Determinants of dividend policy: evidence from an emerging and developing market

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Abstract

Purpose – The purpose of this paper is to identify the determinants of dividend policy in an emerging and developing market.

Design/methodology/approach – The study employs a quantitative approach using 191 Sri Lankan firms and 1,337 firm-year observations as the sample. The authors apply a Binary Logistic Regression model to uncover the determinants of the propensity to pay dividends, and a Fixed Effect Panel Regression to investigate the determinants of dividend payout.

Findings – The authors identify past dividend decision, earnings, investment opportunities, profitability, free cash flow (FCF), corporate governance, state ownership, firm size and industry influence as the key determinants of propensity to pay dividends. In addition past dividends, investment opportunities, profitability and dividend premium are identified as the determinants of dividend payout. Moreover, there is a feedback between dividend yield and profitability in one lag and between dividend yield and dividend premium in two lags, as short-term relationships. Hence, past dividend decision or payout, profitability and investment opportunities are a common set of determinants with implications for both propensity to pay dividends and its payout. The findings support theories of dividends such as signaling, outcome, catering, life cycle, FCF and pecking order.

Practical implications – The findings are important for investors, managers and future research. Investors should focus on the determinants identified by our study when making investment decisions whereas managers should practice the same when formulating appropriate dividend policies for their firms. Future research should rely on propensity to pay dividends and its payout simultaneously to promote a theoretical consensus on the dividend determinant puzzle.

JEL Classification — G30, G35

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Originality/value – This is the first study that investigates determinants of propensity to pay dividends and dividend payout along with short-term relationships in a single study.

Keywords Sri Lanka, Dividend policy, Dividend payout, Propensity to pay dividends

Paper type Research paper

Introduction

The determinants of dividend policy have been investigated for decades, yet there is no consensus on which factors affect the propensity to pay dividends and dividend payout. Researchers rely on variables such as dividend yield, dividend payout ratio (DPR) or propensity to pay dividends when investigating the determinants of dividend policy, but results are often inconsistent. For instance, Botoc and Pirtea (2014) identify profitability and liquidity as positive determinants of DPR in 16 emerging markets, whereas Kuzucu (2015) argues that profitability is a negative determinant and liquidity is a non-significant predictor of DPR in Turkish listed firms. Moreover, since the 1950s past dividends have been investigated as a key determinant of dividend policy (Lintner, 1956) with similarly inconsistent results. For instance, Yusof and Ismail (2016) identify past dividends as a non-significant predictor of DPR in Malaysia, whereas Al-Kayed (2017) highlights past dividends as a key factor influencing corporate dividend policy in the Saudi Arabian context. Al-Kayed (2017) reveals a negative impact on dividend yield from profitability, liquidity, leverage, growth and past dividends among conventional banks, in contrast to Botoc and Pirtea (2014) who single out profitability and liquidity, and to Yusof and Ismail (2016) who name past dividends exclusively.

Rather than dividend payout, Fama and French (2001), De Angelo *et al.* (2006) and Denis and Osobov (2008) investigate the determinants of propensity to pay dividends. This study argues that determinants of dividend policy cannot be investigated by looking at a single dimension, and hence both the propensity to pay dividends and its payout should be included in analyses. The present study extends the literature of determinants of a dividend policy by investigating determinants of both propensity to pay dividends and its payout in a single study allowing to evaluate whether they contain the same set of determinants.

Sri Lanka is an emerging and developing market (World Economic Outlook, 2017) with 296 listed companies across 20 sectors totaling $20bn in market capitalization (Colombo Stock Exchange, 2017). A lack of prior studies on dividend determinants in Sri Lanka, alongside the inconsistency of recent findings on determinants of dividend policy in other emerging and developing markets (Saudi Arabia, Morocco, Malaysia and Turkey) are the main justifications for our study.

Theoretical explanations of dividend policy

Previous studies have presented theoretical explanations for paying dividends based on the determinants of dividend policy (Bhattacharyya, 2007; Baker *et al.*, 2011; Baker and Weigand, 2015; Dewasiri and Weerakoon, 2016). Baker *et al.* (2011) and Dewasiri and Weerakoon (2016), however, stress that a single theory or determinant is unlikely to explain the dividend policy alone. Some common explanations of dividend policy are:

- Bird-in-the-hand theory: it suggests that investors value dividends more than the unseen retained earnings (Lintner, 1956; Gordon, 1959).
- Tax preference theory: it believes that a higher dividend payout is pledged for the lower tax brackets and vice versa (Elton and Gruber, 1970).
- Signaling theory: it posits that dividends are used to communicate the firm profitability to outside shareholders since investors have asymmetric information (Bhattacharya, 1979).

- Agency cost theory: Miller and Modigliani's (1961) "irrelevance" argument assumes no brokerage fees or transaction costs, but in reality there are recurring monitoring costs. Easterbrook (1984) introduces the agency theory of dividends proposing an inverse relationship between dividends and agency costs.
- The substitute and outcome model of dividends: La Porta *et al.* (2000) employ two alternative agency models: the "outcome" and the "substitute" model of dividends. Dividends are considered as an outcome of effective legal protection (corporate governance) in the former, and as a substitute for corporate governance in the latter.
- Free cash flow theory: Jensen (1986) identifies free cash flow (FCF) as the excess cash flow that a manager has at hand, and explains the disbursement of dividends at the expense of investing in projects with a negative net present value as a way of mitigating agency conflicts and reducing agency costs.
- Rent extraction hypothesis: in contrast to the FCF theory, Shleifer and Vishny (1997) argue that large shareholders wish to extract private benefits of control, instead of dividends that may be equal for all shareholders.
- Pecking order theory of dividends: Myers (1984) proposes that when a firm needs investment, it initially proceeds with retained earnings, then with secured or risky debts and finally with equity. Even though the pecking order hypothesis does not have a direct implication for dividend payments, it is relevant when dividends and investment must be reconciled (Fama and French, 2002).
- Life cycle theory of dividends: Mueller (1972) proposes that when large and mature firms make large investments, shareholders may face a reduction in dividend income, which has major implications for the firm life cycle. Fama and French (2001) propose that organizations with a high profit/low growth outlook tend to pay dividends, while low profit/high growth firms are more reluctant. De Angelo *et al.* (2006) state that mature firms tend to pay dividends, while young firms refuse to do so.
- Catering theory of dividends: Baker and Wurgler (2004a) argue that a dividend decision is motivated by the investor's need for dividend-paying stocks employing dividend premium, as a proxy to capture investors' preference for dividends. Baker and Wurgler (2004b) also present evidence that investor preference and tendency to pay dividends are positively correlated.

Determinants of dividend policy

This section focuses on the determinants of dividend policy supported by substantive empirical evidence, development of the research hypotheses and operationalization of the study variables.

Past dividends

Lintner (1956) identifies past dividends as the main factor in corporate dividend policy. Past dividends have been identified as a key determinant of dividend policy in the US context (Baker *et al.*, 1985) and in the banking industry (Dickens *et al.*, 2002). Theis and Dutta (2009) identify previous year dividends as an appositive determinant of dividend policy. As stated by Al-Ajmi and Hussain (2011) and Al-Kayed (2017), we predict a positive impact of lagged dividends on current dividend policy in our sampled Sri Lankan firms, and formulate the following hypotheses:

H1a. Lagged dividends have an impact on dividend decision.

H1b. Lagged dividends have a positive impact on dividend yield.

Lagged (past) dividends refer to the dividend yield of the previous year, calculated as the dividend per share at time $t-1$ divided by the market value per share at time $t-1$, as in Al-Malkawi (2007), Patra *et al.* (2012) and Al-Kayed (2017).

Tax

In his seminal article, Lintner (1956) recommends lowering dividend payout for higher tax liability. Miller and Modigliani (1961) identify taxes as one of the factors creating imperfections, attracting a clientele favoring a precise dividend policy. Elton and Gruber (1970) emphasize the impact of taxes on corporate dividend policy. Amidu and Abor (2006) propose that taxes have a positive impact on dividend policy in Ghana, contrary to Arko *et al.* (2014) who disclose a negative relationship between taxes and corporate dividend policy in the same context. Al-Malkawi (2007) identifies no significant effect of taxes on corporate dividend policy. Since the previous findings are contradictory regarding the impact of taxes on dividend policy, we propose the following hypotheses:

H2a. Tax has an impact on dividend decision.

H2b. Tax has a negative impact on dividend yield.

As operationalized by Amidu and Abor (2006) and Arko *et al.* (2014), tax paid by firm i in period t is measured by dividing corporate tax by net profit before tax.

Earnings

Lintner's (1956) identification of earnings as a key determinant of dividend policy has major implications for signaling theory. Baker *et al.* (1985) confirm that earnings are a key determinant of dividend policy in the USA. Similarly, while Yusof and Ismail (2016) demonstrate the same in the Malaysian context. Baker and Jabbouri (2016) use a survey method to show that current earnings and their stability are first-order determinants of corporate dividend policy. As a result we hypothesize that there is a positive impact from earnings on dividend policy in Sri Lanka firms:

H3a. Earnings have an impact on dividend decision.

H3b. Earnings have a positive impact on dividend yield.

Following Kuzucu (2015) and Yusof and Ismail (2016), we define earnings per share as the proxy for earnings.

Business risk

Bulan *et al.* (2007) and Hoberg and Prabhala (2009) propose that dividend policy may act as a signal of a firm's business risk. Amidu and Abor (2006) study dividend determinants in Ghana and discover a negative impact of business risk on dividend policy. Bokpin (2011) and Patra *et al.* (2012) find an inverse relationship between dividend policy and business risk in Ghana and Greece, respectively. By contrast, Al-Najjar (2011) and Botoc and Pirtea (2014) contend that there is no significant relationship between the variables. Here we hypothesize a negative relationship between firm dividend policy and business risk: firms with higher business risk pay lower dividends due to fluctuations in earnings:

H4a. Business risk has an impact on dividend decision.

H4b. Business risk has a negative impact on dividend yield.

Following Patra *et al.* (2012) and Botoc and Pirtea (2014), business risk is measured as the year to year volatility of earnings (VoE).

Corporate governance

Donaldson (1990) introduces the stewardship theory that postulates an inverse relationship between corporate governance and agency costs. Setiawan and Phua (2013), Bojec and Pirtea (2014) and Benjamin and Zain (2015) identify dividends as a substitute for corporate governance, while Yarram (2015), Yarram and Dollery (2015), Badur and Changjun (2015) and Shamsabadi *et al.* (2016) support the outcome model of corporate governance. Since corporate governance has also been considered a determinant of dividend policy, we hypothesize:

H5a. Corporate governance has an impact on dividend decision.

H5b. Corporate governance has a positive impact on dividend yield.

Following Bokpin (2011), Benjamin and Zain (2015) and Yarram and Dollery (2015), we use board meeting frequency and board independence (number of non-executive directors in the board) as proxy variables to measure corporate governance. Accordingly, binary variables are introduced to represent board independence, such that if the number of non-executive directors is over 40 percent of the board, those firms are categorized as 1, otherwise zero. Moreover, if board meetings are held more than four times a year, those firms are categorized as 1, or otherwise as zero.

Ownership structure

According to Shleifer and Vishny (1997), La Porta *et al.* (2000), Claessens *et al.* (2000) and Faccio *et al.* (2001), most organizations exhibit concentrated ownership and are governed by families, states, or single owners. For this reason, dividends are paid off to mitigate agency conflicts between management and shareholders. Hence, ownership structure must also be considered a determinant of dividend policy. Al-Najjar and Kilincarslan (2016) find that foreign ownership and state ownership are associated with lower probabilities of dividend payments in Turkey. In contrast, Setiawan *et al.* (2016) posit that overall ownership structure has a positive effect on dividend policy. This contrast motivates further study, and thus we propose the following hypotheses:

H6a. Ownership structure has an impact on dividend decision.

H6b. Ownership structure has a positive impact on dividend yield.

Following Ankudinov and Lebedev (2016) and Setiawan *et al.* (2016), ownership structure is here implemented as binary variables, such that if family owners represent over 20 percent of firm ownership, firms are categorized as 1, otherwise zero. Moreover, if the state owns over 20 percent of the firm, it is categorized as 1, otherwise zero. If a firm has both family and state ownership, it is categorized according to the highest controller (family or state).

Firm's debt or leverage

Lintner (1956) identifies debt as a less influential determinant of corporate dividend policy. Rozeff (1982) points out that firms with high financial leverage tend to have low payouts ratios, to reduce transaction costs associated with external financing. In line with this argument, Al-Malkawi (2007) suggests that firms with high debt ratios tend to pay fewer dividends. In accordance with Lintner's (1956) findings, Abor and Bokpin (2010) argue that leverage, debt and external financing are less important determinants of dividend policy. Bokpin (2011), Patra *et al.* (2012) and Arko *et al.* (2014) identify leverage as a major determinant of corporate dividend policy. Yusof and Ismail (2016) identify debt as a negative determinant of corporate dividend policy in Malaysia. Hence, the arguments above motivate the following hypotheses:

H7a. Leverage has an impact on dividend decision.

H7b. Leverage has a negative impact on dividend yield.

As in Al-Malkawi (2007), Abor and Bokpin (2010), Patra *et al.* (2012), Boţoc and Pirtea (2014), Kuzucu (2015) and Al-Kayed (2017), leverage is measured in our study as total debt divided by total equity.

Firm size

According to the agency cost theory, the wide-ranging ownership structure in larger organizations reduces investors' capabilities to manage financing activities, resulting in more asymmetric information and higher agency costs. Al-Malkawi (2007) therefore identifies firm size as a significant determinant factor of dividend policy. Al-Najjar (2011) and Bokpin (2011) reject any significant impact of company size on corporate dividend policy. However, Harada and Nguyen (2011) identify firm size as a negative determinant in the Japanese context. Patra *et al.* (2012), Kuzucu (2015) and Yusof and Ismail (2016) identify firm size as a positive determinant of dividend policy. Accordingly, we predict a positive relationship between firm size and dividend policy:

H8a. Firm size has an impact on dividend decision.

H8b. Firm size has a positive impact on dividend yield.

Following Al-Malkawi (2007), Boţoc and Pirtea (2014), Kuzucu (2015) and Yusof and Ismail (2016) in our study the log value of total assets (TA) is the proxy for firm size.

Free cash flow

FCF is the business cash flow available for dispersal amongst all security holders of a firm. Kadioglu and Yilmaz (2017) investigate the FCF theory in the Turkish market, and their findings provide strong support for Jensen's (1986) hypothesis. Hence, a positive relationship between FCF and dividend policy is here hypothesized:

H9a. FCF has an impact on dividend decision.

H9b. FCF has a positive impact on dividend yield.

We follow Guizani (2018) and Kadioglu and Yilmaz (2017) and calculate the FCF by multiplying cash flow by the inverse of TA (1/TA). Cash flow is calculated as in Lehn and Poulsen (1989) and Guizani (2018), with CF = earnings before interests, taxes, depreciations and amortizations – taxes – interest paid on debt – total dividends.

Profitability

The pecking order hypothesis and signaling hypothesis may also provide explanations for the relationship between profitability and dividends (Fama and French, 2002; Yarram and Dollery, 2015). Kimie and Pascal (2011) and Kuzucu (2015) identify profitability as a determinant with negative impact on corporate dividend policy. In contrast, Amidu and Abor (2006), Al-Malkawi (2007), Al-Najjar (2011), Bokpin (2011), Patra *et al.* (2012) and Botoc and Pirtea (2014) identify profitability as a determinant with a positive impact on corporate dividend policy. Hence, we anticipate a positive impact from profitability on dividend policy:

H10a. Profitability has an impact on dividend decision.

H10b. Profitability has a positive impact on dividend yield.

In our study, profitability is measured as the return on equity ratio, following Amidu and Abor (2006), Boţoc and Pirtea (2014), Wang *et al.* (2016) and Al-Kayed (2017).

Investment and growth opportunities

Al-Najjar (2011) reveals a significant positive impact of investment opportunity (measured as market to book ratio) on corporate dividend policy. Patra *et al.* (2012) and

Basiddiq and Hussainey (2012) identify investment opportunity as a determinant of dividend policy, while Perretti *et al.* (2013) posit that growth opportunities are a key determinant of dividend policy in American depository receipts firms. Arko *et al.* (2014), Yusof and Ismail (2016) and Al-Kayed (2017) propose that growth opportunities are negatively associated with dividend policy. We thus hypothesize a negative relationship between investment opportunities and dividend policy in Sri Lanka firms:

H11a. Investment opportunities have an impact on dividend decision.

H11b. Investment opportunities have a negative impact on dividend yield.

Al-Malkawi (2007), Theis and Dutta (2009), Patra *et al.* (2012) and Al-Kayed (2017) employ market to book value ratio (MBV) as a proxy for investment opportunities since firms with high growth opportunities distribute low dividends in order to retain earnings and invest in growth (Rozeff, 1982), while Botoc and Pirtea (2014) and Kuzucu (2015) use assets growth rate. Here we employ both measures of investment and growth opportunities. MBV is calculated dividing market value per share by book value per share.

Life cycle of the firm

Baker and Powell (2012) and Baker and Kapoor (2015) investigate dividend policy through a survey method, reporting findings in line with the life cycle theory of dividend. However, using retained earnings to assets as a proxy variable, Botoc and Pirtea (2014) find no support for the life cycle theory. Employing growth opportunities as a proxy variable, Perretti *et al.* (2013) and Yarram and Dollery (2015) state that the life cycle theory is a leading explanation for paying dividends. Here we deploy the MBV ratio as a proxy for growth opportunities and hypothesize a relationship between dividend policy and growth opportunities in Sri Lanka firms, as mentioned in *H11a* and *H11b*.

Liquidity

Liquidity has also been studied as a determinant of dividend policy. Lintner (1956) identifies liquidity as a less generally known factor in his qualitative study of 28 corporate managers. A different argument is developed by Baker *et al.* (1985), who state that liquidity is the main determinant of dividend policy. Banerjee *et al.* (2007) highlights a negative relationship between dividend policy and liquidity and called it the "liquidity hypothesis of dividends," a model supported by Zhiqiang *et al.* (2015). Baker and Kapoor (2015) also reveal strong support for the liquidity hypothesis in the Indian context for stock dividends. Accordingly, we hypothesize a relationship between liquidity and dividend decisions also in Sri Lanka:

H12a. Liquidity has an impact on dividend decision.

H12b. Liquidity has a negative impact on dividend yield.

As Following Patra *et al.* (2012), Kuzucu (2015), Botoc and Pirtea (2014), Turner *et al.* (2013) and Al-Kayed (2017), we define current ratio as current assets divided by current liabilities as our measure of liquidity.

Behavioral determinants

Lease *et al.* (1976) investigate the influence of selected demographic attributes on corporate dividend policy, showing that 57 percent of retired female investors and 56 percent of male retired investors preferred dividend-paying stocks. Shefrin (2009) supports the earlier findings, emphasizing the influence of retired, low-income and older households on dividend-paying stocks. Baker *et al.* (2011) and Turner *et al.* (2013), however, find little support for behavioral explanations. Chen *et al.* (2017) contend that board gender composition has a significant incremental effect on dividend payout, as female directors

tend to use dividend payout as a governance-controlling device in firms with scrawny governance. Based on the Chief Financial Officer (CFO) gender, experience and investors' gender composition, the following hypotheses are delineated:

H13. CFO gender has an impact on dividend decision.

H14. CFO experience has an impact on dividend decision.

H15. Investors gender has an impact on dividend decision.

Gender is defined as a binary variable (male = 1, female = 0). Similarly, CFO experience is measured as a binary variable (1 if experience is greater than 15 years, zero otherwise).

Investor preference

The impact of investor preference on dividend policy is initially investigated by Baker and Wurgler (2004a) with dividend premium as a proxy for investor preference. Li and Zhao (2008) conclude that the positive impact of dividend premium on a dividend decision is enhanced when there is a control of firms risk and year. Ferris *et al.* (2006) present evidence supporting this argument, but Hoberg and Prabhala (2009) provide instead evidence for the nonexistence of a catering incentive. Von Eije and Megginson (2008) and Tangjitprom (2013) investigate investor preference for dividends, and conclude that the decision to pay dividends is affected by catering incentives. Dereeper and Turki (2016) highlight that managers amend dividend policies to match preferences of investors. When dividend premium is positive, Wang *et al.* (2016) argue that firms dispense more stock dividends than cash dividends. Hence, here we select dividend premium as a proxy for measure investor preference and predict a significant relationship between dividend premium and yield in Sri Lanka firms:

H16a. Dividend premium has an impact on dividend decision.

H16b. Dividend premium has a positive impact on dividend yield.

Dividend premium is measured as the difference between the log of average market to book ratios in payers and non-payers, as originally proposed by Baker and Wurgler (2004a, b).

Research methodology

Data

We carried out a quantitative study based on published (market) data. The initial sample consists of all the firms listed on the Colombo Stock Exchange (CSE), excluding banks and other financial institutions (81 firms) due to high leverage and industry regulations. The remaining sample consists of 215 firms, from which 191 are selected for the final sample based on the continuous data availability across the period from year 2010 to 2016 in the CSE Data Library. A total of 109 firms are dividend payers and 82 firms do not pay dividends across the period. The CSE has kept data records only for the past seven years. Accordingly, 1,337 firm year observations (191 firms multiplied by seven years) are considered for the analysis. The final sample accounts for 78 percent of CSE market capitalization.

Dividend policy measures

The propensity to pay dividends and dividend payout measure the dependent variable of the study (dividend policy). Propensity to pay dividends is a binary variable (dividend decision: paid or not paid). Dividend yield is our proxy variable for dividend payout and measured as dividend per share divided by market value per share, as in Al-Malkawi (2007),

Patra *et al.* (2012) and Al-Kayed (2017). We exclude DPR from the analysis in order to avoid a perfect mathematical relationship between earning per share (an independent proxy variable) and DPR (dependent variable).

Model specification and data analysis techniques

To test the impact of potential determinants on propensity to pay dividends, we first employ a binary logistic regression model. As suggest by Al-Najjar and Kilincarslan (2017), we include an industry dummy variable to control for industry effects (1 for the manufacturing industry, otherwise zero):

$$\begin{aligned} PPD_{i,t} = {} & \beta_0 + \beta_1 PD_{i,t-1} + \beta_2 TX_{i,t} + \beta_3 EPS_{i,t} + \beta_4 VOE_{i,t} + \beta_5 BI_{i,t} + \beta_6 BMEET_{i,t} \\ & + \beta_7 SO + \beta_8 FO + \beta_9 LE_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} FCF_{i,t} + \beta_{12} ROE_{i,t} \\ & + \beta_{13} MBV_{i,t} + \beta_{14} AGE_{i,t} + \beta_{15} LIQ_{i,t} + \beta_{16} CFOG + \beta_{17} CFOE \\ & + \beta_{18} INVG + \beta_{19} DP_{i,t} + \beta_{20} IND + u_{i,t}. \end{aligned}$$

Then, a fixed effect model is employed to investigate factors affecting dividend payout:

$$\begin{aligned} PAYOUT_{i,t} = {} & \beta_0 + \beta_1 PD_{i,t-1} + \beta_2 TX_{i,t} + \beta_3 EPS_{i,t} + \beta_4 VOE_{i,t} + \beta_5 BI_{i,t} + \beta_6 BMEET_{i,t} \\ & + \beta_7 SO + \beta_8 FO + \beta_9 LE_{i,t} + \beta_{10} SIZE_{i,t} + \beta_{11} FCF_{i,t} + \beta_{12} ROE_{i,t} \\ & + \beta_{13} MBV_{i,t} + \beta_{14} AGE_{i,t} + \beta_{15} LIQ_{i,t} + \beta_{16} CFOG + \beta_{17} CFOE \\ & + \beta_{18} INVG + \beta_{19} DP_{i,t} + \beta_{20} IND + u_{i,t}, \end{aligned}$$

where $PPD_{i,t}$ is the propensity to pay dividends (dependent variable); *PAYOUT*, dividend payout proxied by dividend yield (dependent variable); $PD_{i,t-1}$, past dividends proxied by previous year dividend yield; *TX*, Tax; *EPS*, earning per share (proxy for profitability); *VOE*, volatility of earnings (proxy for business risk); *BI*, board independence and *BMEET*, board meetings (proxy for corporate governance); *SO*, state ownership; *FO*, family ownership; *LE*, leverage; *SIZE*, firm size; *FCF*, free cash flow; *ROE*, return on equity (proxy for profitability); *MBV*, market to book value ratio and *AGE*, firm age (proxies for investment and growth opportunities); *LIQ*, liquidity; *CFOG*, CFO gender; *CFOE*, CFO experience; *INVG*, investors gender; *DP*, dividend premium; *IND*, industry type; and *u*, the error term.

Pairwise Granger causality tests are performed to investigate possible short-term lead-lag relationships between dividend payout and its determinants. Here, the impact of the last two years data ($t-1$ and $t-2$) of independent variables on current dividend payout and the impact of dividend payout of the last two years on current levels of the predictors are investigated. An odds ratio calculation is conducted to investigate the impact of binary predictors on the propensity to pay dividends. Here, both of these analytical instruments are used with the purpose of uncovering the insights into the phenomenon.

Empirical results and discussion

We conduct data analysis in four stages. First we present relevant diagnostics, normality tests and unit root tests. Second, factors affecting the propensity to pay dividends are investigated with a Logit model. Third, factors influencing dividend payout are investigated with a fixed effect model. The appropriateness of each model is discussed accordingly. Finally, short-term relationships are investigated with Granger Causality Tests.

Since *p*-values of the Jarque–Bera tests (available upon request) are higher than the 5 percent significance level, all independent variables are normally distributed. Levin–Lin–Chu tests (available upon request) to investigate the order of integration of variables reveal that

p-values of relevant variables are less than 0.05, indicating that variables are stationary in their levels (I_0). Accordingly, level variables are included in further analysis. The panel unit root test is not conducted for firm size (a non-stochastic variable).

Factors affecting propensity to pay dividends

Propensity to pay dividends results from a decision with two alternatives: to pay or not to pay dividends. As a binary variable, it can be addressed by a Probit or Logit model. Theoretically, there is little differentiation between the two models, resting on their assumptions on errors distribution. For simplicity and ease of interpretation, we proceed with the Logit model. The diagnostic Wald test results reveal that the binary parameters in the equations are not jointly equal to zero. Since the McFaddan R^2 (0.334) value is between 0.2 and 0.4, the binary test represents a better prediction (goodness of fit) of propensity to pay dividends. Table I represents the significant factors that explain the propensity to pay dividends (the non-significant factors are lagged dividends, tax, business risk, leverage, liquidity, CFO gender, CFO experience, board gender composition and dividend premium).

The test summary reveals that board meetings (proxy for corporate governance), earnings (EPS), FCF, industry (dummy), previous year's dividend decision, profitability (ROE), state ownership and firm size (proxied by log of TA) have a significant and positive influence on the propensity to pay dividends. MBV ratio (proxy for investment opportunity) shows an inverse relationship with dividend decision. Therefore, it is not possible to reject the *H3a*, *H5a*, *H6a*, *H8a*, *H9a*, *H10a* and *H11a*, whereas *H1a*, *H2a*, *H4a*, *H7a*, *H12a*, *H13*, *H14*, *H15* and *H16a* are rejected.

Furthermore, coefficient values of variables reveal that previous year's dividend decision has the strongest impact on the decision to pay dividends. The coefficient value implies that having paid dividends in the previous year increases the log of the odds ratio of paying dividends by 3.103, and therefore the odds by 22.26, compared to non-payers in the previous year. Odds ratio values in Table II demonstrate the importance of binary variables to dividend decision.

The findings reveal that the previous year's dividend payers are 22.26 times more likely to pay dividends than non-payers, the highest impact on dividend decision among all predictors. Firms with state ownerships are 1.99 times more likely to pay dividends than the others, and the manufacturing firms are 1.39 times more likely to pay dividends than others. Finally, firms with board of director meetings on a quarterly basis are 1.27 times more likely to pay dividends than others.

Variable	Coefficient	SE	Prob.
C	−5.2751	1.1203	0.0000**
Board meetings	0.4779	0.2220	0.0313*
Earnings per share	0.0102	0.0053	0.0457*
Free cash flow	0.0112	0.0059	0.0476*
Industry	0.6033	0.1900	0.0015**
Previous year dividend decision	3.1031	0.1808	0.0000**
Market to book value ratio	−0.0047	0.0025	0.0499*
Profitability	0.8599	0.3453	0.0127*
State ownership	0.6930	0.6524	0.0456*
Ln of total assets	0.2840	0.0687	0.0000**
McFadden R^2	0.3440	*p*-value	0.0000**
LR statistic	782.5673	Avg. log likelihood	−0.3668

Table I.
ML – binary logit (Newton-Raphson/ Marquardt steps) test summary

Notes: This table shows the significant determinants of propensity to pay dividends. *,**Significant at 0.05 and 0.01 levels, respectively

Factors affecting dividend payout

Determinants of dividend policy are investigated employing dividend yield as a proxy. The Hausman test reveals that the *p*-value is higher than 0.05 (available results available upon request), we proceed with the fixed effect model.

The next step involves relevant diagnostics tests on regression assumptions. Correlations between independent variables (Table III) are used to ensure non-multi-collinearity.

According to the Breusch–Godfrey serial correlation test, there is no serial correlation among residuals. The Breusch–Pagan test confirms that residuals are homoscedastic. The Ramsey RESET Test for model specification reveals that the model has no omitted variables (details on the tests above are available upon request). Thus, diagnostic test results suggest the appropriateness of the fitted fixed effect model (Table IV) without violations of assumptions.

According to Table IV, the regression model is significant at 1 percent level in explaining the dividend policy. The adjusted R^2 value implies that 68 percent of variation in dividend yields can be explained by model predictors. Past dividends, MBV ratio (proxy for investment opportunities), profitability (ROE), dividend premium and assets growth (proxy for investment opportunities) are significant determinants of corporate dividend policy. None of the other predictors reached significance. Hence, *H1b*, *H3b*, *H10b*, *H11b* and *H16b* are accepted, and *H2b*, *H4b*, *H5b*, *H6b*, *H7b*, *H8b*, *H9b*, *H12b*, *H13*, *H14* and *H15* are rejected. The coefficient values of explained variables suggest that lagged dividend (0.21) shows the highest positive impact on dividend yield, while other positive variables include profitability (0.02) and dividend premium (0.003) based on the coefficient size of the impact.

Explanatory variable	Coefficient value	Odds ratio
Lagged dividend decision	3.103	22.26
State ownership	0.693	1.99
Industry	0.603	1.39
Board meetings	0.478	1.27

Note: This table shows the respective coefficients and their odds ratios of the binary explanatory variables

Table II. Odds ratios of significant binary explanatory variables

	DY	AG	BR	EPS	FCF	TAX	AGE	LD	DP	LEV	LIQ	MBV	ROE	TA
DY	1.00													
AG	−0.01	1.00												
BR	0.01	0.00	1.00											
EPS	0.06	0.01	0.00	1.00										
FCF	0.00	0.00	0.00	−0.01	1.00									
TAX	0.03	−0.01	−0.02	0.00	0.00	1.00								
AGE	−0.02	−0.01	−0.02	0.00	0.00	−0.03	1.00							
LD	0.21	−0.03	0.01	0.04	0.00	0.00	0.00	1.00						
DP	0.06	0.00	0.01	0.01	−0.01	0.02	0.02	−0.02	1.00					
LEV	−0.02	−0.01	0.00	−0.01	0.00	0.00	0.00	−0.02	0.05	1.00				
LIQ	−0.02	0.04	0.00	−0.03	0.01	−0.01	0.00	−0.04	−0.01	−0.01	1.00			
MBV	−0.02	0.05	0.00	0.02	0.01	0.00	0.00	−0.02	−0.03	0.00	−0.01	1.00		
ROE	0.03	0.03	0.01	0.03	0.00	0.00	−0.05	0.03	−0.07	−0.85	0.01	0.00	1.00	
TA	0.12	0.01	0.02	0.06	0.16	0.02	−0.01	0.09	−0.02	−0.02	−0.05	0.00	0.07	1.00

Notes: This table shows the correlation between the variables used for the study. DY, dividend yield; AG, assets growth; BR, business risk; EPS, earnings per share; FCF, free cash flow; LD, lagged dividend yield; DP, dividend premium; LEV, leverage; LIQ, liquidity; MBV, market to book value ratio; ROE, return on equity; TA, total assets

Table III. Correlation between the variables

Furthermore, both proxies for investment opportunities (assets growth = −0.002, MBV ratio = −0.0002) indicate a negative impact on dividend yield.

Our findings agree with studies conducted by Dickens *et al.* (2002) and Al-Kayed (2017) in terms of investment opportunities, profitability and past dividends. Most studies conducted in the past decades highlight the importance of past dividends as a determinant of dividend policy (Lintner, 1956; Theis and Dutta, 2009; Al-Ajmi and Hussain, 2011; Khan *et al.*, 2011, Baker and Powell, 2012; Al-Kayed, 2017). Our study also identifies investment and growth opportunities as an important determinant as reported by Dickens *et al.* (2002), Abor and Bokpin (2010), Patra *et al.* (2012), Arko *et al.* (2014), Yarram (2015), Ankudinov and Lebedev (2016), Yusof and Ismail (2016) and Al-Kayed (2017). In accordance with the original argument by Baker and Wurgler (2004a), we demonstrate that dividend premium (proxy for investor preference) is a key determinant of dividend policy in Sri Lanka. The positive impact of profitability on dividend policy conforms to the findings of Dickens *et al.* (2002), Al-Malkawi (2007), Al-Ajmi and Hussain (2011), Patra *et al.* (2012), Arko *et al.* (2014), Yarram (2015), Ankudinov and Lebedev (2016) and Al-Kayed (2017), and contradicts the conclusions by Khan *et al.* (2011).

Pairwise Granger Causality Tests are performed to investigate short-term relationships between dependent and independent variables. Table V shows the results of the causality tests at a minimum of 2 lags.

Results show a feedback between dividend yield and dividend premium at two lags, consistent with the fixed-effect model in Table IV. Moreover, there are feedback effects (two-way short-term relationship) between dividend yield and earnings (EPS) at lag 1, and between dividend premium and dividend yield at lag 2. Assets growth shows a unidirectional causality (one-way short-term relationship) on dividend yield in any lag level. The remaining variables do not show any significant causalities.

Variable	Coefficient	SE	Prob.
C	0.0502	0.0238	0.0352*
Assets growth	−0.0025	0.0012	0.0329*
Past dividends	0.2160	0.0516	0.0000**
Dividend premium	0.0037	0.0019	0.0499*
Market to book value	−0.0002	0.0001	0.0006**
Profitability	0.0236	0.0072	0.0011**
R^2	0.7379	Adjusted R^2	0.6811
p-value (*F*-statistic)	0.0000	Durbin–Watson stat	2.2091

Table IV.
Panel least squares (fixed effect) test summary

Notes: This table shows the significant determinants of dividend yield. *,**Significant at 0.05 and 0.01 levels, respectively

	Lag 1		Lag 2	
Null hypothesis	*F*-statistics	Prob.	*F*-statistics	Prob.
DPRE does not Granger Cause DY	0.0691	0.7928	4.937	0.0079**
DY does not Granger Cause DPRE	0.2275	0.6336	4.695	0.0099**
EPS does not Granger Cause DY	6.0552	0.0144*	1.8633	0.1573
DY does not Granger Cause EPS	4.3445	0.0379*	3.118	0.0459*
AG does not Granger Cause DY	4.2193	0.0407*	4.1938	0.0161*
DY does not Granger Cause AG	1.3109	0.253	0.4854	0.6160

Table V.
Granger causality test summary

Notes: This table shows the short-term relationship between dividend yield and explanatory variables at Lag 1 and 2. *,**Significant at the 0.05 and 0.01 levels, respectively

Scope of determinants of dividend policy

Figure 1 depicts the scope of determinants of dividend policy using both propensity to pay dividends and dividend payout as measures of dividend policy.

Past dividend decision or payout, profitability and growth opportunities are identified as the common set of determinants (C) of dividend policy. The factors affecting both propensity to pay dividends and its payout (A+B+C) determine the scope of determinants of dividend policy.

Summary and conclusion

This study finds that corporate governance, earnings, industry influence, ownership structure (proxied by state ownership), past dividend decision, FCF and firm size have a significant positive influence on the propensity to pay dividends. Odds ratios reveal that the previous year's dividend payers are 22.26 times more likely to pay dividends than non-payers, firms with state ownerships are 1.99 times more likely to pay dividends than the other firms, manufacturing firms are 1.39 times more likely to pay dividends than the other sector firms and firms with an independent board are 1.27 times more likely to pay the dividends than other firms.

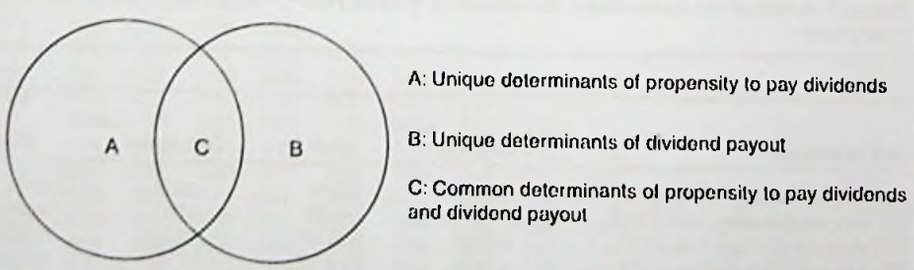
Past dividends, profitability, investment opportunities and investor preferences are identified as determinants of the dividend payout. Out of them, there is a feedback between dividend premium (proxy for investor preference) and dividend yield at lag 2, whereas asset growth (proxy for investment opportunities) shows a unidirectional causality from assets growth to dividend yield in the short run. Even though earnings (EPS) are not significant in explaining dividend yield, causality results reveal a feedback relationship between EPS and DY at lag 1.

Past dividend decision or payout, profitability and growth opportunities can be identified as the common set of determinants of dividend policy that significantly impact on propensity to pay dividends and its payout.

Theoretical implications of the study

The impact of earnings and profitability on dividend policy in our sample of Sri Lanka firms support the signaling theory of dividends, an effect that cannot be replicated by firms that do not experience increases in permanent earnings. The complementary role of corporate governance encourages firms to pay dividends and gives an opportunity for investors to scrutinize firms when future funding is raised. Hence, the findings are also consistent with the outcome model of dividends.

Traditional measures of the business cycle appear to explain dividend payout, in line with the life cycle theory of dividends. Further, the findings reveal that there is a positive



Notes: Where: A = corporate governance, earnings, free cash flow, industry type, state ownership and firm size; B = dividend premium (proxied for investor preference); C = past dividend decision/payout, investment opportunities and profitability; A + B + C = comprehensive picture of determinants of dividend policy

Figure 1.
Range of determinants of dividend policy

impact of dividend premium on dividend policy, in line with catering theory. In accordance with the pecking order explanation, firms with higher investment opportunities having higher fund requirements will pay out lower dividends to reduce their dependence on outside capital. When there is a high level of FCFs under a manager control, a high distribution of dividends is expected. Hence, a positive relationship is expected and these findings support the FCF theory as well.

Practical implications and further directions

This study has implications for investors, managers and researchers. If investors are interested in dividend-paying stocks in the near term, they should first consider organizations that have paid dividends in the recent past. Investors should also look at state owned, profitable, manufacturing firms as they show a higher propensity to pay dividends. Moreover, if investors are interested in higher dividend payout, they should consider past dividend payout and profitability of organizations, noticing that higher investment opportunities will lower payout.

Management should consider past dividend decisions, ownership structure (state or non-state), profitability and industry type when making the decision to pay dividends. When deciding on dividend payout, it is important to consider past dividend payout and profitability of the organization. Moreover, if higher investment opportunities exist, they should lower dividend payout.

Future researchers should use propensity to pay dividends and its payout simultaneously when investigating dividend determinants in other countries so as to contribute for a consensus on the dividend determinant puzzle.

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