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Direct Agency Cost of Equity, Cash Flow Volatility and Dividend Pay-out: Evidence from Pakistan

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ABSTRACT

This study aims to examine the impact of direct agency cost of equity and cash flow volatility on the Pakistani firms' dividend pay-out behaviour. Besides, this study also examines the interaction of direct agency cost of equity and cash flow volatility on the firms' dividend pay-out behaviour. For analysis, a logistic regression model was employed and the data of 188 non-financial firms listed at the Pakistan stock exchange over the period 2011 to 2015 was used. The findings revealed that in an emerging country like Pakistan, cash flow volatility negatively affected the pay-out behaviour and agency cost of equity positively affects the pay-out behaviour. Moreover, interactions of cash flow volatility and asset turnover as proxy of direct agency cost of equity negatively affect the pay-out behaviour. However, the interaction of cash flow volatility and SGA expense as an alternative proxy of direct agency cost of equity is insignificant. This study contributes to the existing body of knowledge by providing an empirical evidence of the interaction effect of agency cost of equity and cash flow volatility on firm's dividend pay-out behaviour which is yet to be examined in other developed and developing countries. It also provides several implications for multiple parties such as firm's managers who determine their abilities to pay dividend and investors while making their investment decisions.

Keywords: Agency cost of equity, cash flow volatility, dividends, Pakistan

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INTRODUCTION

The dividend pay-out has attracted the attention of many researchers due to its importance for the shareholder's wealth. Empirical and survey based studies conducted on this topic have identified the factors like profitability, growth, firm size, agency costs, firm age and corporate governance which affect dividend pay-out (Abdelsalam et al., 2008; Afza & Mirza, 2011; Al-Ajmi & Hussain, 2011; Al-Jaifi, 2015; Al-Kuwari, 2009; Amidu & Abor, 2006; Hussain et al., 2017; Naceur et al., 2006). Earlier only a few studies have focused on the role of cash flow volatility in the dividend pay-out behaviour (Bradley et al., 1998; Chay & Suh, 2009; Deng et al., 2013), most of them have exclusively accentuated the role of cash flows volatility in pay-out policies of the developed countries (Bradley et al., 1998; Chay & Suh, 2009; Minton & Schrand, 1999). Thus, current study is a significant contribution in the body of existing literature since it has addressed the non-financial firms of a developing country like Pakistan.

The current study has also tested the role of agency cost of equity in the dividend pay-out. Generally firms having stable expected cash flows tend to pay high dividends (Brav et al., 2005; Jacob & Jacob, 2013) and firms expecting poor future cash flows pay low dividend that may signal the stability in cash flows of the firm (Chay & Suh, 2009). Besides, agency theory states that dividends are the outcome of high agency conflicts (Smith et al., 2017) as they lead towards resource inefficiencies (Gyan et al., 2017). It indicates that high agency problems are reflected in the form of inefficiency by firms, therefore, shareholders may demand high dividend to avoid wastage of their resources. Precisely, the study tested whether firms with cash flow volatility and high agency cost pay dividends or not.

Likewise, the findings of previous studies were inconsistent regarding the impact of cash flow volatility on the dividend pay-out whereas the current study has highlighted the dividend paying behaviour of the firms facing cash flow volatility and high agency cost of equity. The current study provided mixed evidence on interaction of cash flow volatility and agency cost of equity on the dividend pay-out as findings indicated a significant impact of interaction of the cash flow volatility and agency cost of equity on dividend pay-out, however, the direction of the relationship was different. These results will help the management, lenders and investor while making their decisions regarding firms which are facing cash flow volatility and high agency costs. Accordingly, the following sections discuss the literature, hypotheses, methodology including sample and data collection, findings of the study and finally the conclusion of the study.

LITERATURE REVIEW AND THE FORMULATION OF HYPOTHESES

Cash flows are important factor in the dividend pay-out (Amidu & Abor, 2006). Several studies have addressed the relationship between the cash flow volatility and the dividend pay-out, however, results

have been mixed. For example, some reported negative impact of the cash flow volatility on the dividend pay-out studies (Bradley et al., 1998; Chay & Suh, 2009; Minton & Schrand, 1999). The cash flow volatility signals risk of future shortage of cash which may create problems for the firm while meeting its obligations (Deng et al., 2013). The increased risk which is owing to the volatility of the cash flows decreases the debt level (Keefe & Yaghoubi, 2016; Memon et al., 2018) which may raise the cost of external equity (Chay & Suh, 2009) and ultimately affecting the dividend pay-outs of firms in a negative way (Chay & Suh, 2009; Mirza & Azfa, 2010).

On the other hand, some studies (Daniel et al., 2007; Deng et al., 2013) have reported that firms having cash flow volatility do not cut their dividends. Deng et al. (2013) empirically examined the investment and dividend sensitivity with cash flows volatility and reported that cash flow volatility did not matter in the relationship of investments and dividends. Their findings revealed that firms under conditions of cash flow volatility did not reduce their dividends and manage external financing for their investments. Moreover, they found that ~~that~~ the investment–dividend sensitivity first increased, then decreased and increased again with the increase of the cash flow volatility. Earlier, Jing (2005) posited that firms facing the cash flows volatility paid higher dividends in order to avoid the overinvestment. Likewise, Amidu and Abor (2006) claimed that firms with more available cash flows paid high dividends as the relationship was positive between cash flow and dividend pay-out ratios. These findings imply that relationship between cash flow volatility and dividends has been inconsistent in the previous studies.

The contradictions among the results reported by the previous studies imply that there is a need for more empirical examination of the phenomenon under discussion. Furthermore, in the emerging/developing countries, evidence on the relationship between cash flow volatility and dividend pay-out is scarce. This study is the first of its kind that investigates the impact of cash flow volatility on the dividend pay-out in Pakistan. Thus, the current study aims to investigate the following hypothesis:

H_1. The cash flow volatility affects the dividend pay-out in the Pakistani firms.

Agency theory states that dividends are the outcome of agency conflicts between managers and shareholders (Smith et al., 2017). Management acts as an agent of shareholders, however, managers may prefer their own interests over the interests of the shareholders which causes an increase in the agency cost of equity for the firm (Jensen & Meckling, 1976). In case of high dividend pay-out, agency cost of the shareholders may be reduced which can serve as a substitute mechanism for governance. The cost of capital in the form of dividends and interest reduces the cash flows available at the managerial discretion (Amidu & Abor, 2006; Jensen, 1986).

This study used asset turnover ratio (Ang et al., 2000; Hijazi & Conover, 2011) and SGA (selling, general and administrative)

expense ratio (Florackis & Ozkan, 2008) as the proxies of agency cost of equity. The first ratio (asset turnover ratio) indicates the efficiency of management in utilizing assets to generate the sales. A lower asset turnover ratio represents that agency cost may become positive because management is making poor decisions in choice of investment, inefficiently utilizing resources and assigning funds in executive perks, resulting in poor revenues (Ang et al., 2000). The second ratio (operating expense ratio) is measured by SGA expense ratio (Florackis & Ozkan, 2008; Hijazi & Conover, 2011; Singh & Davidson III, 2003) which consists of operating expenses that are directly related to the expenses on the offices, supplies, automobiles, furnishings and other such facilities. Sometimes personal expenses of the management might be camouflaged in such expenses. It means a high SGA expense ratio may sometimes reflect the management's intentions of using the funds in unproductive ways (Ang et al., 2000). In the light of the discussion above, the following hypothesis has been generated:

H_2. The direct agency cost of equity affects the dividend pay-out in the Pakistani firms.

The turnover ratios reflect management efficiency in controlling the firm's cost and its efficiency in generating the revenues. Besides, it also indicates the future cash flow positions and expected incomes of the firm. Therefore, any firm that has already faced high risk in terms of cash flow volatility may make two alternative types of decisions concerning dividends. Firstly, these firms may pay lower dividends to indicate that their organization has growth prospects and, therefore, aggressive strategies are inducing them to pay lower dividends. Secondly, the management may make high dividend payments to gain the shareholders' trust and to camouflage their expenses on perquisites. Since, the management takes either of the decisions, therefore, it implies that interaction of cash flow volatility and alternative proxies of agency cost of equity may increase/decrease the dividends. Based on the two proxies as discussed above, the following hypothesis have been made to be tested:

H_3. The interaction between asset turnover and cash flow volatility affects the dividend pay-out in the Pakistani firms.

H_4. The interaction between operating expense ratio and cash flow volatility affects the dividend pay-out in the Pakistani firms

Control Variables

Similarly many studies (Al-Ajmi & Hussain, 2011; Al-Malkawi, 2007; Amidu & Abor, 2006; Rozeff, 1982; Yusof & Ismail, 2016) have highlighted that size, growth, profitability and age may be associated with dividend pay-out. Larger firms may differ from small size firms in their pay-out ratios based on their profits and lower growth prospects (Al-Malkawi, 2007). Firms with higher growth prospects may pay lower dividends as compared to the firms that are at their mature stage (Al-Ajmi & Hussain, 2011; Amidu & Abor, 2006; Bulan & Subramanian, 2009; DeAngelo et al., 2006;

Hussain et al., 2018; Yusof & Ismail, 2016). Some studies (Al-Malkawi, 2007; Amidu & Abor, 2006; Fama & French, 2001, 2002) have indicated that profitability is also significant determinant of dividends.

METHODS

Data Collection and Sample

The non-financial firms listed at the Pakistan Stock Exchange from 2011 to 2015 have been addressed in this research. The data was obtained from the Balance Sheet Analysis (BSA) published by the State Bank of Pakistan and annual reports of the firms. All the firm having annual reports available for the whole period were selected as sample for the current research. In addition, to calculate the cash flow volatility, the data for three years, prior to years under study, was required. Thus, the firms that did not have previous years' data available were excluded from the sample. The final sample comprises 188 firms, representing eighteen sectors of Pakistan Stock Exchange. These eighteen sectors include textile spinning (33 firms), textile composite (21 firms), pharmaceuticals (7 firms), fertilizers (3 firms), food and personal care (11 firms), glass and ceramics (6 firms), paper and board (6 firms), cement (15 firms), power generation (8 firms), sugar (20 firms), synthetic (4 firms), technology and communication (5 firms), textile weaving (5 firms), chemical (18 firms), Engineering (6 firms), automobile (8 firms), automobile parts (5 firms) and the miscellaneous (7 firms).

Statistical Analysis

Logit model was used in the current study as it was suggested by Brooks (2014) for binary dependent variable. However, this model was also used in some previous studies (DeAngelo et al., 2006; Fama & French, 2001) where dividend was measured as a binary dependent variable.

Logistic Regression

Logit function F, as presented below, follows the cumulative logistic distribution (Brooks, 2014);

$$F(zi) = \frac{1}{1+e^{-z}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

F(zi) depicts the probability that the firm will pay dividends and e represents the exponential. An advantage of the above specified model in this particular context is that the obtained dividend-payment probability estimates can neither be negative nor larger than one (Brooks, 2014).

$$Ln(Odds) = \left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k \beta_{ki} \ldots\ldots\ldots (2)$$

The above presented equation incorporates odds as the probability to initiate the dividend and P scales by the probability not to initiate the dividend (1-P). The independent variables show those determinants that define the odd ratios. The change in independent variable brings the change in the dependent variables (Brooks, 2014). These determinants have been reported based on their coefficient and significance values. The resulting variance explained by these variables is known as pseudo-R^2 which is also known as McFadden's R^2 (Brooks, 2014).

The main assumptions of general linear models such as normality of variables, their linearity, homoscedasticity, and measurement level are not required in the logistic regression (Cokluk, 2010; Lani, 2015; Menard, 2002; Tietze, 2012). Since, logistic regression does not demand the linearity in the relationship of independent and dependent variables, therefore, it can deal with all types of relations by transforming non-linear log into the odd ratios (Lani, 2015; Menard, 2002). Similarly, the regressors may not necessary be multivariate normal, granting multivariate normality produces a better explanation. Correspondingly, the error terms are not required to be multivariate normally distributed. Also, the homoscedasticity is not desirable and logistic regression does not require variances to be heteroscedastic separately for regressors. Finally, logistic regression deals with ordinal and nominal data and the regressors are not required to be metric (interval or ratio scaled) (Lani, 2015).Thus, it may be implied that logistic regression method is relaxed and flexible as compared to the linear models. Likewise, it is reasonable to state that it is easy to infer the mathematical models attained resulting from the logistic regression (Hair et al., 2006; Lani, 2015; Leech et al., 2005; Menard, 2002; Tabachnick & Fidell, 1996; Tietze, 2012).

A large sample of 940 firm year observations and a logistic model has been used in the current study. The logistic regression is based on maximum likelihood method which requires high number of observations to ensure the reliability of the study (Cokluk, 2010; Lani, 2015). A logistic regression requires that the model should be free from the problem of multicollinearity and the regressors should not depend on each other. The model may also use the interaction effects of different regressors in the analysis (Cokluk, 2010; Hair et al., 2006; Lani, 2015).

Two equations of logistic model have been used in the current study that are described below.

The first equation covered the direct impact of the cash flow volatility, two proxies of agency cost of equity (asset turnover and SGA expense ratio), ownership concentration, size, growth, profitability and age on the dividend pay-out of the non-financial firms in Pakistan. The first equation is as follows:

$$DPB = \alpha + \beta_1(CFV) + \beta_2(OC) + \beta_3(ATO) + \beta_4(SGA) + \beta_5(SIZE) + \beta_6(GRW) + \beta_7(EPS) + \beta_8(Age) + \delta \quad (3)$$

The second equation has incorporated interaction of proxies of agency cost of equity with cash flow volatility:

$$DPB = \alpha + \beta_1(CFV) + \beta_2(OC) + \beta_3(ATO) + \beta_4(SGA) + \beta_5(CFV)(ATO) + \beta_6(CFV)(SGA) + \beta_7(Size) + \beta_8(GRW) + \beta_9(EPS) + \beta_{10}(Age) + \beta_{11}(y12) + \beta_{12}(y13) + \beta_{13}(y14) + \beta_{14}(y15) + \delta \quad (4)$$

Where:

DPB: The dividend pay-out behaviour has been measured as a dummy variable which takes value of 1 if firm pays dividend, zero otherwise

CFV: The cash flow volatility has been measured as standard deviation of last three-year operating scaled by total assets

OC: The ownership concentration has been measured as percentage shares owned by five largest shareholders

ATO: The asset turnover has been measured as sales to average total assets as proxy of direct agency cost of equity

SGA: The selling, general and administrative expenses have been scaled by total sales as proxy of direct agency cost of equity

CFV*ATO: interaction of cash flow volatility and asset turnover ratio

CFV*SGA: interaction of cash flow volatility and SGA expense ratio

Size: Firm size measured as natural logarithm of total assets

GRW: Growth measured as change in sales as proxy of firm growth

EPS: Profitability measured as earnings per share as proxy of firm profitability

Age: Measured as number of years' firm is listed

y12= Dummy variable to control time effect which takes 1 for year 2012, zero otherwise

y13= Dummy variable to control time effect which takes 1 for year 2013, zero otherwise

y14= Dummy variable to control time effect which takes 1 for year 2014, zero otherwise

y15= Dummy variable to control time effect which takes 1 for year 2015, zero otherwise

δ = Error Term

Operational Definition of the Variables

Table 1 provides the operational definitions of the selected variables.

Table 1

Operational definition of the variables

Variable	Notation	Measurement	Author
Cash Flow Volatility	CFV	Cash flow volatility measured as standard deviation of last three-year operating scaled by total assets	Chay and Suh (2009), Balachandran et al. (2017)
Ownership Concentration	OC	Ownership concentration measured as percentage shares owned by five largest shareholders	Khan (2006), Gonzalez et al. (2017)

Table 1 *(Continue)*

Variable	Notation	Measurement	Author
Asset Turnover	ATO	Asset turnover measured as sales to average total assets as proxy of direct agency cost of equity	Ang et al. (2000), Hijazi and Conover (2011)
SGA Expense Ratio	SGA	Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity	Florackis and Ozkan (2008), Singh and Davidson III (2003)
Size	Size	Size indicates the natural logarithm of total assets	Saeed and Sameer (2017)
Growth	GRW	Growth measured as change in sales as proxy of firm growth	Liu et al. (2014)
Age	Age	Measured as number of years' firm is listed	Shumway (2001)
Profitability	EPS	Profitability measured as total earnings divided by number of shares	Deng et al. (2015)
Dividend Pay-out	DPB	Dividend pay-out measured by dummy variable which is given value of 1 in case dividend is paid, zero otherwise	Balachandran et al. (2017)

RESULTS

The results of the current study are given in Table 2:

Table 2

Variance Inflation Factors

Sr. No.	Variables	VIF	1/VIF
1	CFV	1.18	0.848384
2	OC	1.01	0.987301
3	Size	1.15	0.866387
4	EPS	1.05	0.949869
5	Age	1.03	0.966261
6	GRW	1.02	0.984509
7	ATO	1.13	0.883917
8	SGA	1.13	0.885178
	MEAN VIF	1.09	

Note: DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, Age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability.

Multicollinearity

The current study has employed correlation analysis and variance inflation factors to check the multicollinearity among the variables. The results presented in Table 3 reveal the correlation between all the selected variables. It is evident from the results that there exists no multicollinearity among the independent variables because the correlations values are low. In case of high collinearity among variables the values of VIF also increase whereas low values of VIF represents no collinearity or low collinearity. Gujarati (2004) stated that VIF higher than 10 represents that variables are highly collinear. The Table 3 indicates the VIF values for all selected variables of current study. The maximum value of VIF is 1.18 which represents no multicollinearity. To validate these results variance inflation factors have been applied which confirm that no multicollinearity exists in our data.

Table 3

Correlation analysis

	DPB	AGE	ATO	CFV	EPS	GRW	OC	SGA	SIZE
DPB	1	-0.02111	0.277**	-0.102**	0.280**	0.036	-0.046	-0.050	0.250*
AGE	-0.021	1	0.053	-0.125**	0.105**	0.004	0.066*	-0.045	0.067*
ATO	0.277**	0.053	1	0.033	0.167**	0.074*	0.087**	-0.117**	-0.217**
CFV	-0.102**	-0.125**	0.033	1	-0.005	-0.012	0.020	0.306**	-0.250**
EPS	0.280**	0.105**	0.167**	-0.005	1	0.014	0.027	-0.019	0.077*
GRW	0.0357	0.004	0.074*	-0.012	0.014	1	-0.003	-0.030	0.079*
OC	-0.046	0.066*	0.087**	0.020	0.027	-0.003	1	0.008	-0.039
SGA	-0.050	-0.045	-0.117**	0.306**	-0.019	-0.0302	0.008	1	-0.115**
SIZE	0.250*	0.067*	-0.217**	-0.250**	0.077*	0.079*	-0.03902	-0.115**	1

Note: DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, Age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability. **, and * are significant at the 1% and 5% level of significance respectively.

Table 4

Descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Obs
DPB	0.548936	1	1	0	0.497864	-0.196689	1.038687	940
AGE	33.09149	30	102	2	15.8299	0.974326	4.703165	940
ATO	1.286421	1.192957	4.125084	0.00171	0.752205	0.788491	3.805291	940
CFV	5.685277	3.907657	56.39255	0.005774	6.420762	3.469413	20.90044	940

Table 4 *(Continue)*

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Obs
EPS	12.27721	4.46	828.78	-352.81	50.32307	8.705349	129.2664	940
GRW	0.215604	0.073153	36.11227	-0.98303	1.72217	15.1217	265.2343	940
OC	0.649474	0.67035	0.990387	0.127167	0.191841	-0.253087	2.099078	940
SGA	0.165512	0.056123	39.29	0.002662	1.319421	27.92065	824.6228	940
SIZE	15.16668	15.07975	19.7224	11.01076	1.480575	0.189909	3.327095	940

Note: DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, Age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability.

Descriptive Statistics

The results of both dependent and independent variables are reported in Table 4 with the total number of observations in the last column. Since the balanced panel data has been used in this study, the number of observations for all variables is same; that is 940. The average value of the first variable cash flow volatility is 5.685277 with standard deviation of 6.420762. For the second variable which is firm age, the average value is 33 with maximum age of 102 and minimum age of 2 years. Third variable, growth, has an average value of 0.215604 and standard deviation of 1.72217. The ownership concentration, being the fourth variable, has an average value of 0.649474 and standard deviation of 0.191841 which indicates that around sixty five percent shares are concentrated within large shareholders. The fifth variable, earnings per share for Pakistani firms, represents the average value of 12.27721and standard deviation of 50.32307. Finally, the asset turnover ratio indicates that one unit of asset can generate 1.286421 of sales and SGA expense ratio indicates the average value of 0.165512 with standard deviation of 1.319421.

Logit Regression Results

Table 5 shows the results of the logit regression model. The results reveal that hypothesis 1has been accepted where the cash flow volatility is negatively and significantly related to the dividend pay-out. It implies that the firm having cash flows volatility may not pay dividends to minimize the risk of future shortfalls. Moreover, the cash flow volatility may raise operational risk of the firms resulting in reducing the chance of dividend pay-out. These findings confirm the previous studies which have reported the negative relationship of the cash flow volatility and the dividend (Bradley et al., 1998; Chay & Suh, 2009; Minton & Schrand, 1999).

Similarly, the second hypothesis of the study has also been accepted based on the significant results of the alternative proxies

Table 5

Regression results

	Model 1		Model 2		Model 3	
	Beta	p-value	Beta	P-value	Beta	P-value
C	-4.769432	0.000***	-5.709844	0.000***	-5.057611	0.000***
CFV	-0.031062	0.0753*	0.034874	0.1388	-0.027798	0.1139
OC	-0.647065	0.1538	-0.776478	0.0904*	-0.70015	0.1241
ATO	0.732332	0.000***	1.175015	0.000***	0.7795	0.000***
SGA	0.062892	0.42	-0.019006	0.8206	0.482427	0.1063
SIZE	0.293709	0.000***	0.330025	0.000***	0.306698	0.000***
GRW	-0.028461	0.5967	-0.026395	0.651	-0.028044	0.6073
AGE	-0.017218	0.0018***	-0.017128	0.0022***	-0.016883	0.0023***
EPS	0.141285	0.000***	0.138868	0.000***	0.141323	0.000***
CFV*ATO			-0.057768	0.0008***		
CFV*SGA					-0.008323	0.1769
McFadden R-squared	0.350253		0.358153		0.351821	
R Square Change			0.0079		0.001563	
Mean dependent var	0.548936		0.548936		0.548936	
Prob (LR statistic)	0		0		0	

Note DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, Age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability. Coefficients marked ***, **, and * are significant at the 1%, 5%, and 10% level of significance respectively.

of agency cost of equity. The asset turnover of the firms represents how much sales management can generate through the given value of the total assets. In the current study, the asset turnover is significant at 1% which indicates a positive relationship between the asset turnover and the dividend pay-out with a coefficient value of 0.732332. It suggests that any firm having low asset turnover ratio may face high direct agency cost of equity. For instance, Hijazi and Conover (2011) stated that high agency costs might arise because of unhealthy investments and an importance that was given to the personal benefits by the management which led to low profits. On the other hand, firms with a high ATO reflect management's efficiency in generating increased sales. Finally, it can be deduced that the firms having a high ATO may not pay dividends.

However, the second proxy for agency cost of equity which is the SGA expense ratio, indicated an insignificant relationship with the dividend pay-out of Pakistani

firms. The SGA represents the total amount that has been spent by the management on operations because if the amount is high it may signal the ability of the managers to manage the cost on operations. A high agency cost of equity provides a cushion to managers for camouflaging their perks and undue expenses which may result in their inability to pay the dividends.

The models 2 & 3 in Table 5 indicate the results of interaction between CFV and ATO (model 2) and CFV and SGA (model 3). The results indicate that the hypothesis 3 (The interaction between asset turnover and cash flow volatility affects the dividend pay-out in Pakistani firms) has been accepted and hypothesis 4 (The interaction between operating expense ratio and cash flow volatility affects the dividend pay-out in Pakistani firms) has been rejected. The interaction of cash flow volatility and asset turnover exhibited significantly negative results (-0.057768), implying that the higher cash flow volatility and asset turnover lead the firms not to pay the dividends. Furthermore, r-square increased (0.0079) after applying the interaction of asset turnover and the cash flow volatility. In contrast, the interaction of the SGA ratio and cash flow volatility showed insignificant relationship with a coefficient value of -0.008323 and r-square change of 0.001563. However, the insignificant interaction of SGA and cash flow volatility implies that the SGA expense ratio does not matter in this relationship. The reason for these mixed results could be the asset turnover, as an asset turnover also reflects the efficiency in using operating assets. For example Richardson et al. (2001) employed the asset turnover as a measure of operating asset utilization efficiency. Improvements in efficiency result from an increase in quality of earnings which may enable a firm to pay the dividend without any fear of the future short-falls. Fairfield and Yohn (2001) proposed a framework that asset turnover could be used to predict the future profitability of firms which meant that asset turnover might also signal the market about the prospects of the firm.

Further Evidence and Robustness Checks

This section has been added in this study to check and support the above-mentioned results of the current study. This process was completed in two phases. In the first phase, a test was applied by controlling the time effect while in the second phase, the test was applied by dividing the sample into high and low agency cost firms.

Regression Results by Controlling Time Effect

In the first phase, the impact of cash flow volatility, direct agency cost of equity, ownership concentration, and control variables were regressed on dividend pay-out by controlling the year effect. Results of the regression were consistent with the earlier findings of the study even after controlling for the year effect. These results have been presented in Table 6, which indicate that cash flow volatility has a significant negative impact on the dividend pay-out while asset turnover has a

significant positive impact on the dividend pay-out. Similarly, the impact of SGA on the pay-out behaviour is insignificant which is consistent with the earlier findings presented in Table 5. Likewise, the results of model 2 and model 3 have also been found consistent with the findings of Table 5.

Table 6

Regression analysis controlling time effect

	Model 1		Model 2		Model 3	
	Beta	p-value	Beta	P-value	Beta	P-value
C	-4.769432	0.000***	-5.940045	0.000***	-5.309631	0.000***
CFV	-0.031062	0.0753*	0.040405	0.0889*	-0.023693	0.1822
OC	-0.647065	0.1538	-0.79622	0.0837*	-0.715506	0.1172
ATO	0.732332	0.000***	1.232264	0.000***	0.824243	0.000***
SGA	0.062892	0.42	-0.033527	0.6871	0.493343	0.0987*
SIZE	0.293709	0.000***	0.335772	0.000***	0.311398	0.000***
GRW	-0.028461	0.5967	-0.021314	0.7177	-0.023432	0.6708
AGE	-0.017218	0.0018***	-0.018264	0.0013***	-0.018143	0.0013***
EPS	0.141285	0.000***	0.141112	0.000***	0.143588	0.000***
CFV*ATO			-0.059881	0.0006***		
CFV*SGA					-0.008749	0.1555
y12			0.071055	0.7932	0.11658	0.665
y13			-0.136931	0.6212	-0.079485	0.7716
y14			0.048339	0.8606	0.146662	0.5914
y15			0.508143	0.0702*	0.532375	0.0559*
McFadden R-squared	0.350253		0.362887		0.356339	
R Square Change			0.012634		0.006086	
Mean dependent var	0.548936		0.548936		0.548936	
Prob (LR statistic)	0		0		0	

Note: DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability. y12, y13, y14 and y15 are dummy variables to control time effect which takes 1 for year 2012, zero otherwise Coefficients marked ***, **, and * are significant at the 1%, 5%, and 10% level of significance respectively.

Regression Results by High and Low Samples based on ATO and SGA

The second phase further confirmed the findings obtained by applying additional tests (Table 7). The sample of the study was divided based on the median values of ATO and SGA into high and low ATO firms and high and low SGA firms. The results indicate that cash flow volatility has a significant negative impact on the dividend pay-out for the sample of high ATO firms whereas the cash flow volatility has an insignificant impact on the dividend pay-out of low ATO firms. These findings support the interaction effect of cash flow volatility and ATO on dividend pay-out.

Table 7

Regression results by high and low samples based on ATO and SGA

	High ATO Sample		Low ATO Sample		High SGA Sample		Low SGA Sample	
	Beta	p-value	Beta	P-value	Beta	P-value	Beta	P-value
CFV	-0.054593	0.0325**	-0.012426	0.2669	-0.035847	0.0434**	-0.081007	0.0131***
OC	-1.021356	0.1508	-0.934844	0.0054***	-0.566543	0.3428	-2.817815	0.0001***
ATO					0.789792	0.0001***	0.632171	0.0012***
SGA	7.107333	0.0058***	-0.15672	0.3535				
SIZE	0.003806	0.9226	0.061567	0.0001***	0.02059	0.4775	0.074129	0.0372***
GRW	-0.030029	0.692	-0.017905	0.7557	-0.015074	0.767	0.004005	0.9679
AGE	-0.001122	0.9108	-0.020912	0.000***	-0.023982	0.0008***	-0.026035	0.0079***
EPS	0.217144	0.000***	0.047394	0.000***	0.111076	0.000***	0.204724	0.000***
Prob (LR statistic)	0		0		0		0	

Note: DPB means dividend pay-out behaviour measured as a dummy variable which take value of 1 if firm pays dividend, zero otherwise, CFV means cash flow volatility measured as standard deviation of last three-year operating income scaled by total assets. OC means ownership concentration measured as percentage shares owned by five largest shareholders, ATO means asset turnover measured as sales to average total assets as proxy of direct agency cost of equity, SGA means Selling, general and administrative expenses scaled by total sales as proxy of direct agency cost of equity, Size means firm size measured as natural logarithm of total assets, age measured as number of years' firm is listed, GRW means growth measured as change in sales as proxy of firm growth, EPS means firm profitability measured as earnings per share as proxy of firm profitability. Coefficients marked ***, **, and * are significant at the 1%, 5%, and 10% level of significance respectively.

On the other side, the cash flow volatility is significant in both high SGA and low SGA sample firms. The SGA ratio indicates the efficiency of the management in controlling the operational expenses as scaled by the total sales. A high ratio may indicate poor management control over these expenses implying that management spends more on the perks and benefits rendering the cost control as weak. As the results of cash flow volatility are significant in both samples, this indicates that SGA expense ratio does not matter in the dividend pay-out.

DISCUSSION AND CONCLUSION

The current study investigated the role of cash flow volatility, ownership concentration and agency cost of equity in the pay-out behaviour of the Pakistani non-financial firms by using logit model of regression. For this purpose, the data related to five years was extracted from the Balance Sheet Analysis (BSA) published by the State Bank of Pakistan and some other published annual reports. The results indicate a positive relationship of the agency cost of equity with the dividend pay-out and a negative relationship of the cash flow volatility with the dividend pay-out; however, the ownership concentration was found insignificant. To examine the interaction effect of cash flow volatility and agency cost of equity on dividend pay-outs behaviour, two different proxies, asset turnover and the SGA expense ratio were used. The results indicate that the higher the cash flow volatility and asset turnover, the lower is the probability to pay dividends. Furthermore, the interaction effect of the cash flow volatility and SGA expense ratio has insignificant impact on the dividend pay-out. The findings of the study are validated and found consistent even after the application of robustness tests. The study suggests that the firms with high agency cost and cash flow volatility do not pay dividends. The dividends are considered as substitute governance mechanism, therefore, from the investor perspective, it could be anticipated that dividends may serve to reduce agency problems especially for firms facing the cash flow volatility. The findings of the study also provide an implication for firms' managers to understand that their ability to pay dividends is determined by their cash volatility. This finding implies that firms should consider their cash flow volatility as it has a negative impact on the dividend pay-out. The current study focused on one emerging country (Pakistan) but the future researchers can conduct a similar study by selecting a different country or context to enrich the existing body of knowledge.

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