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DETERMINANTS OF CORPORATE PAY-OUT POLICY AND THE MODERATING EFFECTS OF FIRM'S GROWTH: EVIDENCE FROM PAKISTAN

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Abstract: This study investigates the determinants of dividend pay-out of listed firms in Pakistan from the year 2011 to 2015. The focus of the study is the life cycle theory of dividends, agency theory and signaling theory. Corporate governance indicators, firm efficiency and cash flow volatility are the main determinants used in this study. This study also includes eight corporate governance indicators namely insider ownership, ownership concentration, institutional ownership, board independence, board size, CEO duality, audit committee independence and remuneration committee. It is found that ownership concentration, institutional ownership, CEO duality, firm efficiency and cash flow volatility are the significant determinants of dividend pay-out in Pakistan. It is also found that growth opportunities significantly moderate the impact of ownership concentration, institutional ownership, CEO duality, firm efficiency, cash flow volatility on the dividend pay-out. This research is among the pioneer studies which examine the impact of firm efficiency on dividend pay-out. Likewise, the study is among the first attempts to incorporate growth opportunities as moderating variable in the relationship between corporate governance

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indicators, firm efficiency and cash flow volatility with dividend pay-out. Results show that the management of an efficient firm pays a high dividend to increase its reputation in the market. Furthermore, the negative signaling effect of dividend omission may not exist for efficient firms. It implies that efficient firms at their growth stage may also skip dividends.

Keywords: life cycle theory, agency theory, signaling theory, dividend pay-out, Pakistan

JEL CODES: G32; G35.

1. Introduction

Signaling theory states that dividend pay-out signals high growth prospects whereas, the dividend is not paid by growth firms is the idea presented in life cycle theory of dividends. These two competing views are based on the growth opportunities which imply that the growth potential might differentiate the dividend pay-out behavior of the two firms otherwise identical. These arguments support the moderating role of growth opportunities in the relationship of dividends with its determinants. Many studies support the view that growth potential is the differential factor among high and low-paying firms (Amidu & Abor, 2006; La Porta et al., 2000b), however, empirical studies about determinants of dividend pay-out have not studied the moderating effect of growth opportunities. Efficient firms are those where management is efficient in using resources. Thus, efficient firms may not fear negative signaling effects (Hussain et al., 2021).

Therefore, the management of efficient companies may choose not to pay dividends even in the maturity phase when there are growth opportunities. With this in mind, the association between dividends and firm efficiency and a moderating impact of growth opportunities in the relationship of efficiency and dividend payout is examined in this study. Moreover, signaling theory states that dividends are signals about the projected cash flows (Alli et al., 1993; Asquith & Mullins, 1986; Bhattacharya, 1979; Hussain et al., 2021; Hussain et al., 2018). Likewise, dividend pay-out may also signal the riskiness in the cash flows (Alli et al., 1993; Eades, 1982; Rozeff, 1982). According to Hussain et al. (2021), a firm with low cash flow risk pays dividends which indicates that dividends and cash flows volatility are related. Furthermore, debt covenants may become strict for the firms facing high cash flow volatility because financial institutions may perceive these firms as risky as compared to others. Thus, this situation may divert the firms towards internal instead of external financing which may also affect the dividends pay-out (Chay & Suh, 2009) and investment decisions (Minton & Schrand, 1999). Based on the above-mentioned arguments, it can be implied that due to cash flow volatility, a firm might not distribute dividends to avoid cash shortfalls. Thus, this study also examined the cash flow volatility risk as a determinant of dividend pay-out with moderating role of growth opportunities. Thus, the current study being in line with the life cycle,

signaling and agency theories has tested the corporate governance indicators, firm efficiency and cash flow volatility as determinants of dividends.

2. Literature Review

This research studied the effects of corporate governance, firm efficiency and cash flow volatility on dividends. The following section provides a review of previous studies and hypothesis development.

2.1. Insider Ownership

According to Mahadwartha (2007) adopting both governance measures (ownership interest and high pay-out) will become costly for the organization in that both are aimed at reducing the agency costs. Many studies are providing empirical evidence on low dividend pay-out in the firms having managerial ownership (Crutchley & Hansen, 1989; Eckbo & Verma, 1994; Hu & Kumar, 2004; Jensen et al., 1992; Mahadwartha, 2007; Mirza & Azfa, 2010). In Pakistan Mehar (2005) reported that despite the increased ownership interest of management, the dividend payout has remained low. The findings of earlier mentioned studies are in accordance with the substitution hypothesis presented by La Porta et al. (2000b).In contrast, Florackis et al. (2015) reported that firms in which insider ownership is high are expected to pay high dividends. In addition, many of the other studies reported the entrenchment effect of high insider ownership with dividend pay-out (Chen & Steiner, 1999; Farinha, 2003; Hu & Kumar, 2004). The studies support this argument that after getting high insider ownership, management is more entrenched thereby paying high dividends (Bøhren et al., 2012; Farinha, 2003; Shah et al., 2011). However, high insider ownership does not always guarantee high dividend pay-out (Ghosh & Sirmans, 2006) because growth firm require more cash to utilize for the investments (Nizar Al-Malkawi, 2007). This argument incorporates the life cycle explanation with the agency theory in that impact of insider ownership on dividend policy may differentiate because young firms have more opportunities as compared to the mature firms (Bulan & Subramanian, 2009). Thus, based on their life cycle stage, the relationship of insider ownership with dividend pay-out may depend on the extent of growth opportunities available. Similarly, Fenn and Liang (2001) contend that insider ownership and pay-out policy are dependent on the extent of agency problems in the firm. According to their study inside ownership can mitigate the agency problem in organizations with few growth opportunities. It means that the inside ownership and pay-out policy depends on the level of growth opportunities. Given that, this study documented the impact of ownership concentration on firms with different growth potentials. Therefore, it is hypothesized that:

H_1: There is a significant relationship between the inside ownership and the dividend pay-out in Pakistani firms.

H_2: The interaction of the inside ownership and the growth opportunities have a significant relationship with the dividend pay-out in Pakistani Firms.

2.2. Ownership Concentration

Two different hypotheses exist regarding dividend payout based on ownership concentration. First is the monitoring hypothesis which states that ownership concentration aligns management and shareholders' interests (Claessens & Djankov, 1999), thereby increasing the dividend pay-out (Jensen, 1986; La Porta et al., 2000a; Shleifer & Vishny, 1997). Past studies show the positive impact of concentrated ownership on dividends (Ahmed & Javid, 2009; Firth et al., 2016; Thanatawee, 2013, 2014). On contrary, the rent extraction hypothesis suggests that dominant shareholders (preferring low dividend pay-out) will get their desired ratio on the cost of other shareholders (demanding high dividend pay-out) (Faccio et al., 2001; Gugler & Yurtoglu, 2003; Shleifer & Vishny, 1997). This argument was supported by others and pointed to a negative relationship between the concentration of ownership and dividends (Artikis et al., 2011; Chen et al., 2005; Yusof & Ismail, 2016). It shows that findings are not consistently based on the monitoring hypothesis and rent extraction hypothesis. According to Mitton (2004) firms operating in emerging economies with strong governance mechanism pays higher dividends if growth opportunities are not available. However, firms pay lower dividends when growth opportunities are available. Similar arguments were given by other studies (Alonso *et al.*, 2005; Gul, 1999; O'Connor & Byrne, 2015). These results imply that the direction of governance and dividends relationship might change with the availability of growth opportunities. Thus, the current study has analyzed the effects of ownership concentration on dividends and an interaction effect of ownership concentration and growth on dividends. Therefore, it is hypothesized that:

H_3: There is a significant relationship between ownership concentration and dividend pay-out in Pakistani firms.

H_4: The interaction of ownership concentration and growth opportunities have a significant relationship with dividend pay-out in Pakistani firms.

2.3. Institutional Ownership

Crutchley and Hansen (1989) state that institutional ownership is a control mechanism used by management to look after the welfare of company shareholders. Moreover, they documented the inverse relationship of institutional ownership with dividends. Institutional shareholding serves as an alternative governance mechanism for paying high dividends. Firms having growth opportunities with a high percentage of institutional shareholders do not pay higher dividends because paying dividends to discipline the management is not necessary for this situation. It is because institutional shareholders have strong voting power to discipline the management

(Short et al., 2002). Barclay et al. (2009) reported that firms with a high percentage of institutional shareholdings are not forced by these institutional investors to pay dividends. Moreover, institutional investors prefer those companies paying lower dividends (Grinstein & Michaely, 2005).

Many other studies support this argument and reported an inverse association between dividends and institutional ownership (Al-Najjar & Hussainey, 2009; Amidu & Abor, 2006; Thanatawee, 2014). On contrary, Hu and Kumar (2004) contend that firms with institutional shareholders have high pay-outs. This argument is also supported by previous studies (Abdelsalam et al., 2008; Fairchild et al., 2014; Firth et al., 2016; Shleifer & Vishny, 1997; Short et al., 2002; Thanatawee, 2013; Zeckhauser & Pound, 1990). Since, many of the previous studies reported the pay-out policy of firms may differentiate on the basis of the life cycle of the firm (Bulan & Subramanian, 2009; Chay & Suh, 2009; DeAngelo et al., 2006), therefore, the current study investigated the pay-out policy on the basis of the life cycle of the firms. For this purpose, this research used growth as a proxy for the life cycle stage. Therefore, it is hypothesized that:

H_5: There is a significant relationship between institutional ownership and the dividend pay-out in Pakistani firms.

H_6: The interaction of institutional ownership and growth opportunities have a significant relationship with the dividend pay-out in Pakistani Firms.

2.4. Board Independence

Many past types of research have shown an association between independence of board and dividends (Al-Najjar & Hussainey, 2009; Belden et al., 2005; Benjamin & Mat Zain, 2015; Brown & Caylor, 2004; Chen et al., 2005; Hu & Kumar, 2004; Setia-Atmaja, 2010; Yarram & Dollery, 2015). Among these studies, some suggested that dividends and board independence are inversely related (Al-Najjar & Hussainey, 2009; Benjamin & Mat Zain, 2015; Chen et al., 2005) supporting substitution hypothesis whereas others claimed that dividends and board independence are positively related (Belden et al., 2005; Brown & Caylor, 2004; Hu & Kumar, 2004; Setia-Atmaja, 2010; Yarram & Dollery, 2015)supporting outcome hypothesis. Therefore, based on the mixed argument, this study investigated the effects of the independence of the board on the pay-out policy based on the agency-based life cycle theory. This study used growth opportunities as a proxy for the life cycle stage of the firm. There are other studies reporting the relationship among growth opportunities, dividends and corporate governance (Abor & Bokpin, 2010; Gugler, 2003; Officer, 2011). However, this study is among the first of those studies reporting the relationship of board independence with a pay-out policy with the interaction of board independence and growth opportunities. Therefore, it is hypothesized that:

H_7: There is a significant relationship between board independence and the dividend pay-out in Pakistani firms.
H_8: The interaction of the board independence and the growth opportunities have a significant relationship with the dividend pay-out in Pakistani Firms.

2.5. Board Size

According to Yarram and Dollery (2015), the performance of the boards with less number of directors is low with respect to governance functions. An increase in the size of the board may bring more expertise to the board thereby improving its effectiveness (Klein, 1998). Companies with more members on the board pay high dividends because boards with more members are trying to please a large number of shareholders and pay higher dividends (Yarram & Dollery, 2015). The empirical support for this argument can be traced back to many of the previous studies (Abor & Fiador, 2013; Bokpin, 2011; Jiraporn & Ning, 2006). On contrary, there are other studies that do not support this argument and have reported that a larger board size pays lower dividends (Alias et al., 2012; Batool & Javid, 2014; Ghosh & Sirmans, 2006; Rehman et al., 2012). As stated by La Porta et al. (2000a) smaller boards can also pay higher dividends for making a good reputation. However, Setia-Atmaja et al. (2009) documented an insignificant association between board size and dividends. Based on these mixed findings there is a need to analyze the impact of the size of the board on the pay-outs. In addition to these results, growth opportunities have been found differentiating factors among high pay-out and low pay-out firms (Abor & Bokpin, 2010; Gaver & Gaver, 1993; Liang et al., 2011; Smith & Watts, 1992). Therefore, it is hypothesized that:
H_9: There is a significant relationship between the board size and the dividend pay-out in Pakistani firms.
H_{10}: The interaction of the board size and the growth opportunities have a significant relationship with dividend pay-out in Pakistani Firms.

2.6. CEO Duality

The interest differences of shareholders and management of a company can lead to disputes over financial decisions (Ghosh & Sirmans, 2006). CEO duality can make management more empowered which reduces the threat of hostile takeover, thus more entrenched managers may pay more dividends (Ahmed & Javid, 2009). Hence, a company with the duality of CEOs could pay more dividends to reduce the risk of wealth expropriation. Agency theory claims that empowered managers can expropriate the shareholder wealth. For instance, Fama and Jensen (1983) suggested that the power concentration in one person decreases the value of the governance measures. Therefore, firms with entrenched managers may pay a high dividend. There are many other studies reporting that a firm with CEO duality pays higher

dividends (Batool & Javid, 2014; Bradford et al., 2013; Ghosh & Sirmans, 2006; Yarram & Dollery, 2015). On contrary, agency theory claimed that to protect shareholders CEO of the company should not own the dual positions while the stewardship theory claims that shareholder interests are better served if both roles are concentrated in the hands of one person because it will reduce the conflicts that arise if power is shared (Donaldson, 1990). CEO duality reduces the conflict between shareholders and management thereby creating benefits for the firm (Donaldson, 1990; Donaldson & Davis, 1991). Abor and Fiador (2013) postulated that CEO duality is inversely related to dividends. In addition, there are many other reporting negative associations in dividends and CEO duality (Alias et al., 2012; Chen et al., 2005; Litai et al., 2011; McGuinness et al., 2015). These results show that previous studies have provided inconclusive findings on association in dividends and CEO duality. Moreover, the CEO's role is also affected by the availability of growth opportunities (Ahmed & Javid, 2009). For instance, management is inclined towards taking up the growth opportunities due to the rewards they can attain if these investments prove successful (Bulan & Subramanian, 2009). This argument implies that the availability of growth opportunities may affect corporate pay-out decisions. In addition, Glen et al. (1995), claimed that whenever organizations got the opportunity they prefer to invest instead of paying the dividends. Based on the mixed findings of an association between dividends and CEO duality, the role of growth opportunities was examined by taking an interaction effect of CEO duality with growth opportunities. It may elaborate on the impact of CEO duality in the pay-out policy at the different life cycle stages. Thus, it is hypothesized that:

H_{11}: There is a significant relationship between the CEO duality and the dividend pay-out in Pakistani firms.

H_{12}: The interaction of the CEO duality and the growth opportunities have a significant relationship with dividend pay-out in Pakistani Firms.

2.7. Audit Committee Independence

According to Collier and Gregory (2000), the presence of internal directors on the audit committee negatively affects the audit committee's role. Their findings support that non-executive directors in the audit committee improve the governance mechanism. As a result, companies do not have to pay high dividends as an alternative. For instance, Cotter and Silvester (2003) suggested that audit committee independence and dividend pay-out have an inverse relationship. It implies that board committees consisting of outside directors may mitigate agency problems and the firm need not pay high dividends. These results are supported by Chen et al. (2005) documented that dividends and audit committee independence are negatively associated. However, Nimer et al. (2012) stated that the payment of dividends and the independence of the audit committee are not significantly related. On the

contrary, other studies show a positive association between dividends and the independence of the audit committee. (Brown & Caylor, 2004; Yarram, 2010; Younas *et al.*, 2012). Given the mixed findings, this study intends to analyze the impact of the audit committee on the dividend pay-out at different life cycle stages. Agency conflicts are more prevalent in the mature firm as compared to the young firm as per life cycle theory (Bulan & Subramanian, 2009; DeAngelo et al., 2006; O'Connor & Byrne, 2015). Therefore, the role of audit committee independence in mitigating agency conflict may vary at different life cycle stages. For this purpose, this study used the growth opportunities as a proxy of the life cycle. Accordingly, the interaction of growth opportunities with the audit committee independence was used as determining factor of the dividend pay-out. Therefore, it is hypothesized that:

H_{13}: There is a significant relationship between the audit committee independence and the dividend pay-out in Pakistani firms.

H_{14}: The interaction of the audit committee independence and the growth opportunities have a significant relationship with the dividend pay-out in Pakistani Firms.

2.8. Remuneration Committee

The main objective to constitute a remuneration committee is to decide remuneration for the management based on their performance (Hayes et al., 2004). The presence of independent directors in the remuneration committee may enhance effectiveness because literature posits that outside directors can better protect the shareholder interest as compared to insiders and it may reduce the agency costs (Xie et al., 2003). Otherwise, firms would have to pay high dividends as an alternative (Cotter & Silvester, 2003). This argument has been supported by Safari (2015) as to him, remuneration committee independence is negatively related to the dividend pay-out. Similarly, Cotter and Silvester (2003) also claimed that remuneration committee independence and dividends have a negative relationship. On the other side, Anderson and Bizjak (2003) concluded that the presence of insiders in the committee may not necessarily raise the agency cost of higher executive compensation. It implies that insider in the committee does not reduce its effectiveness. It implies that the independence of the remuneration committee is not associated with the financial decision. Yarram (2010) reported an insignificant relationship between remuneration committee independence and dividends. Similarly, a recent study by Ya and Safari (2016) also reported an insignificant relationship between board remuneration committee independence and dividends. In direct opposition to these studies are those reporting a positive relationship between remuneration committee independence and dividends (Brown & Caylor, 2004; Hayes et al., 2004; Shaheen & Nishat, 2005). These results show that the relationship of remuneration committee with dividend is mixed in previous literature. Therefore, it is hypothesized that;

H_{15}: There is a significant relationship between the remuneration committee and the dividend pay-out in Pakistani firms.
H_{16}: The interaction of the remuneration committee and the growth opportunities has a significant relationship with the dividend pay-out in Pakistani Firms.

2.9. Firm Efficiency

Firms that are good at managing their resources and expenses performs better (Sanni et al., 2020) thus are rated better by investors (Gaganis et al., 2013; Guzman & Reverte, 2008; Liadaki & Gaganis, 2010; Sufian & Majid, 2007) therefore earn more profit and have a high market value (Demsetz, 1973; Peltzman, 1977). The efficient firms do have more access to external finance due to lower risks and may also bear less cost of funds. The low cost of production inefficient firms also reduces their risk which in term makes it easy for them to acquire debt. However, two competing hypotheses on the relationship of efficiency and leverage have been tested and mixed results have been reported. The first hypothesis previously tested in this regard is the efficiency-risk hypothesis. This suggests that the more efficient firms will move to higher debt-to-equity ratios, as greater efficiency can lower their bankruptcy and insolvency costs. Companies assume this will reduce their dividends when leverage is available. In contrast to the efficiency risk hypothesis, the franchise value hypothesis asserts that less leverage by efficient companies will allow them to save the high economic rents of possible liquidation. Nevertheless, both hypotheses confirm the association between leverage and firm efficiency. In addition to the above-mentioned arguments, the signaling hypothesis asserts that dividends are the signals about the future growth of a company. But as per the arguments given above, these signals may vary for the efficient firms and inefficient firms because efficient firms are valued higher as compared to inefficient firms. Therefore, it could be hypothesized that firm efficiency may affect the pay-out policy of the firm.
On contrary to the signaling hypothesis life cycle theory claims that firms make pay-out decisions based on the life cycle stage but as already discussed that efficient firms are valued differently as compared to inefficient firms imply that integrating firm efficiency to the life cycle may generate different results. For instance, any firm that reduces the pay-out policy may fear the negative signals generated. However, it is because efficient firms are valued differently by the investors they may not fear the negative impact if they got some growth potential. Precisely, it can be claimed that efficient firms with growth potential may reduce their dividend pay-out. The efficiency risk hypothesis and franchise value hypothesis have been tested in the previous studies with leverage (Cheng & Tzeng, 2011; Margaritis & Psillaki, 2007; Mok et al., 2007). Moreover, it has been already discussed previously that studies have provided evidence on the varying pay-out behaviors of the companies that attain high growth from those with low growth (Abor & Bokpin, 2010; Alonso et al.,

2005; DeFusco et al., 2014; Gaver & Gaver, 1993; Gul, 1999; Liang et al., 2011; Smith & Watts, 1992). This study based upon these arguments tested the interaction of growth with efficiency is regressed on the dividends. This new relationship might be termed as efficiency growth hypothesis.

H_{17}: There is a significant relationship between firm efficiency and the dividend pay-out in Pakistani firms.

H_{18}: The interaction of the firm efficiency and the growth opportunities has a significant relationship with the dividend pay-out in Pakistani Firms.

2.10. Cash Flow Volatility

A firm with stable cash flows may have higher internal equity and low liquidity problems (Hussain et al., 2020a; Hussain et al., 2020b; Pordea et al., 2020; Xuezhou et al., 2020) and may have a low risk of insolvency (Balteș & Pavel, 2019). Chay and Suh (2009) state that if management can perfectly forethought the expected cash flow volatility, the evidence is in line with the hypothesis that cash flow volatility is significant while making decisions. A similar opinion can be traced back to the study of Bradley et al. (1998) stating that firms keep low dividend pay-out if expected cash flows are volatile. Similar results were reported by others postulating that cash flow volatility and dividends are negatively related (Hussain et al., 2019; Minton & Schrand, 1999; Mirza & Azfa, 2010). According to the signaling theory firms having unstable cash flows pay less to avoid stock price penalization by investors. Therefore, based on signaling theory, cash flow volatility is inversely linked to dividends. On contrary, Minton and Schrand (1999) concluded that firms facing cash flow volatility forgo their growth opportunities. Similarly, Deng et al. (2013) claimed that firms with unstable cash flows do not cut their dividends but external financing is used to resolve the uncertain cash flows. These arguments are also supported by Daniel et al. (2007) revealing that firms do not cut their dividends due to uncertain cash flows but manage them through external financing. In addition, Jing (2005) also postulated that unstable cash flows are inversely linked to dividends. Companies with uncertain cash flows may pay higher dividends to avoid investments that may not add value to the company. Therefore, agency theory supports that firms having unstable cash flows might pay higher dividends. (Jing, 2005). Based on signaling and agency-based theory, previous research has provided inconclusive evidence on the relationship between dividends and cash flow volatility.

As mentioned earlier, managers in companies with volatile cash flows tend to pay higher dividends because of the higher agency costs attached to those firms. Investors cannot attribute the cash flow volatility to managerial decisions or factors not controllable by the management (Bradley et al., 1998; Jing, 2005). On contrary, the signaling hypothesis explanation is that when cash flows are volatile managers might pay lower dividends as compared to the expected income to avoid the stock

reduction penalty arising due to the reduction of dividends. Based on these arguments firms with the volatility of cash flows are expected to pay less. The study about the cash flow volatility and dividends may distinguish the signaling theory and agency theory of dividends (Bradley et al., 1998). Chay and Suh (2009) provided the agency-based life cycle explanation of the cash flow volatility and pay-out policy. For instance, Chay and Suh (2009) examine whether cash flow volatility varies with the phase of the business life cycle. They found that the impact of cash flow volatility on dividend payouts is significantly negative at various stages in the business lifecycle.

Firms with unstable cash flows may get external financing at a higher cost as compared to the others because finance providers may consider them riskier. However, mature firms tend to have more stable cash flows as compared to the young firms which show that the life cycle stage of cash flows may become more stable (Chay & Suh, 2009). For incorporating life cycle theory into the relationship of cash flow volatility and dividend, this study intends to use the interaction of growth opportunities with cash flow volatility. Firms that enjoy high growth rates tend to avoid paying high-interest rates on their debts and manage their cash needs by paying lower dividends: For instance, firms having growth prospects are in need of funds, therefore, might pay lower dividends (DeAngelo et al., 2006; Fama & French, 2001; La Porta et al., 2000b; Rozeff, 1982; Smith & Watts, 1992). Based on these results, it is hypothesized that incorporating the life cycle theory into this relationship may align competing theories of cash flow volatility and dividends. Therefore, it could be hypothesized that:

H_{19}: There is a significant relationship between the cash flow volatility and the dividend pay-out in Pakistani firms.

H_{20}: The interaction of the cash flow volatility and the growth opportunities has a significant relationship with the dividend pay-out in Pakistani firms.

3. Materials and Methods

3.1. Data and Sample

The data of non-financial companies for 5 years, from 2011 to 2015, were used in this study. The data was extracted from the audited annual financial reports of companies and the balance sheet analysis published by the State Bank of Pakistan (SBP). A total of 202 non-financial companies were sampled, representing 18 different sectors.

3.2. Analysis Methods

This study conducted the data analysis in two stages. The first stage was to calculate overall firm efficiency using DEA. At the second stage, corporate governance indicators, firm efficiency (calculated at first) and cash flow volatility were regressed

on the dividends using a logistic regression model. Firm efficiency was calculated by measuring technical efficiency using DEA. The firm efficiency was calculated using DEA following (Chen & Chen, 2011), where the inputs are operation costs, total assets and selling and administrative expenditures, and net sales as the output. The data envelopment analysis (DEA) was developed by Charnes et al. (1978) and widely used by later studies. The DEA model was used to calculate the relative technical efficiency ratio for a decision-making unit. This relative efficiency was measured by weighted outputs to the weighted inputs. This model was extended by the termed as Charnes and Cooper (1962) CCR. The CCR model was based on the constant return to scale assumption whereas in the absence of this assumption the model termed as BCC proposed by Banker et al. (1988) was used. The BCC model adds parameters in the basic model of Charnes et al. (1978) to include the assumption of variable returns to scale. A comparison was made among the decision-making units to term them as efficient. The respective model used in any study whether it is CCR or BCC will declare the decision-making units as efficient where the DEA ratio is equal to one. Since the BCC model is less preventive in comparison to the CCR model, therefore, the current study has used the CCR model. The decision-making unit which is efficient as per the CCR model is deemed efficient also based on the BCC model whereas efficient decision-making units as per the BCC model may not necessarily be efficient as per the CCR model (Bozec et al., 2010). The DEA model requires to meet certain criteria pertaining to the selection of input/outputs, weights used, homogeneity of the decision-making units, and variables measurement (Dyson et al., 2001). The decision on the minimum number of inputs and outputs is derived from the study of Boussofiane et al. (1991). The current study has 1 output with 3 inputs, following the study of Boussofiane et al. (1991), which states that the number of firms should exceed the product of input × output. Since the current study has followed Boussofiane et al. (1991), therefore, following their criteria those sectors were selected having minimum 5 firms. Thus, those sectors were chosen for the efficiency calculation for which at least the data of 5 firms was available satisfying the assumption. Firm efficiency in this current study was calculated by constant returns to scale using DEA. The constant return to scale is better as compared to variable returns to scale because a firm might be inefficient as per variable return to scale but might be efficient as per constant return to scale.

3.3. Econometric Model

In the data analysis, this study calculated the efficiency scores by using DEA (Data Envelopment Analysis). These efficiency scores were further used with corporate governance indicators and cash flow volatility as regressors on the dividends. For the final analysis, a logistic regression model was used to estimate the likelihood of dividend pay-outs

To estimate this relationship, this study used the logit regression model.

$$DPP = \alpha + \beta_1(IO) + \beta_2(OC) + \beta_3(INO) + \beta_4(BI) + \beta_5(BS) + \beta_6(CD) + \beta_7(ACI) + \beta_8(CC) + \beta_9 \ln(FE) + \beta_{10}(CFV) + \beta_{11}\text{PB} + \beta_{12} \ln(Lev) + \beta_{13} ln(EPS) + \beta_{14} Size + \beta_{15} Age + \delta \quad (1)$$

The following model incorporates the growth as moderating variable:

$$DPP = \alpha + \beta_1(IO) + \beta_2(OC) + \beta_3(INO) + \beta_4(BI) + \beta_5(BS) + \beta_6(CD) + \beta_7(ACI) + \beta_8(CC) + \beta_9 \ln(FE) + \beta_{10}(CFV) + \beta_{11}(\text{PB}) + \beta_{12}(IO)(PB) + \beta_{13}(OC)(PB) + \beta_{14}(INO)(PB) + \beta_{15}(BI)(PB) + \beta_{16}(BS)(PB) + \beta_{17}(CD)(PB) + \beta_{18}(ACI)(PB) + \beta_{19}(CCI)(PB) + \beta_{20}(F.E)(PB) + \beta_{21}(CFV)(PB) + \beta_{22} \ln(Lev) + \beta_{23} ln(EPS) + \beta_{24} Size + \beta_{25} Age + \delta \quad (2)$$

Where;
DPP indicates the dividend pay-out measured as a dummy variable which takes the value of 1 for the year the firm pay dividend and zeroes otherwise
BO means percentage ownership by insiders
OC means percentage ownership by the five largest shareholders
IO means percentage ownership by institutional investors
BI means the percentage of directors other than executive directors
BS =Natural Log of the total number of board members
CD = measured by dummy variable where a value of 1 indicates the situation in which CEO and Chairman are same person and value of zero indicates otherwise
ACI = means audit committee independence measured as a percentage of directors other than executive directors in the audit committee
CC = CC means remuneration committee measured by dummy variable which take the value of 1 if the firm has remuneration committee in a given year, zero otherwise
FE = Firm efficiency calculated from equation 2 using DEA
CFV = indicates cash flow volatility which is calculated by taking the standard deviation of the most recent three years' operating income
PB = Growth opportunities measured as a market to book ratio
Lev = Leverage measured as total debt divided by shareholders equity
EPS = Earnings per share calculated as earning scaled by the number of shares
Size = Size is the natural logarithm of total assets of a firm
Age = Age measured as the number of years firm is listed
δ = Error Term

4. Empirical findings and discussion

4.1. Descriptive Statistics

Table 1 is to report the descriptive information of all the variables. Column 1 of this table shows the names of all variables, while the remaining columns give descriptive

information such as average, the minimum value in a series, the maximum value in a series, median, standard deviation, and total observations. Because balanced panel data was used in the current study, the total number of observations in the study is therefore 1010 for all variables.

Table 1 Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Obs.
BO	0.3003	0.2526	0.9960	0	0.2882	1010
OC	0.6396	0.6605	0.9904	0.1272	0.1964	1010
IO	0.4391	0.4172	0.9999	0	0.3162	1010
BI	0.6900	0.7143	1	0	0.1622	1010
BS	7.8792	7	15	6	1.3589	1010
CD	0.2653	0	1	0	0.4417	1010
ACI	0.8654	1	1	0	0.1878	1010
CC	0.7795	1	1	0	0.4146	1010
FE	0.8897	0.9640	1	0	0.2030	1010
CFV	5.7413	3.7983	56.3926	0.0058	6.6631	1010
SIZE	15.1298	15.0586	19.7224	10.8315	1.5619	1010
AGE	32.5752	29	102	2	15.6899	1010
EPS	11.5335	4.095	846.76	-352.81	49.1260	1010
LEV	0.9730	1.0940	296.9789	-941.2717	31.7948	1010
PB	0.9570	0.5779	96.2686	-127.8007	5.4286	1010

Note: BO means percentage ownership by insiders, OC means percentage ownership by five largest shareholders, IO means percentage ownership by institutional investors, BI means percentage of directors other than executive directors, BS means natural Log of total number of board members, CD is CEO duality measured by dummy variable where a value of 1 indicates the situation in which CEO and Chairman are same person and value of zero indicates otherwise, ACI means audit committee independence measured as percentage of directors other than executive directors in the audit committee, CC means remuneration committee measured by dummy variable which take value of 1 if firm has remuneration committee in a given year, zero otherwise, CFV indicates cash flow volatility which is calculated by taking standard deviation of most recent three years' operating income, FE represents firm efficiency, PB means market to book ratio, Size means natural logarithm of total assets, Age means number of years firm is incorporated as public limited company, EPS means profitability measured as earning per share, lev means leverage measured as total debt to shareholders equity.

4.2. Multicollinearity

In order to check the multicollinearity, correlations and variance inflation factors are calculated. The results are shown in Tables 2 and 3. According to Asteriou and Hall

(2007), the correlation between any two variables above 0.9 is above the acceptance level in regression analysis. Based on this value, the present study showed the absence of multicollinearity problems. In addition, multicollinearity is also checked with the Variance Inflation Factor (VIF). A VIF value greater than 10 shows that the independent variables are strongly collinear (Gujarati, 2004; Hair et al., 2006). Table 3 shows that the overall mean of the VIF for all independent variables is 1.67 and that all variables have a VIF less than 10. In particular, the correlation and variance inflation factors confirm that there is no multicollinearity in the model.

Table 2 Correlation Matrix

	DPB	BO	OC	IO	BI	BS	CD	ACI	CC	FE	CFV	SIZE	AGE	EPS	LEV	PB
DPB	1.000															
BO	-0.126	1.000														
OC	-0.041	0.074	1.000													
IO	0.190	-0.772	0.259	1.000												
BI	-0.019	-0.293	0.015	0.272	1.000											
BS	0.095	-0.226	-0.088	0.202	0.234	1.000										
CD	-0.260	0.241	-0.012	-0.287	-0.211	-0.257	1.000									
ACI	-0.035	-0.145	0.011	0.107	0.513	0.078	-0.167	1.000								
CC	0.061	-0.062	-0.013	0.033	0.231	0.107	-0.194	0.239	1.000							
FE	0.302	-0.011	0.064	0.028	-0.104	0.033	-0.161	-0.053	0.039	1.000						
CFV	-0.114	-0.037	0.005	-0.030	0.005	-0.002	0.110	-0.025	-0.114	-0.059	1.000					
SIZE	0.291	-0.266	-0.016	0.310	0.050	0.345	-0.219	0.038	0.119	0.157	-0.257	1.000				
AGE	-0.017	-0.009	0.107	0.064	-0.023	0.166	-0.082	-0.049	0.104	0.065	-0.101	0.061	1.000			
EPS	0.279	0.026	0.036	0.027	-0.069	0.035	-0.080	-0.016	0.001	0.135	-0.009	0.083	0.106	1.000		
LEV	0.013	-0.003	-0.021	0.020	0.013	0.006	-0.040	0.031	-0.031	0.007	0.015	0.011	0.027	-0.005	1.000	
PB	0.110	-0.069	0.062	0.113	0.053	0.048	-0.091	0.018	0.035	0.050	0.001	0.058	0.050	0.066	0.730	1.000

Note: DPB means dividend pay-out where a value of 1 indicates the dividend payment and zero indicates dividend omission. BO means percentage ownership by insiders, OC means percentage ownership by five largest shareholders, IO means percentage ownership by institutional investors, BI means percentage of directors other than executive directors, BS means natural Log of total number of board members, CD is CEO duality measured by dummy variable where a value of 1 indicates the situation in which CEO and Chairman are same person and value of zero indicates otherwise, ACI means audit committee independence measured as percentage of directors other than executive directors in the audit committee, CC means remuneration committee measured by dummy variable which take value of 1 if firm has remuneration committee in a given year, zero otherwise, CFV indicates cash flow volatility which is calculated by taking standard deviation of most recent three years' operating income, FE represents firm efficiency, PB means market to book ratio, Size means natural logarithm of total assets, Age means number of years firm is incorporated as public limited company, EPS means profitability measured as earning per share, lev means leverage measured as total debt to shareholders equity.

Table 3 Variance Inflation Factor

Variables	VIF	Tolerance (TOL)
BO	3.22	.3110
OC	1.40	.7132
IO	3.59	.2788
BI	1.59	.6282
BS	1.31	.7660
CD	1.24	.8036
ACI	1.41	.7068
CC	1.15	.8713
CFV	1.13	.8884
FE	1.09	.9183
PB	2.25	.4444
SIZE	1.38	.7235
AGE	1.09	.9189
EPS	1.05	.9487
LEV	2.21	.4519
MEAN VIF	1.67	-

Note: BO means percentage ownership by insiders, OC means percentage ownership by five largest shareholders, IO means percentage ownership by institutional investors, BI means percentage of directors other than executive directors, BS means natural Log of total number of board members, CD is CEO duality measured by dummy variable where a value of 1 indicates the situation in which CEO and Chairman are same person and value of zero indicates otherwise, ACI means audit committee independence measured as percentage of directors other than executive directors in the audit committee, CC means remuneration committee measured by dummy variable which take value of 1 if firm has remuneration committee in a given year, zero otherwise, CFV indicates cash flow volatility which is calculated by taking standard deviation of most recent three years' operating income, FE represents firm efficiency, PB means market to book ratio, Size means natural logarithm of total assets, Age means number of years firm is incorporated as public limited company, EPS means profitability measured as earning per share, lev means leverage measured as total debt to shareholders equity.

Table 4 Logit Regression Results, Moderating effect of Market to Book Ratio with Ownership Structure

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
C	-3.3753***	0.0113	-3.3454***	0.012	-4.1204***	0.0028	-3.5394***	0.0081
BO	0.6266	0.2563	0.3457	0.558	0.6416	0.2484	0.4742	0.3974
OC	-1.5680***	0.0051	-1.6194***	0.0039	-0.4132	0.5192	-1.6631***	0.0032
IO	1.1358**	0.0338	1.1898**	0.0263	1.2097**	0.0245	1.6165***	0.0041
BI	-0.0326	0.9611	-0.0744	0.9118	-0.1083	0.8725	-0.1266	0.8515
BS	-0.0117	0.8732	-0.0184	0.8005	-0.0376	0.6242	-0.0397	0.5892
CD	-0.8063***	0.0002	-0.7893***	0.0002	-0.7979***	0.0002	-0.7641***	0.0004
ACI	-0.6856	0.2203	-0.6562	0.2425	-0.7443	0.1883	-0.6641	0.2399
CC	0.0030	0.9891	-0.0083	0.9698	-0.0449	0.8396	-0.0338	0.879
FE	2.5069***	0.0001	2.5453***	0.000	2.5964***	0.000	2.5834***	0.000
CFV	-0.0314*	0.0807	-0.0324*	0.0721	-0.0364**	0.0508	-0.0345**	0.0592
SIZE	0.1576***	0.0199	0.1630***	0.0164	0.1565**	0.022	0.1724**	0.0118
AGE	-0.0189***	0.0007	-0.0190***	0.0007	-0.0162***	0.0051	-0.0186***	0.0011
EPS	0.1338***	0.000	0.1323***	0.000	0.1274***	0.000	0.1281***	0.000
LEV	-0.0229	0.144	-0.0304*	0.0603	-0.0340***	0.0029	-0.0563***	0.0025
PB	0.2225***	0.0036	0.1745***	0.0119	1.6565***	0.000	0.6631***	0.0001
BO*PB			0.3100	0.1753				
OC*PB					-1.6701***	0.0002		
IO*PB							-0.5746***	0.0043
McF R-SQ	0.3902		0.3915		0.4026		0.3962	
R-SQ Change			0.0013		0.0124		.0060	
MDV	0.5327		0.5327		0.5327		0.5327	
Prob	0.000		0.000		0.000		0.000	

4.3. Logistic Regression Results

4.3.1. Ownership Structure and Dividend Payout

The positive coefficient value of inside ownership refers to the outcome hypothesis, but these findings are not significant. It implies that insider ownership as a governance mechanism is not effective in Pakistan, therefore, the firms do not pay dividends as an outcome. Regarding the substitution hypothesis, the dividends are not substituting the weak governance mechanisms in the Pakistani firms which means that shareholders are unable to compel the organization to give out the money in the shape of dividends. Since the corporate governance practices of Pakistani firms are weaker than the firms in developed countries (Sheikh & Wang, 2012), therefore, it calls for an enhanced level of governance.

As per the findings of this study, the association between dividends and the concentration of ownership is significant. These findings are in accordance with the findings of prior research. For instance, Farinha (2003) found the inverse relation between concentrated ownership and dividend pay-out in the UK. Chen *et al.* (2005) also reported an inverse relation between concentrated ownership and dividends in Hong Kong. Likewise, Artikis et al. (2011) and Yusof and Ismail (2016) found an inverse relation between dividends and concentration of ownership in Japan and Malaysia respectively. These findings hold the substitution hypothesis in that high ownership concentration replaces the dividends as an alternative governance mechanism. Since the ownership concentration is an indicator of monitoring by the largest shareholders in the organization, therefore, the amplified ownership interest of the largest shareholders indicates strong governance which may substitute the weak shareholder's protection. Therefore, the presence of the largest shareholders by enabling the largest shareholders to influence the management erases the need for high dividends as an alternative. These findings also support the rent extraction hypothesis which advocates that shareholders having large ownership stakes do not prefer dividends which may affect the interests of the small shareholders that are expecting the dividends (Faccio et al., 2001; Shleifer & Vishny, 1997).

The results of this study show a significant relationship between institutional ownership and dividends. These findings are in accordance with the earlier research. For instance, Firth et al. (2016) reported a positive relationship between the shareholding of institutions and dividends in China. Short et al. (2002), reported the positive association of institutional ownership with dividends in the United Kingdom. Likewise, Fairchild et al. (2014) and Abdelsalam et al. (2008)were similar in Thailand and Egypt. The positive relation of dividend pay-out with institutional ownership refers to the outcome hypothesis. Firms with high institutional ownership have strong governance mechanisms to control the management due to their strong voting powers (Short et al., 2002). According to the outcomes hypothesis, the dividend is the outcome of strong governance practices. However, the findings

contradict the substitution hypothesis which suggests that institutional investors substitute the dividends as alternative governance mechanisms.

4.3.2. Moderating effect of Market to Book Ratio with Ownership Structure

The current study intended to examine the effects of the interaction of insider ownership and growth on dividends. It was hypothesized that insider ownership significantly impacts the dividend pay-out and this impact is moderated by the growth opportunities. Thus, growth opportunities were taken as moderating variable in this relationship. However, the findings of this study do not find any significant moderating effect of growth opportunities in the relationship of insider ownership on the dividends. The hypothesis of the interaction effect of concentration of ownership and growth opportunities on the dividends is accepted. These results agreed with the substitution hypothesis of agency theory. However, after including growth opportunities as a moderating variable, the effect was increased, suggesting the life cycle effect. Therefore, the agency-based explanation of the life cycle is supported. Since these findings are in accordance with dividend life cycle theory, it can therefore be implied that Pakistani concentrated ownership companies can ignore dividend payments when growth opportunities exist. Life cycle theory asserts dividend pay-out is low initially when growth is high and conflicts are low. Since the ownership concentration serves as one of the governance mechanisms for the firms, therefore, grounded on the life cycle theory explanation of dividend pay-out, it can be implied that firms having high growth prospects are young firms. Thus, the ownership concentration as a governance mechanism reduces the dividend pay-out for the Pakistani firms in the presence of growth opportunities.

The results in Table 4 (Model 4) show that the effect of the interaction of growth and institutional ownership on dividends is significant. Hence, the hypothesis of the effect of the interaction of growth and institutional ownership on the probability of dividend pay-out is accepted. These results from this study support the dividend life cycle theory. Institutional ownership serves as a governance mechanism, and based on dividend lifecycle theory; this may mean that companies are not required to apply a strict governance mechanism due to the reduction of agency conflicts at the beginning of the lifecycle. In addition, life cycle theory suggests that the managerial interests are aligned to the interests of shareholders at the growth stage so that companies don't have to pay high. The results of this study are in accordance with this argument. Due to the significant moderating effect of growth, Pakistani companies with growth opportunities may skip dividends.

4.3.3. Board Characteristics

This study found an insignificant association between dividends and the independence of the board. According to the outcome hypothesis, the dividend

payout should be high as the board is more independent because the dividend is the outcome of better governance. In contrast, the substitution hypothesis asserts that poor governance is substituted by dividends; therefore, the negative relationship may prevail. Interestingly, the results of this study are not in alignment with the above-mentioned hypotheses. These findings raise doubts on the effectiveness of the board in the financial decisions of Pakistani firms.

Regarding board size, results indicate that it is not a factor in the pay-out decisions of firms in Pakistan. Although the findings of some of the previous studies have claimed that there is no board with an ideal number of members that may improve the corporate financial decisions, the previous studies have documented the significant evidence of the impact of board size on the dividends in other countries (Chen et al., 2017; Saeed & Sameer, 2017; Yarram & Dollery, 2015). Since the role of board size is not significant in dividend decisions of the Pakistani firms, therefore, the current study does not support most of the previous findings. However, these results are in line with the conclusions of Setia-Atmaja et al. (2009), who find an insignificant association between dividends and board size. There might be various reasons for the insignificant association of dividends and the size of boards in Pakistani firms. Firstly, the Pakistani firms do not have a large number of members on the board as compared to the firms in the other neighboring countries. As per the findings of this study, the average board size is 8 whereas the board size in India is 13 and in Bangladesh is 16 (Ferdous et al., 2014). Since the low board size is considered less effective due to less diversity, experience and skills involved, therefore, the current study contends that the reason for the insignificant role might be the low board size in Pakistan. Secondly, the average number of non-executive directors on the board is 2.67 in the Pakistani firms as compared to India where the ratio is 4 (Ferdous et al., 2014). Likewise, the ratio of outsiders on the board is 69 percent as shown in table 1 of the current study. Given that, the current study contends that increasing the board size in Pakistani firms may increase their role in the dividend policy.

Table 5 Logit Regression Results, Moderating effect of Market to Book Ratio with Board Characteristics

	Model 1		Model 2		Model 3		Model 4	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
C	-3.3753**	0.0113	-3.4409**	0.0117	-4.2258***	0.0033	-3.2199**	0.0162
BO	0.6266	0.2563	0.6249	0.2576	0.6117	0.2671	0.5758	0.2974
OC	-1.5680***	0.0051	-1.5753***	0.005	-1.5231***	0.0062	-1.6109***	0.004
IO	1.1358**	0.0338	1.1353**	0.033	1.0837**	0.0431	1.0809***	0.044
BI	-0.0326	0.9611	0.0577	0.9413	-0.0249	0.9703	0.1381	0.8391
BS	-0.0117	0.8732	-0.0118	0.8715	0.0793	0.386	-0.0240	0.7406
CD	-0.8063***	0.0002	-0.8053***	0.0002	-0.7854***	0.0002	-1.2456***	0.000
ACI	-0.6835	0.2203	-0.6850	0.2211	-0.7104	0.2049	-0.9279	0.1042
CC	0.0030	0.9891	0.0030	0.9891	-0.0059	0.9785	-0.0295	0.8944
FE	2.5069***	0.0001	2.4986***	0.0001	2.4677***	0.0001	2.4768***	0.0001
CFV	-0.0314*	0.0807	-0.0313*	0.0811	-0.0296*	0.098	-0.0300*	0.0995
SIZE	0.1576**	0.0199	0.1584**	0.0195	0.1687**	0.0133	0.1736**	0.0113
AGE	-0.0189***	0.0007	-0.0188***	0.0007	-0.0186***	0.0009	-0.0181***	0.0012
EPS	0.1338***	0.000	0.1335***	0.000	0.1337***	0.000	0.1317***	0.000
LEV	-0.0229	0.144	-0.0245	0.1571	-0.0298**	0.0614	-0.0668***	0.0012
PB	0.2225***	0.0036	0.3153	0.4626	0.8070**	0.0367	0.1780***	0.0042
BI*PB			-0.1203	0.8258				
BS*PB					-0.0700	0.1158		
CD*PB							0.6259***	0.0037
McF R-SQ	0.3902		0.3902		0.392		0.3968	
R-SQ Change			.00003		.0018		.0066	
MDV	0.5327		0.5327		0.5327		0.5327	
Prob.	0.000		0.000		0.000		0.000	

On the basis of significant results of the impact of CEO duality on dividends, the hypothesis is accepted for Pakistani firms. This significant finding confirms the results of the previous studies. For instance, McGuinness et al. (2015), reported an

inverse association between dividends and CEO duality in China. Abor and Fiador (2013) reported the negative relationship between the CEO duality and the dividends in Sub-Saharan Africa. Furthermore, Alias et al. (2012) and Chen et al. (2005) reported an inverse relation between CEO duality with dividends in Malaysia and Hong Kong respectively. These results are in conformity with stewardship theory, which assumes that CEO duality does not raise the agency cost; therefore, firms do not need to pay high dividends. The CEO duality increases the focus of the management; therefore, it brings positive benefits and increases shareholders' interests. The increased efficiency of the management lowers the agency issues; therefore, the firms do not need to pay high dividends since the chances of expropriation are not high. The previous studies have also provided support to the stewardship theory as an alternative to the agency theory (Abor & Fiador, 2013; Donaldson & Davis, 1991). In contrast, the inverse relation of dividends and CEO duality conforms with the outcome hypothesis. As stated in the outcome hypothesis the outcome of good governance is the dividends, therefore, paying low pay-out indicates the bad governance for the sample of firms. As per agency theory, management control is high with the duality of the CEO which reduces the effectiveness of the board. In addition, it raises the likelihood of expropriation in a firm; therefore, the high agency conflicts prevail in the dual role of CEO. Thus, the inverse relation between dividend pay-out and CEO duality supports the outcome hypothesis agency theory.

4.3.4. Moderating effect of Market to Book Ratio with Board Characteristics

The results in model 2 of Table 5 show the interaction effect of board independence and growth on dividends. The hypothesis is not accepted based on the results reported in Table 5 (model 2). Model 3 in Table 5 incorporates the interaction of board size with growth opportunities. The findings indicate an insignificant impact of the interaction of board size and firm growth on the dividends. Based on these results, the hypothesis of moderating effect of growth on the association in size of board and probability to pay is rejected. Since there is no direct impact of the size of the board on the dividend thus it is conferred that board size is not large enough to provide diversity, experience and skill required for the corporate financial decisions. The smaller boards in the Pakistani firms are not effective in the dividend policy because most of the appointments are made by large shareholders and families. Thus, the board size is not proven a significant indicator of dividend pay-out even for the growth firms.

Table 6 Logit Regression Results, Moderating effect of Market to Book Ratio with Board Committees

	Model 1		Model 2		Model 3	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
C	-3.3753**	0.0113	-3.5590***	0.0093	-3.6204***	0.0074
BO	0.6266	0.2563	0.6194	0.2617	0.6070	0.2705
OC	-1.5680***	0.0051	-1.5913***	0.0046	-1.5875***	0.0045
IO	1.1358**	0.0338	1.1423**	0.0326	1.1024**	0.0394
BI	-0.0326	0.9611	-0.0479	0.943	0.0292	0.9654
BS	-0.0117	0.8732	-0.0152	0.8351	-0.0158	0.8282
CD	-0.8063***	0.0002	-0.7914***	0.0002	-0.7939***	0.0002
ACI	-0.6856	0.2203	-0.4572	0.5014	-0.6816	0.2241
CC	0.0030	0.9891	-0.0022	0.9922	0.2175	0.4538
FE	2.5069***	0.0001	2.4983***	0.0001	2.4955***	0.0001
CFV	-0.0313*	0.0807	-0.0317*	0.0775	-0.0319*	0.0785
SIZE	0.1576**	0.0199	0.1601**	0.0183	0.1623**	0.0167
AGE	-0.0189***	0.0007	-0.0187***	0.0008	-0.0187***	0.0007
EPS	0.1338***	0.000	0.1331***	0.000	0.1335***	0.000
LEV	-0.0229	0.144	-0.0276	0.1114	-0.0237*	0.096
PB	0.2225***	0.0036	0.4601	0.2642	0.5520*	0.0634
AC*PB			-0.2506	0.5561		
CC*PB					-0.3429	0.2506
McF R-SQ	0.3902		0.3904		0.3912	
R-SQ Change			.0003		.0010	
MDV	0.5327		0.5327		0.5327	
Prob.	0.000		0.000		0.000	

The negative direct impact of CEO duality on the dividends implies that empowered managers may avoid paying dividends. However, after incorporating the interaction

of CEO duality and growth prospects in the model, the effect becomes positive. These findings support the outcome hypothesis in that CEO duality increases managerial control and will weaken the governance in the firm. Since the agency theory claims that the CEO duality will empower the CEO and reduce the effectiveness of the board, therefore, there is the likelihood of expropriation and management may not pay the dividends. As, the growth opportunities were taken to capture the life cycle effect, therefore, based on the life cycle effect it was expected to have lower agency conflicts with high growth opportunities. After incorporating the growth opportunities in this relationship, the effect becomes positive which indicates that young firms with CEO duality will pay higher dividends. As life cycle theory asserts that conflicts are low in young firms therefore interests of management and shareholders are aligned in growth firms.

In addition, the current study contends that the findings indicate that signaling and life cycle theories are complementary theories in the presence of growth opportunities. For instance, the signaling theory postulates that high dividends signal better growth prospects and findings indicate that the direct impact of CEO duality on dividends became positive after incorporating growth opportunities in this relationship. It implies that growth opportunities signal growth prospects.

4.3.5. Board Committees

The hypothesis of the relationship between dividends and the independence of the audit committee is rejected. The results of the current study are in alignment with the previous research. For instance, Leng (2007) reported that the audit committee has an insignificant relationship with dividends in Malaysia. Likewise, Nimer et al. (2012), also found that the relationship between dividends and audit committee is not significant in Jordan. The existence of an audit committee gives confidence to the shareholders on governance (Gendron & Bédard, 2006). The audit committee will be more independent as more non-executive directors are included. As the committee independence increases, its role in the firm would be more effective which may reduce the shareholder's demand for dividends. Therefore, shareholders may demand dividends from the firm to avoid possible cash flow problems. These arguments are in accordance with the substitution hypothesis. Likewise, the hypothesis of association in dividends and remuneration committee for sampled Pakistani companies is also rejected. These results are supports the results of the earlier research studies. For instance, Ya and Safari (2016) reported the insignificant relationship between remuneration committee and dividends in China. Likewise, Yarram (2010), reported insignificant relation between dividend pay-out and remuneration committee. The decision to devise the compensation package based on the performance of the management is the responsibility of the remuneration committee (Kesner, 1988). This function of the remuneration committee may reduce

the agency cost for the firm by improving the monitoring function. Since the remuneration committee may serve as one of the governance mechanisms, therefore, it may substitute the dividends as an alternative governance mechanism in line with the substitution hypothesis. In contrast, the outcome hypothesis considers pay-out as a result of the governance quality. The findings of the current study imply that the remuneration committee may not perform its role effectively in the Pakistani context as the results are not significant.

4.3.6. Moderating effect of Market to Book Ratio with Board Committees

The direct impact of audit committee independence on the dividend was insignificant in model 1 of Table 6. Since the board audit committees in Pakistan are not effective in pay-out decisions, therefore, the present study contends that audit committees should have a high frequency of meetings to increase their effectiveness as governance mechanisms. The results in Table 6 (model 3) are insignificant for the interaction of remuneration committee and growth. Based on these results, the hypothesis of the interaction effect of growth opportunities and remuneration committee on the probability to pay is rejected. The existence of a remuneration committee may pose a monitoring mechanism over the management which may increase their effectiveness and lower the agency problems. Hence, the presence of a compensation committee may have a significant association with the pay-outs in Pakistani firms. Likewise, the agency conflicts vary with the life cycle stage; therefore, the presence of growth opportunities may alter this relationship. However, the results of this research are not in accordance with either of these theories. Since the remuneration committee was not mandatory before the year 2012 and most of the Pakistani firms did not constitute the remuneration committee.

Therefore, the current study has used a dummy variable to measure the remuneration committee variable. The independent directors in the committee may enhance effectiveness and it may reduce the agency costs. The reduced agency cost may affect the dividend policy as conferred by the outcome and substitution hypothesis. Likewise, independent directors in the committee may affect the decision to initiate/omit the dividends in the growth firms in as stated by the life cycle theory of dividends.

Table 7 Logit Regression Results, Moderating effect of Market to Book Ratio with Cash Flow Volatility and Firm Efficiency

	Model 1		Model 2		Model 3	
	Coefficient	P-Value	Coefficient	P-Value	Coefficient	P-Value
C	-3.3753**	0.0113	-4.3361***	0.003	-3.1885**	0.0175
BO	0.6266	0.2563	0.6229	0.2619	0.6033	0.2746
OC	-1.5680***	0.0051	-1.6514***	0.0036	-1.6066***	0.0041
IO	1.1358**	0.0338	1.1670**	0.0303	1.1456**	0.0324
BI	-0.0326	0.9611	-0.0553	0.9343	-0.0832	0.9011
BS	-0.0117	0.8732	-0.0250	0.7317	-0.0225	0.7594
CD	-0.8063***	0.0002	-0.7956***	0.0002	-0.7994***	0.0002
ACI	-0.6856	0.2203	-0.7068	0.2081	-0.6192	0.2704
CC	0.0030	0.9891	-0.0078	0.9719	-0.0075	0.9729
FE	2.5069***	0.0001	3.6144***	0.000	2.4938***	0.0001
CFV	-0.0314*	0.0807	-0.0310*	0.0864	-0.0567**	0.0181
SIZE	0.1576**	0.0199	0.1641**	0.0162	0.1569**	0.0207
AGE	-0.0189***	0.0007	-0.0185***	0.0009	-0.0189***	0.0007
EPS	0.1338***	0.000	0.1320***	0.000	0.1345***	0.000
LEV	-0.0229	0.144	-0.0237	0.1796	-0.0136	0.2221
PB	0.2225***	0.0036	1.1136***	0.0078	0.1166	0.1468
FE*PB			-0.9377**	0.0296		
CFV*PB					0.0288*	0.0854
McF R-SQ		0.3902		0.3937		0.3923
R-SQ Change				.0035		.0021
MDV		0.5327		0.5327		0.5327
Prob.		0.000		0.000		0.000

4.3.7. Firm Efficiency

The findings indicate that firm efficiency has significant positive impacts on the dividend pay-out choice in the sample of Pakistani companies. These findings mean

that efficient firms in Pakistani tend to disburse more dividends. The efficiency risk hypothesis states that firm efficiency reduces the bankruptcy costs and thereby increases the chances of higher debt to equity ratio. Based on the efficiency risk hypothesis, it can be claimed that efficient firms need not to omit dividends as leverage is accessible. The positive association of efficiency and leverage is documented by many of the previous studies (Cheng & Tzeng, 2011; Mok et al., 2007).

4.3.8. Moderating effect of Market to Book Ratio with Firm Efficiency

The positive direct impact of efficiency on dividends suggests that efficient companies could pay more to boost their repute. Nevertheless, the interaction effect of efficiency and growth negatively affects pay-outs. These results support the lifecycle effect as efficient companies don't pay dividends when there is a growth opportunity. Moreover, the signaling theory postulates that management pay dividend to signal future growth prospects whereas the results of the current study show that the efficiency of companies reduces dividend payments when growth opportunities are present. The findings are in accordance with the life cycle theory which suggests that growth companies pay less. The current study is one of the studies that documented the impact of firm efficiency on pay-outs and the interaction effect of efficiency and growth on pay-outs. Many previous studies have supported the signaling theory of dividends (Asquith & Mullins, 1986; Baker et al., 2011; Myers & Bacon, 2004) and others have supported the life cycle theory of dividend (Bulan & Subramanian, 2009; DeAngelo et al., 2006; Denis & Osobov, 2008). Nonetheless, the findings of this research point out that the negative signaling effect of dividend omission may not prevail for efficient firms. It implies that technically efficient firms having growth opportunities may skip dividends. Since, efficient firms do have lower agency conflicts as compared to other firms (Bozec et al., 2010), therefore, they may skip dividends because there remains no need for dividends as an alternative governance procedure and can avail the available growth opportunities.

4.3.9. Cash Flow Volatility

The hypothesis of association in dividends and volatile cash flow is supported based on the results of this study. These results are in accordance with the various prior researches. For instance, Bradley et al. (1998) reported an inverse relationship between dividend payout and cash flow volatility. Minton and Schrand (1999), also reported similar results for the sample of US firms. Moreover, Chay and Suh (2009) reported a negative relationship in cash flow volatility and dividends in Australia, France, Japan, Canada, the US, the UK, Germany. The firms with cash flow volatility may face difficulty in getting the external finance and may rely on the funds

generated internally (Holt, 2003), therefore, they avoid paying dividends (Chay & Suh, 2009).

4.3.10. Moderating effect of Market to Book Ratio with Cash Flow Volatility

There is a negative impact of cash flow volatility on dividends as shown in model 3 of Table 7. It implies that the cash flow volatility raises the risk and to avoid the cash flow shortfalls firm pays lower dividends (Chay & Suh, 2009). However, growth opportunities have a significant positive moderating effect in this relationship. Life cycle theory hypothesizes that cash flows are more volatile at in the growth firms because companies at the early stage of their life cycle have more growth prospects, therefore, they should not pay dividends. According to Chay and Suh (2009), mature firms facing a low level of cash flow volatility tend to pay high dividends. However, the results of the present study indicate that despite the growth opportunities are available; the firms with high cash flow volatility pay high dividends. These findings support the signaling explanation in that firms having volatile cash flows pay high dividends even in presence of the growth opportunities. Thus, the findings imply that after incorporating the moderating effect of growth opportunities, the life cycle and signaling theories are complementary theories.

5. Conclusion and Policy Implications

The theories such as life cycle and signaling theory provided enhanced understanding on the question that why few of the companies distribute dividends and others do not distribute them? This study tried to answer some of these questions by paying attention to the life cycle theory and signaling theory. The current research addressed the corporate governance measures, firm efficiency, cash flow volatility and growth opportunities in the determination of dividend pay-out. The current study provided new insights into the life cycle theory by considering the corporate governance measures, firm efficiency and cash flow volatility. The contribution of this study is to provide evidence on agency relationship in the dividend pay-out with reference to the life cycle stage of the firm as the life cycle theory suggests that the agency problems are more prevalent in mature firms. Moreover, conferring to the life cycle theory companies which have growth opportunities ahead may not pay dividends to reinvest the funds. However, life cycle theory did not consider the firm efficiency in this relationship. For instance, a company that has growth opportunities may not efficiently utilize these opportunities. Thus, the corporations that are not efficient and do not have capable management may not be comfortable in cutting the dividends to reinvest. The current study contributed to the existing dividend-related literature by examination of firm efficiency in the theory of firm life cycle of dividends.

In addition to the firm efficiency, volatility of cash flows may also increase the risk associated thereby affecting the dividend pay-out. Therefore, this study is novel as it provides an empirical examination of the explanatory variables with the dividend pay-out in the presence of varying levels of growth opportunities. Hence the study contributes to the existing literature by providing four new dimensions concerning the dividend policy in Pakistan. The first contribution is to study the dividend pay-out of firms with corporate governance indicators by considering growth as moderating variable. Second, the contribution is to document the relationship between firm efficiency and dividend pay-out. The third contribution of the current study is to document the relationship between firm efficiency and dividend pay-out by considering the growth as moderating variable. The fourth contribution is to document the relationship of cash flow volatility with dividend pay-out of Pakistan firms with growth as moderating variable. This study has profound implications on the dividend policy regarding the corporate governance indicators, the firm efficiency, the cash flow volatility and above all the growth opportunities.

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Author Contributions
HH conceived the study and was responsible for the design and development of the data analysis, literature reviews and write-up. RMR and HAA provided supervision and were responsible for making analyses and interpretations. RYH was responsible for the data collection, formatting and proofreading of the draft.
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