The Simultaneous Effect of Corporate Ownership on Dividends and Capital Structure: Malaysian Evidence

Mousa Sharaf Adin Hezam Saleh[1], Yusnidah Ibrahim[2] & Hanita Kadir Shahar[2]

[1] Faculty of Administrative Science, Ibb University, Yemen

[2] School of Economics, Finance & Banking, University Utara Malaysia, Malaysia

Correspondence: Mousa Sharaf Adin Hezam Saleh, Department of Finance and Banking, Ibb University, Yemen.

Abstract

Most of the researchers analyzed the impact of ownership structure on dividends and capital structure decisions separately. Drawing upon preceding empirical studies, the interdependence between dividends and capital structure raises the potential of the endogeneity bias when interdependent factors are segmented. Therefore, this study examined the effect of corporate ownership structure on capital structure and dividend policy simultaneously. This study utilized 407 Malaysian-listed firms over the period from 2012 to 2016 and adopted simultaneous modelling using 2SLS and 3SLS regression techniques. The results changed markedly in sign, magnitude and significance when moving from OLS estimator to 2SLS and 3SLS estimators. The findings show that both dividend and capital structure policies have positive interdependence. The substantial, family, government and foreign ownership affect dividends positively and capital structure negatively. The study provides various theoretical and practical implications to improve corporate governance and corporate financial policies. This study contributes to the growing literature on corporate finance and corporate ownership. Particularly, it provides simultaneous investigation on the effect of family, government and foreign ownership on dividends and capital structure for Malaysian firms.

Keywords: dividends, capital structure, ownership structure, simultaneous equations

1. Introduction

The interaction between ownership structure, dividends and capital structure theoretically referred to the agency theory. As part of agency-based analysis, the separation of ownership, control, and management in corporations raises the issue of agency costs. In firms with widely dispersed ownership, the managers will not always act in the best interest of the shareholders and to limit the divergences from shareholders' interests, appropriate monitoring shall be established to limit the aberrant activities (Jensen & Meckling, 1976). Therefore, the types and compositions of firms' ownership structure are important factors that influence the level of agency problem and constitute the governance system. Both capital structure and dividend policy are proven as governance mechanisms to alleviate the agency problem in firms. To avoid managers' unfavorable actions, shareholders strive to distribute as much as possible of free cash flow as dividends and place the managers under capital market monitor (Easterbrook, 1984; Rozeff, 1982).

The literature has provided evidence on the interdependence of capital structure and dividend and should be addressed simultaneously (Jensen, Solberg, & Zorn, 1992; Kim, Rhim, & Friesner, 2007; Lee *et al.*, 2016). Myers (1984) argued that dividend payments influence the firms' reliance on internal funds. The sticky dividends behaviour inducing firms with high dividends for new external finance. However, firms that have higher leverage obligations are reluctant to raise dividend payments. Rozeff (1982), Easterbrook (1984), and Jensen (1986) argued that dividends and capital structure are effective devices used to mitigate agency costs. While dividends reduce the available cash that managers may use at the expense of owners interests, debt financing induces capital market monitoring. Kim *et al*, (2007) discussed that considering the monitoring role of dividends and capital structure, it is reasonable to expect that firms attempt to use the optimal combination of policies that minimizes agency costs. Therefore, capital structure is not determined independently, but rather simultaneously with a firm's dividend policy.

Rozeff (1982) and Easterbrook (1984) pointed out that the use of dividends and capital structure as a governance device is less needed for firms with concentrated ownership structure. The presence of ownership concentration

reduces the agency conflicts and creates an effective mechanism on the alignment of interests between shareholders and managers. Nevertheless, the impact of ownership structure on capital structure and dividend policy is unclear. Researchers suggest that the roots of agency cost are not only due to managers-owners conflicts. Ownership concentration may induce large shareholders to expropriate wealth from minority, which raises the conflict between minority and majority shareholders (Faccio *et al.*, 2001; La Porta *et al.*, 2000b; Shleifer & Vishny, 1986). Therefore, the need for dividend and capital structure monitoring role is applied for firms with high concentration ownership, and the level of firms' agency problem is determined through the interaction between ownership structure, capital structure and dividend variables (Djebali, 2015; Kim *et al.*, 2007).

Furthermore, different identities of block-shareholders (family, government, and foreign ownership) may show different preferences toward capital structure and dividend policy. Even though the literature review provides a number of studies that examined the effect of types and identities of ownership on dividend and capital structure decisions, the reported findings are inconsistent and separately addressed (Al-Najjar & Kilincarslan, 2016; Anderson & Reeb, 2003; Croci, Doukas, & Gonenc, 2011; Djebali, 2015; Le & Tannous, 2016; Pindado, Requejo, & Torre, 2012). Since these two choices have to be simultaneously addressed, statistically, previous studies are more likely to produce biased results because of the endogeneity problem when interdependent factors are segmented (Wooldridge, 2010). The present study is based on an alternative approach to that employed in previous literature. Therefore, this study contributes to the literature by examine the effect of ownership concentration on dividends and capital structure simultaneously. Furthermore, it examines whether the identities of controlling shareholders show a different effect on dividends and capital structure using effective approach of method.

Malaysia provides an ideal setting to explore this issue because of that the firms' ownership structure has been reported to be highly concentrated and dominated by various identities of block-shareholders (Ghasemi, AB Razak and Muhamad, 2018). Saleh, Ibrahim, and Shahar (2018a) reported that the substantial shareholders possess, on the average, 56.9% of firm's shareholdings. The high concentration ownership and close alignment between managers and large shareholders increase the threat of expropriation from minority shareholders in Malaysia. Haniffa and Hudaib (2006) assert that in Malaysia, minority shareholders resort to sell their shares as a disciplinary action to express their dissatisfaction with the firm's policies. Furthermore, In Malaysia, the dividends rules are regulated by the Companies Act 1965 and its amendment in 2017, the only limitations on determining when and how much to pay dividends is that related to creditors right and firms' solvency. Besides that, there has been a tremendous increase in the reliance on debt financing in the Malaysian market (Tam & Tan, 2007). With such circumstances, managers in Malaysia need to better understand the preferences of shareholders and act for the appropriate approach to satisfy majority and minority shareholders. Thus, this study attempts to provide clear insight to managers regarding the preferences of shareholders toward capital structure and dividend policy by examining the effect of different types of ownership structure on the capital structure and dividend policy in a simultaneous framework.

2. Literature Review and Hypothesis Development

2.1 Interrelationship Among Dividends and Capital Structure

The extant literature provides conflicting interpretations regarding the relationship between dividend policy and capital structure. Researchers argued that the combination of pecking order analysis with Lintner dividend model suggests a positive relationship between dividend and capital structure (Baskin, 1989). Given the sticky dividend assumption suggested by the Lintner model, firms with high dividends are expected to pay greater dividends in future. Myers (1984) argued that the information asymmetry between managers and outside investors put extra costs on external finance, thus firms prefer internal funds and the internal deficit is financed first by the less risky debt. Accordingly, pecking order theory implies that firms with higher dividends will have less internal financing and therefore higher leverage. Mookerjee (1992) tested the Lintner model including external finance as the independent variable. The results indicate a positive relationship between dividends and external finance by borrowing.

Alternatively, based on agency analysis, it has been argued that both dividends and capital structure could be substitutes or complements in mitigating the firms' agency costs. Dividends reduce the excess cash under the managers' discretion and increase the firm's dependence on the financial market and thus induce market monitoring on management (Easterbrook, 1984; Jensen, 1986). Belden *et al.* (2005) suggested that capital structure can be used as an alternative of dividends to reduce agency costs. They found that firms use debt in addition to dividends to control agency problems. Kim *et al.* (2007) found a positive relationship between dividends and capital structure. They suggested that debt and dividends are complementary policies to reduce agency costs. Ghasemi *et al.* (2018) suggested that when ownership structure leads to align the interests of managers and owners, dividends and leverage are substitutes and when the firm's agency status call for more monitoring efforts, debt and dividends are

complements. Dutta (1999), Aggarwal and Kyaw (2010), and Khan and Adom (2015) found positive relationship between dividends and capital structure.

In contrast, there are considerable empirical studies that showed negative results. Researchers argued that high leverage ratio increased the corporate risk and in consequence, raise the cost of external financing which make firms depend more on internal financing (Jabbouri, 2016; Rozeff, 1982). Rozeff (1982) argued that the firm's risk and the transaction costs increase with a high leverage ratio. Therefore, firms with high leverage ratios pay higher interest expenses and costs of capital. As a consequence, the chance for firms to pay dividends declines as the leverage ratio increases, and a negative association is expected between dividends and capital structure. Jabbouri (2016) posited that a high debt ratio increases the firm's financial risk and cost of finance, thus, firms tend to have a low dividend policy to reduce its financial risks. He found a negative relationship between dividends and financial leverage. Abdulkadir *et al.* (2016) also provided strong evidence for Rozeff's (1982) explanation as their results showed that dividends decrease as leverage increase. Kuwari (2009), Lee e*t al.* (2016), and Yusof, Ismail, and Ali (2016) also found a negative relationship between dividends and capital structure. Based on the literature, the study hypothesizes that:

H1a: Dividend payout affects capital structure.

H1b: Capital Structure affects Dividends payout.

2.2 Ownership Structure

As part of the agency-based analysis, the ownership structure is from the most important factors that influence the level of agency problem and constitute the governance system which in turn reflects on the financial decisions. The separation of ownership, control, and management in corporations leads to high agency costs. Managers will not always act in the best interest of the shareholders and to limit the divergences from shareholders' interests, appropriate monitoring shall be established to limit the aberrant activities (Jensen & Meckling, 1976). In firms with widely dispersed ownership, the free-rider problem is severe where the individual shareholder has not enough incentive to incur monitoring costs for the benefit of all shareholders (Short *et al.*, 2002). Shleifer and Vishny (1986) argue that ownership concentration mitigates agency problem, large shareholders have the motive to monitor the firm's managers.

Nevertheless, the agency-based analysis, in the last decade, has been extended to give more concern to the potential conflicts among shareholders. In emerging markets, agency problems between controlling shareholders and minority shareholders are more crucial than those between managers and shareholders (Al-Jaifi, 2017; Faccio *et al.*, 2001; Mulyani *et al.*, 2016). Faccio *et al.* (2001) asserted that the expropriation of minority shareholders' wealth by the controlling shareholders is the main agency problem in East Asian firms. In countries with high ownership concentration, the protection of minority shareholders is an issue where controlling shareholders might manipulate information and use corporate assets not to enhance profitability but rather to retain control over the firm.

Drawing on the agency analysis, literature on ownership structure provides inconsistent predictions regarding its effect on dividends and capital structure. Rozeff (1982) and Easterbrook (1984) suggest that ownership concentration substitutes the monitoring role of dividends and capital structure. Active monitoring of large shareholders increases the alignment of interests between managers and shareholders and ensures better firm performance. Therefore, a negative relationship is expected between ownership concentration and dividends and capital structure. Short *et al.* (2002) suggests that the presence of large shareholders reduce the managers' negative actions on firm value and mitigate the need of debt as a means to monitor mangers. Furthermore, the information asymmetries associated with ownership concentration and the reluctance to minimize non-diversifiable risk result in a negative relationship with capital structure (Farooq, 2015; Rajan & Zingales, 1995).

Alternatively, researchers consider the low dividends associated with high concentration as a signal of expropriation (Harada & Nguyen, 2011; La Porta *et al.*, 2000a). Shleifer and Vishny (1997) argue that large shareholders like managers could choose to reduce dividends and use cash in activities that provide private benefits for them. According to La Porta *et al.* (2000a), high dividends are an outcome of good governance and shareholders protection. Hence, the positive relationship between dividend and ownership concentration is a consequence of large shareholders' monitoring.

Likewise, Rossi *et al.* (2016) argued that the positive relationship between ownership concentration and capital structure could be simultaneously interpreted as either a complementary role to mitigate agency conflicts between managers and owner or a controlling shareholder attempts to extract benefits from the minority. Friend and Lang (1988) and Mehran (1992) suggested that external shareholders have more diversified portfolio than managers

leading them to be less aversion toward risk associated with debt. In addition, large shareholders attempt to maintain a strong voting power over the firm by using more debt (Brailsford *et al*., 2002; Céspedes *et al*., 2010).

From the above discussion it can be hypothesized that:

H2: There is a relationship between ownership concentration and both dividend payout and capital structure.

2.2.1 Family Ownership

The involvement of family affiliation in businesses implements a unique feature of corporate policies. Family shareholders are characterized by having direct representation in management, longer investment horizons, and relatively undiversified portfolio. Although the direct representation of family members in the management reduces the costs of manager-owner conflicts, family firms are accused of expropriation threat. Setia-Atmaja (2010) argued that the presence of family ownership increases agency costs and thus, the need for governance mechanisms. The greater incentives to expropriate wealth from minority and probable conflicts with other block-holders such an insisting on keeping incompetent managers because he is a family member suggest that agency problem might be more severe in firms with family control. Therefore, controlling families strive to keep a good reputation for their family group through the appropriate corporate policies.

Yoshikawa and Rasheed (2010) suggested that in family-controlled firms, one of the critical agency conflicts is the conflict between inside family shareholders and other outside block-shareholders. Their results showed that dividends are positively related to family directors. Similarly, Pindado *et al*. (2012) examined the use of dividends as a governance tool in family-controlled firms in Eurozone countries. They found that family firms tend to pay more dividends and keep a stable dividend policy as compared to non-family firms. Saleh *et al*. (2018a) affirm that the severity of agency problems compels Malaysian family-controlled firms to pay higher dividends regardless of their financial needs for growth opportunities. However, Djebali (2015) reported a negative relationship between dividends and family ownership. He attributes that to families' reservations about future growth opportunities and preference to tunnel dividends to their affiliated firms, thus, keeping the business resources and benefits under their control.

Based on existing literature, there is no absolute decisive prediction regarding family shareholders' preferences toward the choice of capital structure. The concern of keeping control over the firms leads family shareholders to prefer debt finance (Pindado *et al*., 2015). Croci *et al*. (2011) found that family firms are more affected by control-motivation and prefer debt financing compared to non-family controlled firms. However, the control-incentive is not always held where the creditors' restraints on controlling shareholders via covenants (Anderson & Reeb, 2003; McConaughy, 2009) and the poor diversified portfolio of family shareholders make family firms more sensitive to risks associated with debt financing (Faccio *et al*., 2011). Based on the discussion above it can be hypothesized that:

H3: There is a relationship between family ownership and dividend payout and capital structure.

2.2.2 Government Ownership

Government ownership in capital markets is taken as a special case due to several considerations. Firms that are controlled by the government are more concerned about the country's aggregate economy, political and social policy goals (Dewenter & Malatesta, 2001). Based on agency analysis, government ownership is expected to reveal double agency costs. Besides the conflicts that may arise between the shareholders (majority and minority), government ownership raises the probability of conflicts between the government and the citizens as the ultimate owners (Eng & Mak, 2003; Al-Malkawi, 2017).

Managers of government-owned firms are poorly monitored and evaluated by politicians as agents for citizens, the ultimate owners of these firms (Ben−Nasr, 2015). Ben−Nasr (2015) and Al-Najjar and Kilincarslan (2016) found a negative relationship between government ownership and dividends. They suggested that managers and politicians may strive to keep cash within the firm for achieving personal and political desires that keep them in power for a longer period.

However, other researchers argued that since the governments are expected to hold the responsibility of protecting investors, this suggests high monitoring role of government ownership to reduce the managers' misuse of authorities on firms' policies (Kuwari, 2009; Al-Malkawi, 2017). In emerging markets, the protection of investors is questionable, with high uncertainty about the firms' future and lack of experience about how to treat minority rights. Thus, the expropriation risk is high, and governments attempt, through their participation in the capital market, to show the good reputation of firms by distributing a large dividend payout (Kuwari, 2009). Several empirical studies

reported a positive relationship between dividends and government ownership (Al-Malkawi, 2017; Kuwari, 2009; Lin *et al*., 2017).

On the other hand, literature has shown inconclusive results regarding the effect of government shareholding on capital structure. The government domination on the financial system and control over most banks and financial institutions allow firms controlled by the government easier access to external funds and on favorable terms (Chen *et al*., 2014; Li *et al*., 2009; Pöyry & Maury, 2010). Such financial privileges suggest a positive relationship between government ownership and firms' financial leverage. The financial privileges of government-controlled firms have been supported empirically (Chen *et al*., 2014; Le & Tannous, 2016; Li *et al*., 2009; Pöyry & Maury, 2010).

On the contrary, Chen and Strange (2005) suggested that government ownership increases the entrenchment of managers who are more concerned about the risk associated with debt financing, and thus the presence of state shareholders limits the use of debt. Su (2010) found that firms controlled by the government use less debt than nongovernment -controlled firms. He suggested that debt is less likely to be an effective governance tool to discipline the managers of government-controlled firms. Hardiyanto *et al*. (2015) and Nhung and Okuda (2015) found a negative impact of government ownership on the firms' financial leverage. Hence it is hypothesized that:

H4: There is a relationship between government ownership and dividend payout and capital structure.

2.2.3 Foreign Ownership

The finance literature has highlighted the differential impact of foreign ownership on firms' policies and its performance implications (Douma *et al*., 2006). Foreign investors practice international standards, demand strong corporate governance and have better experience compared to local investors which is reflected in better performance of firms and in the overall growth of the economy (Jeon *et al*., 2011; Mian & Nagata, 2015). Lam *et al*. (2012) argued that the presence of foreign ownership pressures local firms to improve corporate governance and reduce asymmetric information about the firms. Such an environment reduces the need for dividend-induced monitoring, predicting a negative relationship between dividends and foreign ownership. The negative impact of foreign ownership on dividends also found by Yoshikawa and Rasheed (2010).

In contrast, Manos (2002) and Baba (2009) argued that, unlike domestic shareholders, foreign investors encounter a high degree of information asymmetry, and difficulty of monitoring managers overseas. Therefore, the increase in foreign ownership leads to greater dividend payouts. However, other researchers consider the positive effect of foreign ownership on dividends as a result of applying strong corporate governance. Jeon *et al*. (2011) argued that foreign shareholders pressure firms to pay more dividends in order to enhance shareholders monitoring and reduce the problem of overinvestment. Mian and Nagata (2015) suggested that foreign shareholders, especially institutions, consolidate the efficient use of dividends and investments policy to increase the firm value.

Foreign affiliated firms are financially stronger firms with greater investment opportunities and the equity contribution from foreign investors may lead to the use of less debt (Bandyopadhyay & Barua, 2016). Gurunlu and Gursoy (2010) pointed out that foreign investors encounter more risks relative to local investors, these risks involve country risk, currency risk, and business risk. They found that foreign ownership is negatively related to leverage. Chen and Strange (2005) and Li *et al*. (2009) provided empirical support for the negative effect of foreign ownership on capital structure. Le and Tannous (2016) suggested that foreign ownership serves as a substitute for leverage-induced monitoring. The foreign investors' privileges of accessing and interpreting information help to reduce agency costs and control the overinvestment problem. Therefore, this study hypothesizes that:

H5: There is a relationship between foreign ownership and dividends payout and capital structure.

3. Methodology and Estimating Technique

3.1 Sample and Data Characteristics

The study is conducted on selected firms from the population of all listed firms on the Main Market of Bursa Malaysia for five years period from 2012 to 2016. The financial related firms are excluded as they are subject to different regulations. The study excluded firms in the ACE market because it adopts a simple listing requirement in terms of size, growth, operating history, and track record of firms to enable emerging firms to gain an advantage as being listed firm. Firms with negative earnings are excluded from the sample, as these firms refrained from paying dividends not because of rational monitoring or financing action but because they are unable to pay dividends. Thus, the sensible interpretation of firms' dividends behavior calls for excluding these firms. (Jensen *et al*., 1992; Mulyani *et al*., 2016; Setia-Atmaja, 2010). Furthermore, only firms that have complete data over the period of study were included in the sample. Finally, 407 firms (2035 observations-year firms) were included in the sample. The

ownership structure variables are collected from the firm's annual reports available on the Bursa Malaysia website. Data for the other variables are collected from the DataStream of Thomson database.

Table 1 shows the number of firms in each sector. The sample included firms from ten sectors. The sectors of Industrial Products and Trading & Service have the largest representation in the sample which is 27.2% and 21.8% respectively, whilst the Infrastructure Project Companies (IPC) represents the smallest percentages of sample firms that consisted of only 0.98 % of the sample firms.

Table 1. Profiles of Sample firms between 2012 to 2016

Sector	No	%	Dividends Payers	Non-dividends payers	Dividend Payout	Leverage
Construction	26	6.38	21	5	0.144	0.373
Consumer Products	69	16.95	60	9	0.338	0.183
Hotels	1	0.24	1	0	0.413	0.035
Industrial Products	111	27.27	91	20	0.337	0.216
Plantation	23	5.65	23	0	0.51	0.161
IPC	4	0.98	3	1	0.419	0.286
Properties	58	14.25	45	13	0.154	0.333
REITS	15	3.68	15	0	0.592	0.321
Technology	11	2.70	11	0	0.37	0.088
Trading/Services	89	21.86	81	8	0.376	0.219
Total	407	100	351	56	0.332	0.244

Table 1 also reports the number of firms that paid dividends in each sector and non-dividend payer. Overall, 351 firms paid dividends which represent 86% of the sampled firms. REITS firms are shown to have the highest dividend payout ratio at 59.2%, and Construction firms had the lowest payout ratio of 14.4%. The average leverage ratio varied among sectors from the highest (37.3%) for Construction firms to the lowest (8.8%) for Technology firms

3.2 Estimating Technique

It has been argued that in the OLS model, the independent variables are assumed to be exogenously determined. For consistent estimation of OLS, the independent variable should not be correlated to the unobserved value that represented in the error value of the model. If such an assumption is infringed, the regression model will be subject to the endogeneity problems and biased results are expected (Wooldridge, 2010). In statistic, the endogeneity bias appears when the dependent variable is simultaneously determined with one or more of the independent variables "endogenous variable" (Roberts & Whited, 2013). In such circumstances, there will be an association between the error term of the model and the independent variable "endogenous variable". This association raises the endogeneity problem in the model, which leads to bias results. This association affects the estimated parameters of other exogenous variables as well unless they are totally uncorrelated to the endogenous variable (Cameron & Trivedi, 2005). The Equations in simultaneous model can be rewritten as follow:

$$Y = \beta_0 + \partial X + \sum_{j=1}^{j} \beta_j x_j + u \tag{1}$$

$$X = \beta_0 + \delta Y + \sum_{k=1}^{k} \beta_k x_k + \varepsilon \tag{2}$$

Where Y and X represent the dependent variable, which are the endogenous variable (it may be there a vector of endogenous variables), x_j and x_k are the exogenous variables, ∂, δ, and β_j are the parameters that the study aims to estimate, ε and u are the error term.

To avoid bias results due to the endogeneity problem, researchers adopt one of the Instrumental Variable techniques (IV). The IV methods resolve the endogeneity problem by finding instruments that satisfy the assumption of consistent estimation. This instrument should be uncorrelated to the error term but sufficiently correlated to the endogenous variable (Cameron & Trivedi, 2005). Based on the IV methods, , X in Equation 2 is regressed on all

other exogenous variables in equation 2 in order to find the fitted instruments (ỹ) that used in the second stage to regress Y on (ỹ) and x_k (exogenous variables) to obtain $\bar{\beta}_j$ (Cameron & Trivedi, 2005). The IV techniques can be performed equation-by-equation using two-stage least squares (2SLS) or full system of equations using the three-stage least squares (3SLS). The 2SLS estimator for $\bar{\beta}_j$ can be written as follow:

$$\bar{\beta}_{j2sls} = (ỹ'x_k)^{-1}ỹ'Y \tag{3}$$

Where x_k is a matrix includes all exogenous variables. According to Wooldridge (2010), 2SLS estimator is the most efficient estimator among the class of IV estimators. The 2SLS approach uses all exogenous variable in the regressed equation as instrumentals to obtain the predicted value of the endogenous variable. However, 3SLS is more informative estimator as it takes into account the contemporaneous correlation between the error terms in the system across equations (Lee *et al.*, 2016). Wooldridge (2010) asserted that 3SLS and 2SLS are asymptotically equivalent when each equation in the system is just identified.

3.3 Econometric Model

As discussed in the literature review dividends and capital structure are highly confirmed as jointly determined decisions. Jensen *et al*, (1992), Aggarwal and Kyaw (2010), Lee *et al*. (2016), and Ghasemi *et al*. (2018) found that dividend policy and capital structure are co-determined. They concluded that capital structure and dividend decisions should be investigated in a simultaneous estimation technique. Therefore, this study utilizes the 2SLS and 3SLS to estimate the simultaneous relationship between dividends and capital structure. Two simultaneous equations are specified, each equation identifies one endogenous variable along with the other exogenous variables.

$$DIV = \beta_0 + \beta_1 LEV + \beta_2 CON + \beta_3 FAMILY + \beta_4 GOV + \beta_5 FOREIGN + \beta_6 TQ + \beta_7 ROA + \beta_8 BETA + \beta_9 STDV + \beta_{10} SALEGRTH + \beta_{11} FCF + \varepsilon \tag{4}$$

$$LEV = \delta_0 + \delta_1 DIV + \delta_2 CON + \delta_3 FAMILY + \delta_4 GOV + \delta_5 FOREIGN + \delta_6 TQ + \delta_7 ROA + \delta_8 BETA + \delta_9 STDV + \delta_{10} COVERAG + \delta_{11} TANG + \sigma \tag{5}$$

The capital structure (LEV) is measured by the market value of the leverage ratio. Rajan and Zingales (1995) argued that market value of leverage is the efficient measurement relative to the agency problem, that because it reflects the residual for the shareholders from the firm value in the case of liquidation. Dividends (DIV) are measured as the ratio of cash dividends to the operating income (Kim *et al.*, 2007). As discussed in the previous section, dividends and capital structure seem to be simultaneously ownership variables (CON, FAMILY, GOV, and FOREIGN). Therefore, they have been added as exogenous variables for both dividends and capital structure equations.

Fallowing pervious literature, profitability (ROA), investment opportunities (TQ), and corporate risk (BETA, STDV) are key determinants of dividends and capital structure. According to pecking order theory, dividends are less attractive with lower profitability and greater investment opportunities. Similarly, when investment exceeds retained earnings, more external finance will be needed. Thus, debt increases when profitability decreases and investment opportunities increases (Fama & French, 2002; Myers, 1984). Similarly, Fama and French (2002) argued that both trade-off and pecking order theory predict a negative effect of earnings volatility on dividends and capital structure. Firm risk add extra costs on external finance, hence firms with high risk prefer to keep lower payout ratio and lower leverage.

The simultaneous equation modeling is required instrumental variables at least as large as the number of endogenous variables for each structural equation to satisfy the assumption of model identification. Thus, two specific exogenous variables were added to each system equation as instrumental variables. In this study, sales growth (SALEGRTH) and free cash flow (FCF) were used as instrumental variables in the dividends equation (Aggarwal & Kyaw, 2010; Jensen *et al*, 1992; Vo and Nguyen, 2014). Rozeff (1982) and Jensen *et al*, (1992) suggested that sales growth is associated with higher investment expenditures. Therefore, firms with high sales growth establish lower dividend payout to avoid costly external finance. According to agency theory, dividends are used to reduce cash under managers' discretions. Thus as free cash flow increases, firms use more dividends. Similarly, two instrumental variables were added to the capital structure equation: coverage ratio (COVERAG) and asset tangibility (TANG). According to Eriotis *et al*, (2007), high-interest coverage ratio indicates lower default probability due to lower leverage. The trade-off theory predicts a positive relation between leverage and tangibility. Tangible assets are easier to collateralize and they suffer a smaller loss of value when firms go into distress (Köksal & Orman, 2015). Table 2 presents the measurements and acronym of each variable.

Table 2. The variables' measurements

No.	Variables	Acronym	Measurements	Study/References
Dependent variables (endogenous)				
1	Dividends	DIV	Payout ratio: cash dividend to operation income.	Harada and Nguyen (2011), Kim *et al.* (2007)
2	Capital structure	LEV	Ratio of total debt to (market value of equity +total debt)	Pindado *et al.* (2015), Short *et al.* (2002)
Independent variables (exogenous)				
1	Ownership concentration	CON	The percentage of shares held by shareholders who owned 5% or more of shareholdings	Yunos *et al.* (2010), Eng and Mak (2003)
2	Family ownership	FAMILY	The ratio of share owned by family members.	Anderson and Reeb (2003)
3	Government ownership	GOV	The ratio of shares held by government.	Kuwari (2009), Lin *et al.* (2010), Chen *et al.* (2014)
4	Foreign ownership	FOREIGN	The ratio of shares owned by foreign	Li *et al.* (2009), Baba (2009),
5	Growth opportunities	TQ	Tobin's Q= (total debt + market value of equity)/ total asset.	Fama and French (2002), Aggarwal and Kyaw (2010)
6	Profitability	ROA	Net income to total assets.	Fama and French (2002)
7	Corporate risk	STDEV	Standard deviation of the first difference in operating income divided by total asset.	Jensen *et al.* (1992), Aggarwal and Kyaw (2010)
		BETA	Beta= the covariance of stock return with market return divided by variance of market return.	Rozeff (1982), Aggarwal and Kyaw (2010)
8	Sales growth	SALEGRTH	Ratio of change in sale for current year related to last year.	Jensen *et al.* (1992) Vo and Nguyen (2014)
9	Free cash flow	FCF	Net income + depreciations	Aggarwal and Kyaw (2010), Le and Tannous (2016), Yusof *et al.* (2016)
10	Coverage ratio	COVERAG	The ratio of operating income to interests' expenses.	Eriotis *et al*, (2007)
11	Tangibility of Assets	TANG	Fixed assets to total assets.	Köksal and Orman (2015)

4. Empirical Results and Analysis

4.1 Descriptive Statistics

Table 3 the descriptive statistics of the variables undertaking by the study. The overall mean dividend payout for the whole sample over the period of study is 0.33, which is a similar percentage that was reported by Benjamin *et al.* (2016) for a sample of Malaysian firms. The mean value of the leverage ratio is 0.24. Based on studies of Malaysian firms, the mean value of leverage ratio ranged between 31% as reported by Lean *et al.* (2011) and 15.28% as reported by Suhaila *et al.* (2008). The difference in values is perhaps due to the difference in sample period and sample selection criteria. Ownership concentration (CON) as measured by the percentage of shareholdings owned by

substantial shareholders (5% or more equity shareholding) has a mean value of 0.56 and ranges from 11.8% to 89%. These statistics indicate a high level of concentration ownership in Malaysia where all the sample firms have substantial shareholders. These percentages are consistent with Yunos *et al.* (2010) who found that 96.76% of Malaysian firms in the sample have concentrated ownership with substantial shareholdings higher than 20%.

Table 3. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
DIV	2,035	0.331675	0.540244	0	14.84799
LEV	2,035	0.244314	0.224936	0	0.976079
CON	2,035	0.568177	0.148647	0.1181	0.8934
FAMILY	2,035	0.245471	0.255919	0	0.8546
GOV	2,035	0.088096	0.174509	0	0.9042
FOREIGN	2,035	0.118542	0.185723	0	0.8944
TQ	2,035	1.107603	1.260718	0.110693	15.49756
ROA	2,035	0.075663	0.068355	0	0.7532
BETA	2,035	0.629689	0.563596	-0.60445	2.811773
STDV	2,035	0.036035	0.035755	0.0019	0.526529
SALEGRTH	2,035	0.141281	0.95015	-0.967	30.76483
FCF	2,035	0.054734	0.055393	-1.23947	0.340541
COVERAG	2,035	0.177767	1.025083	-7.01957	41.83333
TANG	2,035	0.345807	0.236542	0	0.996648

Table 4 shows that the correlations among variables are relatively low. The highest value is 38.5% for the correlation between profitability (ROA) and the leverage ratio (LEV). Therefore, it can be concluded that both models are free from multicollinearity problem.

Table 4. Correlation matrix

Variables	DIV	LEV	CON	FAMILY	GOV	FOREIGN	TQ
DIV	1						
LEV	0.2216	1					
CON	0.0886	-0.137	1				
FAMILY	-0.0522	-0.0317	0.0781	1			
GOV	0.1508	-0.0515	0.2236	-0.3039	1		
FOREIGN	0.0904	-0.2266	0.1471	-0.0891	-0.0229	1	
TQ	0.1877	-0.3224	0.1136	-0.1533	0.1463	0.2387	1
ROA	0.1109	-0.3859	0.051	-0.0235	0.0336	0.1732	0.7372
BETA	-0.1011	0.0225	-0.1581	-0.0471	0.005	-0.0699	0.0127
STDV	0.0102	-0.1884	0.0528	0.0008	-0.0297	0.1139	0.2045
SALEGRTH	-0.058	0.0399	0.0157	0.0195	-0.0156	-0.0229	-0.013
FCF	0.2932	-0.1851	-0.0272	0.057	-0.0423	0.025	0.1096
COVERAG	0.284	0.1847	-0.0211	0.0056	0.0086	-0.0474	-0.0498

TANG	0.0503	0.0363	0.0796	-0.0414	0.1513	0.009	0.0028
	ROA	BETA	STDV	SALEGRTH	FCF	COVERAG	TANG
ROA	1						
BETA	0.1088	1					
STDV	0.237	0.0468	1				
SALEGRTH	0.0294	0.0357	0.0225	1			
FCF	0.3756	0.1543	-0.0187	0.0386	1		
COVERAG	-0.0924	-0.0222	-0.0368	-0.0056	-0.0408	1	
TANG	-0.0795	-0.1017	-0.0559	0.0022	0.0306	0.0394	1

4.2 Diagnostic Tests

Diagnostic tests were performed to test for the regression assumptions. The Breusch-Pagan/Cook-Weisberg Test was applied to test the error term in the examined models. The results show that dividend model (chi2 (1) = 2727.07 & Prob > chi2 = 0.0000) and capital structure model (chi2 (1) = 130.94 & Prob > chi2 = 0.0000) have heteroskedasticity problem. Also, the Wooldridge test is used to detect the presence of autocorrelation in the examined models. The results reveal that only capital structure suffer from autocorrelation problem (F (1, 406) = 279.336 & Prob > F = 0.0000) and no first-order autocorrelation in the dividend model (F (1, 406) = 2.513 & Prob > F = 0.1137). Robust standard error is needed to solve the problem of heteroskedasticity and autocorrelation.

For endogeneity presence in the examined models, the Durbin–Wu– Hausman was performed. The results confirmed that leverage is endogenous variable in the model of dividend (Durbin (score) chi2 (1) = 284.218 (p = 0.0000) & Wu-Hausman F (1, 2022) = 328.248 (p = 0.0000)). Similarly, dividend is found to be endogenous in the capital structure model (Durbin (score) chi2 (1) = 68.5596 (p = 0.0000) & Wu-Hausman F (1, 2022) = 70.4966 (p = 0.0000)).

In order to test the identification of the models and validity of instruments, using Stat 15 the rank condition is checked. The results show that both equations are identified, results in an identified system. In addition, Sargan-Hansen test is performed for checking the over-identifying restrictions. The results reveals that instruments are valid for dividend model (Sargan (score) chi2 (1) = .018719 (p = 0.8912) & Basmann chi2 (1) = .018599 (p = 0.8915)) and capital structure model (Sargan (score) chi2 (1) = 7.80338 (p = 0.474) & Basmann chi2 (1) = 7.78337 (p = 0.557)).

4.3 Empirical Findings

Table 5 shows the results of OLS, 2SLS, and 3SLS for both dividend and capital structure equations. The results show a significant difference across equqsions before and after accounting for endogeneity effect. Generally, for both models capital structure (LEV) and dividends (DIV) have been found to be significant, which proves the simultaneous relationship. Furthermore, the results reported a significant negative relationship between capital structure (LEV) and dividends (DIV) before accounting for endogeneity and a significant positive relationship after accounting for endogeneity effects. This positive relation implies that firms tend to depend on debt to finance their activities rather than using internal finance by reducing dividends.

Table 5. Results of regression analysis

variables	Dividend			Capital Structure		
	OLS	2SLS	3SLS	OLS	2SLS	3SLS
DIV	-	-	-	-0.0955*** (0.000)	0.0885*** (0.000)	0.0881*** (0.001)
LEV	-0.530*** (0.000)	4.8256*** (0.000)	4.8289*** (0.000)	-	-	-

CON	0.0162	0.5930***	0.5789***	-0.0925***	-0.1096***	-0.1095***
	(0.833)	(0.004)	(0.005)	(0.003)	(0.001)	(0.001)
FAMILY	0.0119	0.3043***	0.3045***	-0.0564***	-0.0591***	-0.0591***
	(0.792)	(0.010)	(0.010)	(0.002)	(0.002)	(0.003)
GOV	0.3441***	0.6661***	0.6713***	-0.0297	-0.0985***	-0.0979***
	(0.000)	(0.000)	(0.000)	(0.280)	(0.003)	(0.002)
FOREIGN	0.0614	1.0052***	1.0160***	-0.1574***	-0.1885***	-0.1884***
	(0.315)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TQ	0.0142	0.0684**	0.0691**	-0.0005	-0.0130**	-0.013**
	(0.295)	(0.045)	(0.043)	(0.914)	(0.033)	(0.033)
ROA	1.3052***	5.9794***	6.0165***	-0.9632***	-0.9927***	-0.9936***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BETA	-0.0456**	-0.1401***	-0.1421***	0.0081	0.0239***	0.0238***
	(0.020)	(0.005)	(0.004)	(0.300)	(0.008)	(0.008)
STDV	-1.224***	2.1375**	2.0684**	-0.5705***	-0.5262***	-0.5268***
	(0.000)	(0.019)	(0.023)	(0.000)	(0.000)	(0.000)
SALEGRTH	-0.0188*	-0.0812***	-0.0067	-	-	-
	(0.096)	(0.005)	(0.555)			
FCF	-3.790***	1.9075***	2.1213***	-	-	-
	(0.000)	(0.002)	(0.000)			
COVERAG	-	-	-	0.0465***	0.0181***	0.0182***
				(0.000)	(0.003)	(0.002)
TANG	-	-	-	0.0191**	0.0151	0.0126**
				(0.042)	(0.459)	(0.038)
No of obs	2035	2035	2035	2035	2035	2035
RMSE	0.4808	1.1757	1.1758	0.1935	0.2136	0.2135
Prob > chi2	0.000	0.000	0.000	0.000	0.000	0.000

*** 1% significance level, ** 5% significance level, *10% significance level

The results are consistent with the agency theory predictions that firms, in order to alleviate agency costs, use dividends to reduce excess cash and use debt to increase the dependence on the capital market (Easterbrook, 1984; Jensen, 1986). Yusof *et al.* (2016) suggested that dividend-induced governance reduces the internal funds available for investment and increase the need for external finance. Adu-Boanyah *et al.* (2013) suggested that the use of debt reduce the agency cost and improve the firm's profitability, both of which are associated with high dividends.

The results are also consistent with the pecking order theory. Myers (1984) argued that due to the sticky feature of dividends, debt is preferred over equity when firms experience an internal financial deficit. Therefore, high dividend payout increases the probability of internal deficit and, as a consequence more debt is used. Similarly, several studies have reported a positive relationship between dividends and capital structure (Belden *et al*., 2005; Dutta, 1999; Aggarwal & Kyaw, 2010; Kim *et al*., 2007).

The ownership structure is represented in the models by four variables, namely, substantial shareholders as a proxy of the overall ownership concentration (CON), family ownership (FAMILY), government ownership (GOV) and foreign ownership (FOREIGN). The results changed markedly in sign, magnitude and significance when moving from OLS estimator to 2SLS and 3SLS estimators. As for dividend equation, only government ownership (GOV) show significant effect based on OLS estimator. However, after taking into account the endogeneity effect using

2SLS and 3SLS, all ownership variables (CON, FAMILY, GOV, and FOREIGN) have found to be positively significant. The results are consistent with the monitoring hypothesis, which suggests that controlling shareholders use dividends to apply a strict financial discipline against managerial opportunism (Harada & Nguyen, 2011). Active monitoring by controlling shareholders minimize the extravagance of corporate resources. Hence the excess cash is paid out as dividends (Shleifer & Vishny, 1986). Furthermore, the results are inconsistent with the expropriation hypothesis, as the results suggest that there is no attempt by controlling shareholders in Malaysia to extract private benefits at the minority shareholders' expenses or expropriate their wealth. The positive relationship between substantial, family, government, and foreign shareholders with dividends also indicates the presence of strong investor protection in Malaysia.

On the other hand, ownership variables (CON, FAMILY, GOV, and FOREIGN) have a significant negative coefficient in the capital structure model based on both 2SLS and 3SLS. The results indicate that controlling shareholders (substantial, family, government, and foreign shareholders) tend to use less debt. This negative effect supports the substitution hypothesis of agency theory, where the active monitoring of shareholders mitigate the need for debt as a means to monitor mangers (Short et al., 2002). Furthermore, the substantial shareholder who owns an undiversified large portion of the firm may be more cautious regarding the risk associated with debt. Obviously, large shareholders are less affected by control-motivation in Malaysia. As shown in Table 2 the mean of ownership concentration (CON) is 56.8% which indicate absolute control of large shareholders on the firms. The direct representation of family shareholders in the board with absolute control on the firms' shareholdings rises the managers' entrenchment who are more concern about the risk associated with debt. Similarly, Chen and Strange (2005) suggested that government ownership increases the managers' entrenchment. Another explanation may be that the government and foreign shareholders have a high ability to raise equity financing. Furthermore, unlike domestic investors, foreign investors are exposed to additional risks associated with the instability in macroeconomic variables such as exchange rates and interest rates. Such risks make foreign investors more concern regarding the risks associated with debt. The current results are consistent with the results found by Su (2010) Chen and Strange (2005), and Li et al. (2009).

With respect to firms' characteristics, results showed that growth opportunities (TQ) and profitability (ROA) negatively affect the capital structure and positively affect dividend payout. The results support the pecking order prediction, firms with high profits have less leverage and higher dividend payout (Fama & French, 2002). Although pecking order theory predicts a negative relationship between dividend and investment opportunity, Myers' (1984) argued that due to the sticky of dividends policy at the short term, firms meet the growth required funds by either using the cash balance, marketable securities or largely by debt. For corporate risk variables, firms' market risks (BETA) is found to be significant and negatively related to dividends. This result also supports pecking order theory, Rozeff (1982) argued that a firm's risk increases the transaction costs associated with new issuance hence firms with high risk reduce dividend payments to lower the need for external finance. But (BETA) is found to be negative on capital structure. However, based on the assets substitution hypothesis, firms with a high variance in market value are more likely to use higher debt to shift part of firms' risk to bondholders (Green & Talmor, 1986). Also, corporate risk as measured by the standard deviation of earnings (STDV) has a significant negative effect on the capital structure, which supports the pecking order predictions.

The positive effect of free cash flow (FCF) on dividends supports the agency theory predictions where shareholders use dividends to reduce cash under managers' discretions. In addition, sales growth (SALEGRTH) is found to be negatively related to dividend. In the other hand, coverage ratio (COVERAG) and tangibility (TANG) are found to be positively related to capital structure. The result reinforces the trade-off hypothesis with the assumption that tangible assets serve as a collateral for debt financing and increase the firms' borrowing capacity at a lower cost, fixed assets are the creditors' last resort when firms go bankrupt . which is in accordance with trade-off predictions (Saleh et al. 2018b).

5. Conclusion

Unlike previous studies, this study simultaneously examined the effect of corporate ownership variables on capital structure and dividend policy. The investigation is conducted for a sample of listed firms in Malaysia between 2012 and 2016. The results from OLS estimator showed a significant difference in sign, magnitude and significance compared to 2SLS and 3SLS estimators indicating the effect of endogeneity bias. The results of simultaneous regression models using 2SLS and 3SLS confirmed that dividends and capital structure are simultaneously determined, where they are found to affect each other positively. The positive bi-directional relationship between capital structure and dividends is consistent with the predictions of both agency and pecking order theory. The

dividend-induced governance reduces managers' discretions on free cash flow and keeps the firm under capital monitoring due to persistent needs for external finance. Although pecking order suggests the preference of internal finance over external, Myers (1984) asserted that the reluctance of managers to reduce dividends at short trim push firms with high dividends to use more debt financing.

The study provides evidence on the influence of four ownership identities on the firms' dividend policy and capital structure. The study focused on the effect of four ownership identities namely ownership concentration (substantial), government ownership, family ownership, and foreign ownership. All ownership identities were found to be significant. The positive effect of substantial ownership, government ownership, and foreign ownership on dividends reflects the protection of minority shareholders and supports the monitoring hypothesis that suggests large shareholders monitor management through dividends (Shleifer & Vishny, 1986).

As for capital structure, similar to the dividend model, all ownership identities (substantial, government, and foreign ownership) were found to be significant and negatively related to capital structure. Clearly, capital structure is not a good governance mechanism for Malaysian firms. The plausible explanation from the agency theory perspective is that ownership concentration offsets the governance role of debt to alleviate agency costs. In addition, controlling shareholders in Malaysia possess absolute control on the firms with a mean concentration of 65.8%. Thus, they concern about the risk of financial distress more than the risk of losing control. However, given the results, a question may be raised as to how firms could keep low debt levels when they distribute most of their internally generated funds in the form of dividends. The possible justification lies in pecking order theory as offered by Myers (1984) and Fama and French (2002) who argued that the consideration of both information asymmetry costs and financial distress costs motivates firms to issue equity to build up financial slack in anticipation of future investment.

The findings of the study provide clear insight to managers regarding the preferences of shareholders toward capital structure and dividend policy and how these choices are affected by the expected conflicts between minority and majority shareholders. Shareholders in Malaysia are shown to prefer high and stable dividend payout. Overall, shareholders tend to use dividends as a monitoring tool but not capital structure. At a high threat of expropriation, high dividends are required to build reputation. Shareholders may tend to channel funds into investment opportunities rather than payout dividends. Such clear vision enhances the managers' performance and enables them to reduce the agency conflicts and information asymmetry. Furthermore, it provides them, early on, with expectations regarding specific changes and the appropriate approach to satisfy the current and expected investors and hence maximize the firm value.

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