
LEVER	[-]	-.5851	-1.92*	-.51369	-1.78*	-.1220
ATANG	[-]	-.8314	-0.80	—	—	—
AGE	[+]	.0943	3.67***	.0854	3.67***	.0203
M/B	[-]	.0259	.42	—	—	—
Observations		483		483		
Log Likelihood		-193.3855		-195.8522		
LR test▪		χ^2 (10) = 78.87		χ^2 (5) = 73.94		
P-value		0.0000		0.0000		
Likelihood-ratio test of rho=0▪▪		32.63*** (0.000)		34.07*** (0.000)		

Notes: Variables are described in Table1. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. ▪ LR test denotes the likelihood-ratio test for joint significance. ▪▪ The likelihood-ratio test for pooled Logit estimator against the random effects Logit estimator.

The general model (Model 1) includes ten variables and encompasses all of the models, with 483 firm-year observations. All the variables possess the hypothesized signs (except for FAML and M/B). However, of the ten variables included in the model only five are statistically different from zero (LNTA, ROE, RISK, LEVER, and AGE). The general model is tested down to a more parsimonious model (Model 2). In this process five variables (GOVT, INST, FAML, ATANG, and M/B) are dropped from the general model since they are statistically not significant. The likelihood ratio test (LRT) is performed to test Model 2 (restricted) against Model 1 (unrestricted) and see whether this process statistically provides additional explanatory power to the model. In other words, do the additional parameters in the unrestricted model significantly increase the likelihood?

In this case, the LRT statistic is LR= –2 [-195.85 - (- 193.39)] = 4.92, and the critical value from a χ^2 distribution, with 5 degrees of freedom, is 11.07 (P = 0.05). Since the computed value is less than the critical value, the null hypothesis is not rejected. That is, the null model (Model 2), which is the restricted model, cannot be rejected. Therefore, Model 1 does not provide a statistically significant increase in likelihood over Model 2, which supports our

exclusion of the aforesaid variables (GOVT, INST, FAML, ATANG, and M/B).

As can be seen from Table 4, the ownership structure seems not to have any influence on corporate dividend decision in the case of Saudi Arabia. In the case of government ownership (GOV), the result presented here is consistent with Al-Ajmi and Abo Husain's (2011) findings. That is the evidence does not support the double principal-agent hypothesis proposed by Gugler (2003).

As hypothesized, the coefficient on asset tangibility (ATANG) is found to be negative but statistically insignificant. This suggests that Saudi firms do not use their tangible assets as collaterals to raise funds. Al-Ajmi and Abo Husain (2011) obtained similar result for Saudi Arabia. Contrary to expectation however, the coefficient on M/B is positive but statistically not different from zero indicating that growth opportunities as measure by M/B ratio is not a determining factor of dividend decision.

Table 4 also shows that five factors seem to influence corporate dividend decision in Saudi Arabia. These factors are firm's size (LNTA), profitability (ROE), business risk (RISK), leverage (LEVER), and firm's maturity (AGE). From Models 1 and 2, the coefficients on SIZE is statistically significant at 1% level or better (z-stats = 3.95 and 4.65 respectively). From Model 2, the marginal effects indicates that for a 10 percentage point increase in firm size as measured by market total assets (LNTA) will increase the likelihood of paying dividends by approximately 4.895 percentage points, other things being equal. The results presented here are consistent with the findings of Al-Ajmi and Abo Husain (2011) for Saudi Arabia and Al-Malkawi (2008) for Jordan. Other studies on developed markets also found positive relationship between size and dividend payouts (see for example, Crutchely and Hansen, 1989, Chang and Rhee, 1990, Reeding, 1997, Holder et al., 1998).

Similarly, profitability as measured by the return on equity (ROE) is found to be an important determinant of Saudi corporate dividend decision. The coefficients on ROE are highly significant with z-statistics of 3.75 (Model 1) and 4.83 (Model 2). Other thing being equal, a 10 percentage point increase in ROE results in an approximately 19.37 percentage point increase in the likelihood of paying dividends. This suggests that profitability is an important factor that affects dividend decision in the case of Saudi firms lending support to Al-Ajmi and Abo Husain (2011) who arrived at a similar conclusion. Our findings are also in line with the earlier findings of Fama and French (2001) for US, Al-Malkawi (2008) for Jordan, and Al-Najjar and Hussainey (2009) for UK. The significant positive relationship between profitability and dividends is generally consistent with the pecking order theory and signalling hypothesis.

Table 4 also shows that business risk is negatively related to dividend decision. The coefficients on RISK, measured by earnings variability, are negative and significant at 5% level in Models 1 and 2 indicating that an increase in the business risk reduces the probability of paying dividends. From Model 2, other thing being equal, a 10 percentage point increase in RISK results in an approximately 34% percentage point decrease in the likelihood of paying dividends.This is consistent with signalling and agency costs hypotheses and prior research (see Crutchely and Hansen, 1989, Holder et al.,1998, and Al-Najar, 2009, among others).

Another variable found to be a determinant of corporate dividend decision in Saudi Arabia is financial leverage (LEVER), measured by the debt to equity ratio. The coefficients on LEVER are consistently negative and significant at the 10% level. This suggests a higher level of financial leverage reduces the likelihood to pay dividends, consistent with transaction costs hypothesis. From Model 2, for a 10 percentage point increase in leverage the probability that a firm will pay dividends decreases by about 1.22 percentage points, all other factors being equal. Aivazian et al. (2003) found that debt and dividend payments are negatively related for firms operating in emerging markets. However, Al-Ajmi and Abo Husain (2011) reported mixed results with regard to leverage in the Saudi context.

Finally, as can be seen form Table 4, firm age is found to be robustly significant. As expected, the coefficients on AGE are positive and highly significant at 1% level or better. This suggests that mature firms are more likely to pay dividends in Saudi Arabia. This result provides support for the maturity hypothesis proposed by Grullon et al. (2002). Similar result reported by Al-Malkawi (2008) for Jordanian firms.

5. Conclusions and Implications

The purpose of this research is to examine the determinants of corporate dividend decision in Saudi Arabia. More specifically, the current study attempts to determine the factors that affect the likelihood of paying dividends using Logit specifications. The analysis is based on panel data with 483 firm-year observations covering the period from 2005 to 2011. We employ the general to specific modelling approach in order to choose between the rival hypotheses which represent various theories of dividend policy. The present study develops ten testable research hypotheses.

The results revealed that ownership structure including government (GOV), institutional (INST)

and family (FAML) shareholdings are not determinant factors of corporate dividend decision as those variables are found to be statistically not different from zero. Similarly, assets tangibility (ATANG) and growth opportunities (M/B) are found to be insignificant.

The results also showed that five variables namely size (LNTA), profitability (ROE), business risk (RISK), leverage (LEVER) and firm maturity (AGE) seem to influence corporate dividend decision in Saudi Arabia. Three factors including LNTA, ROA and AGE have positive relationship with dividends, while RISK and LEVER are negatively correlated with dividend decision. More specifically, the likelihood of paying dividends increases with firm size, profitability and maturity. That is, larger, mature and more profitable firms are more likely to pay dividends in Saudi Arabia. However, firms with more earnings variability (business risk) and more debt (leverage) are less likely to pay dividends. These results are generally consistent with the agency costs and the transaction costs hypotheses. The evidence also lends some support for the signalling and the pecking order arguments.

The findings presented in this research may offer some practical implications. For Saudi companies, the evidence shows that dividends can be used as a mechanism to reduce agency costs and as signaling device because, by and large, the results presented in this research are consistent with those two theories. For the Saudi Capital Market Authority, the results imply that corporate dividend policy can be employed as an important internal corporate governance mechanism which may help in reducing agency problems. Finally, the findings of this research may help Saudi investors to construct their portfolios according to their preference. For example, income oriented investors who prefer dividends can invest in large, mature and profitable firms, as these companies are more likely to pay dividends and avoid investing in companies with high leverage and more earnings variability, other things being equal.

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