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Stock Price Volatility and Role of Dividend Policy: Empirical Evidence from Pakistan

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ABSTRACT

Despite years of empirical research, the linkage between dividend policy and stock price volatility (*SPV*) remains controversial among the researchers and scholars. This research endeavors to figure out the relationship between *SPV* and dividend policy of listed companies in Pakistan. A sample of 50 firms, based upon consistent dividend paying behavior, listed on Karachi Stock Exchange (KSE) has been selected from non-financial sectors, for the period of 2005-2012. Multiple regressions analyses have been carried on by applying random effect model on panel data i.e., for empirical estimation and robustness, panel estimated generalized least squares methods is used for finding relationship between dividend policy (dividend payout [*DP*] and dividend yield [*DY*]) and *SPV* after controlling for firm size (FS), asset growth (*AG*), long-term debt (*LD*), earning volatility (*EV*) and earnings per share (*EPS*). The study has found significant negative relationship between *SPV* and dividend policy variables i.e., *DP* and *DY*. Study has also found significant positive relationship between control variables (*AG*, *EV* and *EPS*) and *SPV* in KSE. But in case of the remaining two control variables i.e., FS and *LD*, these were found to be negatively related to *SPV*. The findings of this research are expected to contribute to dividend policy literature by providing evidence from Pakistani stock market to prior studies done in developed and developing countries.

Keywords: Stock Price Volatility, Dividend Policy, Karachi Stock Exchange, Random Effect Model
JEL Classifications: G20, G30, G35

1. INTRODUCTION

A large number of research studies have been carried out in different developed and developing countries', but the mystery i.e., relationship between dividend policy (dividend payout [*DP*] and dividend yield [*DY*]) and stock price volatility (*SPV*) remains unresolved. This research is an endeavor to find out relationship between dividend policy i.e. *DP*/*DY* and *SPV* in Pakistan. The study will assist investors to understand how stock prices move with financial information such as dividend announcement and dividend cut; as a result, investors in information-starved Pakistan will be able to predict the stock risk. According to Gordon (1963) paying high dividends is accompanied with decrease in risk which ultimately affects cost of capital as well as influences the stock prices of the firm. Dividend policy is the decision of what proportion of earnings should be distributed to the company's shareholders (Arnold, 2008). In the wake of paying interest and taxes, corporate managers can choose either to distribute part of net income as cash dividends to the firm's shareholders or retain all of it and plough back in the firm which may increase the share price (Bodie, 2009). *DP* shows the percentage flow of remaining net income to shareholders (Fama and French, 1988). Corporate managers' decisions over dividend policy have significant effect on company's share prices and are the subject matter under this study.

1.1. Dividends and Risk Theories

1.1.1. Duration effect

The name duration indicates time period. This theory tells us that companies that pay large dividends, and as a result have high *DY*, are expected to be associated with stream of cash inflows in the near future. Also, companies which have consistent dividend policy of high *DY* have shorter duration. This is similar to the concept of short-term liabilities which are always near to par value. Hence, stocks of companies with high *DY* are less likely to fluctuate in the face of discount rate changes (Baskin, 1989).

To test the duration effect theory hypothesis Baskin (1989) has adopted following procedure by assuming "g" is the constant increase in dividends payouts and "K_e" is the equity discount rate i.e. cost of capital or rate of return on common equity. Then the stock price "P_t" can easily be calculated by using Gordon growth model.

$$P_t = \frac{D_{t+1}}{(K_e - g)} \quad (1)$$

After taking derivative of Equation (1) with respect to "K_e" we come up:

$$\frac{dP_t}{dK_e} = \frac{-(D_{t+1})}{(K_e - g)^2} \quad (2)$$

By applying simple mathematics we can present Equation (2) as a ratio of discount rate "K_e" to DY such as.

$$\frac{-(dP_t / dK_e)}{(P_t / K_e)} = \frac{K_e}{(D_{t+1} / P_t)} \quad (3)$$

Equation (3) leads us to the conclusion that companies' stock prices are less responsive to changes in discount rate provided they have high DY, and hence lower price volatility, all other things remaining the same.

1.1.2. Rate of return effect

Companies at growth stage have considerable investment opportunities available to them; they are therefore likely to retain a much larger portion of their earnings and payout very low dividends. Retention of earning for reinvestment purposes is deemed to be cheaper than new issue of shares or debt financing (Myers and Majluf, 1984). However, a low DP, and as a result low DY, can command value only if there is an availability of future positive net present value (NPV) projects. Market perceives low DP as a positive signal regarding greater future cash flows from new investment projects - and somewhat rightfully starts expecting higher-than-present returns in the future. Future, however, is uncertain and the company may or may not be able to achieve its desired objectives of earning a higher rate of return. Hence stock prices up and down movement depends upon rate of return fluctuations over the period of time, such as explained by Gordon (1963).

From the above discussion it can be inferred that dividend policy (DP and DY) is a proxy for anticipating growth opportunities for the firm. Firms with lower DP and DY can be assumed to have more opportunities of new investments than the firms with high DP and high DY. However, if the expected return from these new opportunities is less reliable and uncertain than profits from existing assets already in place; then companies with low DP and low DYs have more volatile stocks. Another observation that emerges from the discussion is that companies paying high dividends are at maturity stage with stable earnings and less volatile stocks. This portrays that there is inverse relationship between volatility of stock prices and dividend policy (DP and DY) based upon rate of return theory. In order to prove this theory mathematically Baskin (1989) has used following procedure and assumptions.

- Common stocks should not be issued during the period
- Cost of capital "K_e" should be constant for discounting future cash flows
- Firm should payout constant dividend of $(1-B)$. Where "B" is the retention ratio
- Firm earn "R" (internal rate of return [IRR]) on all new invested capital of retained money.

Hence growth rate "g" can also be interpreted as ($g = BR$). On the basis of above assumptions and incorporating value of "g" into Equation (1) stock price is as follow:

$$P_t = \frac{D_{t+1}}{(K_e - BR)} \quad (4)$$

Further taking derivative of Equation (4) with respect to "R" we get Equation (5) as under.

$$\frac{dP_t}{dR} = \frac{(BD_{t+1})}{(K_e - BR)^2} \quad (5)$$

After making refinement to Equation (5) by using simple mathematics we could explain elasticity of stock prices due to anticipated IRR changes in the future i.e., by multiplying retention ratio with IRR and then divide it by DY.

$$\frac{(dP_t / dR)}{(P_t / R)} = \frac{BR}{(D_{t+1} / P_t)} \quad (6)$$

Equation (6) express that DP and DY have inverse relationship to future anticipated changes in rate of return. This means future forecasted rate of return will have negative relationship with DP and DY. As a result, dividend policy is negatively related to share price volatility.

1.1.3. Information effect

Baskin (1989) has also elaborated upon relevancy of information content theory by stating that according to "Information Signaling Hypothesis" dividend announcement presents positive signal to the market regarding future soundness of the company's return over their investments. If earnings announcement are followed by higher dividends payout then investors have confidence over the companies' policies. Investors' confidence leads them to rationally analyze the new information and to react accordingly while making investment decisions such as to hold the shares or to sell them. Hence dividend policy (DP and DY) give information regarding company's soundness and it shows that higher dividends are accompanied with less stock price fluctuations i.e. there is inverse relationship between the two.

The remaining paper is organized as follows: Section 2 discusses Literature Review, Section 3 explains Data Sources and Methodology, Section 4 elaborates on Results and Findings and the last Section 5 provides Conclusions.

2. LITERATURE REVIEW

To start studying stock prices and dividend policy literature without referring to Miller and Modigliani (1961) (MM) is unfair. Under ceteris paribus condition of no tax, no transaction cost, efficient market hypothesis (EMH), no information asymmetry, investors are rational, no agency issue corporate dividends are irrelevant to their *SPV* (MM et al., 1961). Further they argued that it is earnings that matters for stock prices and it is company's investment policy that figure the future cash flows and earnings. Later many researchers such as Brennan (1971), Black and Scholes (1974) and Hakansson (1982) have supported "MM" on different markets of the world and concurred that dividends are irrelevant to stock prices. They found neither dividends nor information effect have any relationship with stock prices. Brennan (1971) argued that rejection of dividend irrelevancy theory means rejection of EMH and the question on the symmetric market information which is not possible in today's market. However, we know that market is never perfectly efficient plus there are certain costs which cannot be avoided, such as transaction and tax costs. Also the investors are not rational all the time. They sometime take irrational investment decisions which are not based on logical judgments. In finance these irrational buying or selling decisions of investors are termed as behavioral decisions and come under the broader perspective of behavioral finance.

The absurd assumptions of EMH opened the doors for later researchers to challenge dividend irrelevancy theory and to find relevancy of dividend policy with stock prices. Gordon (1963) has challenged dividend irrelevancy theory. He proved with his empirical findings that dividend policy does have an impact on firm's market value. Specifically we see in literature the primary dividend policy variables (*DP* and *DY*) affects upon volatility of stock price which is negative in many cases of studies in developed and developing countries. Dividend policy is trace back to the Lintner (1956) and Walter (1956) who raised a question that "What are the choices available for managers to take certain actions which affect dividend payments' timing and the shapes?" This question set ground for later studies such as Ball et al. (1979) studied Australian stock market for the period of 1960-69 in order to analyze the association between dividend and share prices. They found *DY* and stock return have significant association. Based on their findings they rejected dividend irrelevancy theory. Some of the dividend relevancy theories are given as under.

2.1. Clientele Theory and Dividend Policy

The word clientele is a hybrid term used for client and customers collective. Clientele effect theory states that investors have different tax, transactions and earnings preferences. Some requires cash earnings (cash dividends) and some requires capital appreciation (capital gain). The same is true for companies. For example, mature firms attract investors with cash dividend preferences or investors with lower tax bracket; while growing firms attract investors with capital gain preferences or investors with higher tax bracket. Rozeff (1982) found that beta, agency issue and growth determine the optimal dividend payout. He argued that higher beta coefficient is consistent with less dividend payout that there is negative link between dividend payout and firm's risk because companies with high beta may have higher external financing cost, they are more likely to opt lower dividend payout policy. Hence investors tend to prefer the companies' stocks that help them minimize tax and transaction cost (MM, 1961). This theory proclaims that clientele effect requires the company to select a particular dividend policy keeping the particular needs of its investors in mind. This is clearly relevant to stock prices and investors.

2.2. Agency Theory and Dividend Policy

Agency cost conflict arises when management of the company work for their own betterment and forget the loyalty principle to work for the shareholders' wealth maximization (Ross et al., 2008). The firms with free cash flow are required by the shareholders to pay excess cash as dividends while management/bondholders do not want so. Such conflicts violate the MM (1961) dividend irrelevancy theory assumption that managers are true agent for shareholders and there are no disputes among them. Managers are normally involved in practices such as investing in unprofitable projects that will be associated with high employee compensation and bonuses (Al-Malkawi, 2007). Such violations negate dividend relevancy theory.

2.3. Signaling Theory and Dividend Policy

Under EMH and MM (1961) assumption of no information asymmetry stock prices fully reflect all available information. But many researchers have proved that managers of the company have more accurate and secret information than outsiders (Miller and Rock, 1985). Managers can use dividend announcement as signal to market about the firm's brighter future and expected cash flows in near time (Al-Malkawi, 2007). In support to (Miller and Rock 1985) and (Al-Malkawi 2007), (Bhattacharya 1979) explained that many dividend announcements communicate information about good future financial health of the company. Such information sharply reflects in share prices when the market receives it. In order to keep stock prices stable in during bad times or negative net income, managers hesitate to announce cuts in *DP* (Lintner, 1956). Such hesitation on the part of managers proves dividend policy relevancy with stock prices.

2.4. Bird in Hand Theory and Dividend Policy

"A bird in hand is worth more than two in the bush." This statement in the context of dividend policy expresses that investors prefer cash dividends over capital gain despite of higher tax rate on cash dividend. Capital gain is taxed lower than cash dividend and is payable only at the time of selling of securities. Investors believe "Bird in Hand Theory" on the ground that future profits from capital gain are uncertain and there is information asymmetry (Al-Malkawi, 2007). Hence they prefer cash dividends over capital gain. Dividend relevancy theory is supported by Bird in hand theory and expresses relationship of dividends with stock prices (Lintner, 1962; Walter, 1963; Gordon and Shapiro, 1956).

2.5. Dividend Relevancy Theory and Evidence from Developed/Developing Countries

In favor of the Gordon, Baskin (1989) in his study on USA by selecting large data of 2344 listed companies, comprising of

financial and non-financial sectors by using cross sectional study methodology found negative relationship between *SPV* and *DY*. Throughout in his study major focus was on *DY*. While once applying regression with both regressors i.e., *DP* and *DY* and once without *DP*, he came up with the same significant results without major changes in coefficients. In addition, he also included control variables such as size, debt and earning volatility (*EV*) which made the results robust with more explaining power. Baskin (1989) declared *DY* a more appropriate explanatory variable. In partial regression model of *DY*, size of firm is significantly negatively associated to *SPV* while long-term debt (LD) and *EV* have positive association with *SPV*. It means larger the firm size (FS) lesser the volatility; and larger the debt and *EV*, the greater the volatility in stock prices. Baskin (1989) concluded that inclusion of these control variables are necessary for explaining *DY* to be more important variable for explaining its relationship with volatility of stock prices. He also concluded that dividend policy itself affects *SPV*.

In contrast to study of Baskin (1989) another researchers Allen and Rachim (1996) came up with the result of no relationship between the stock prices and *DY* in their study on the same issue in Australian stock market by utilizing cross sectional multiple regressions. At the same time they found significant negative association between *SPV* and *DP*. They also found that control variables such as size, *EV* and leverage also explain relationship with *SPV* and are necessary to be included in regression model. Size in Australian firms found to be significantly negatively related while *EV* and debt were found to be significantly positively related to stock volatility which are in line to results of Baskin's (1989) study.

Baskin (1989) study was further validated recently by Hussainey et al. (2011) on the mature market of London Stock Exchange. By applying multiple regression analysis, their study validated dividend literature by proving that *SPV* and *DP* as well as *DY* are significantly negatively related. It means firms in UK with higher *DP* and *DY* have lower *SPV* and *viz*. As for the control variables, size in UK firms is negatively related to *SPV* while debt and *EV* have significant positive association. Their study's results matched with existing body of literature such as Baskin (1989) and Allen and Rachim (1996) on US and Australian equity markets respectively. This reaffirms that larger firms are at their maturity stage, more diversified and are in better position to generate debt finance at favorable cost. Hence such firms payout high dividends so their stock prices remain stable comparative to smaller or growing firms. In another study on US equity market, financial engineers Profilet and Bacon (2013) used ordinary least square (OLS) multiple regression on panel data to arrive at the finding that *DY*, size of firm, leverage and growth showed significant negative association with *SPV*. Hence we conclude dividend policy literature (*DP* and *DY*) support negative relationship with volatilities of share prices in developed economies of the world.

Moving from developed to developing countries, we found supporting evidences to subject under study. One of the study on Malaysian construction and material companies by Zakaria et al. (2012) for the period of 2005-2010 found that *DP* has significant positive relationship with *SPV* while *DY* has insignificant positive association. These results are totally contrasting to the results of developed markets such as Hussainey et al. (2011). As for the study's control variables, size had significant positive, growth had insignificant positive while leverage was found to be significantly negatively linked to share price volatility. The same results of Zakaria et al. (2012) are presented by Ilaboya and Aggreh (2013) in his study on Nigerian Stock Market by applying pooled OLSs and fixed effect models. His study came out with mixed results i.e., *DY* was found positively associated while *DP* was significantly negatively associated with *SPV*. As for control variables of his study, *FS* and *EV* were found to be negatively related while debt and assets growth (*AG*) came out with positively associated to stock prices and as a result to their volatilities.

The same issue was proved in developing and emerging economies of the world by Chen et al. (2009) who analyzed the cash dividend influence upon stock prices in China for period of 2000-2004. They found there is significant relationship between cash dividend and share prices i.e., increase in stock prices are positively correlated with increase in cash dividend. Beside normally used control variables (size, growth, debt) Chen et al. (2009) incorporated earnings per share (*EPS)* in their research. They come out with findings of significant relationship between *EPS* and fluctuation of share prices. They reported that, fluctuation in share prices is positively affected by *EPS*. It means higher the *EPS* in Chinese companies, the more volatility in their stock prices. In a broader perspective it was presented that earnings of companies have positive relationship with share prices and ultimately with their volatilities. Adesola and Okwong (2009) in their research on Nigerian Stock Market used cross sectional study methodology by utilizing sample of 27 listed companies and found that last year dividend, *EPS* and earnings are significantly positively related to dividend policy as well as to *SPV*. They also found that size and growth have no effect on dividend policy of the company.

In support of dividend policy literature the study conducted by Ramadan (2013) on Jordon economy found that dividends do affect share prices significantly and hence their volatilities. He found negative relationship between *DP*/*DY* and share price volatilities. These results are in line to Hussainey et al. (2011) on UK market and Okafor, Mgbame, Chijoke-Mgbame, (2011) on Nigerian market. He argued that when a company increases its dividend it enhances investor's confidence and trust upon performance of the company which leads to stability of share prices. Likewise, if company cuts dividends, it gives a negative signal to market about company's performance which causes investors distrust upon firm. This results in fluctuation of share prices. He extended his basic model of dividend policy by incorporating two control variables "size and growth." Size showed significant negative relationship with volatility of share prices which is in accord to existing literature; however growth came out with insignificant negative association. The negative association of growth with volatility of share prices in Jordon is against the existing body of literature. It means the more a firm grows and retains earnings in Jordon, the less volatile its stock prices would be. This is against the significant positive results of Hussainey et al. (2011) on UK market.

Taking the scenario from another perspective, Pani (2008) in his study on firms listed on stock exchange of Bombay, India focuses on retention ratio rather than *DP* and found that there is positive association between stock returns and retention ratio. As for control variables in the study, size has positive while debt to equity ratio was reported as negatively related with stock price returns.

These findings suggested that relationship can be in any direction and it depends upon financial system, political environment, state of economy and other global events. Keeping in mind these prior studies in developed and developing countries of the world, the present study has been carried on Karachi Stock Exchange (KSE) in order to determine the existence, or absence, of empirical evidence in the area of relationship between *SPV* and dividend policy of firms in Pakistan.

2.6. Theoretical Framework

The theoretical framework of this study follows Baskin (1989) and Hussainey et al. (2011) approach. This is a quantitative and descriptive research study. It endeavors to find out relationship between explained variable (*SPV*) and explanatory variables (*DP* and *DY*) after controlling to some accounting variables such as FS, asset growth (*AG*), *LD*, *EV* and *EPS*. The study has incorporated these control variables on the basis of special traits attributable to companies. There are certain factors which bring change in companies' financial policies. One such policy is retention ratio and *DP* ratio. Companies at KSE are of different nature and of different financial strength on the basis of assets they hold. Large and geographically diverse companies pay more dividend than smaller firms. Two possible explanations for this state of affairs are: (a) Bigger companies are normally at the maturity stage and have fewer new positive NPV investment opportunities and (b) larger firms are able to attract favorable debt terms. For realizing the size effect on share prices, the study has incorporated *FS* as a control variable. In order to further strengthen the argument of FS inclusion, *AG* has also been added as a control variable. Small and young firms have more growth opportunities than old and mature firms. As a result small/young companies hold earnings and payout less in dividends. Furthermore leverage and *DP* have inverse connection. The more a firm is levered the less earnings are left for distribution among shareholders. EV is included as fourth control variable on the basis of its relevancy with *DP*. Large firms have stable earnings and constant dividend policy while small firms have unstable earnings (more volatility) hence they payout less in dividends. Therefore, *EV* has a connection with payout ratio and ultimately with share prices. Different scholars have empirically proved that earnings announcements has relevancy with share price movements. Hence, last but not the least, *EPS* as a control variable has been included for strengthening the link between independent and dependent variables on the grounds that, the more a company earns (in absolute or per share terms) the better its position is to payout large dividends.

2.7. Research Hypotheses

On the basis of conceptual framework the focus of this study is to test the hypotheses developed and to find out whether or not the dividend policy of firms is significantly related to *SPV* in KSE, Pakistan.

2.7.1. Hypothesis with dividend policy

H_0: There is no significant relationship between *DY* and *SPV*.
H_1: There is significant relationship (positive/negative) between *DY* and stock price volatility.
H_0: There is no significant relationship between *DP* and *SPV*.
H_1: There is significant relationship (positive/negative) between *DP* and *SPV*.

Same pattern is used for hypothesis for all control variables used in this study.

3. DATA SOURCE AND METHODOLOGY

This study is focused on Pakistani firms listed on KSE. 50 companies from 11 business sectors are selected from KSE. Companies' selection is based upon consistent dividend paying nature for the period under this research i.e. 2005-2012. Major sectors which are covered in this research are: Food, Textile, Chemical and Pharmaceutical, Motor Vehicle and Trailer, Fuel and Energy and Refined Petroleum Products. Study has taken companies related data from annual reports which are downloaded from KSE, Business Recorder, State Bank of Pakistan and respective web sites of the companies while stock prices data is taken from KSE website. The study uses Baskin (1989) and Hussainey et al. (2011) methodology, according to them dividend data is further divided into two proxies which are used as independent variables such as *DY* and *DP* ratio. Beside the two main regressors, the study has also used some control variables such as *EV*, *FS*, leverage (*LD*), *AG* and *EPS*. The dependent variable, *SPV* which is measured in statistics as dispersion from the mean value will be regressed on two independent variable proxies separately and also collectively by including some control variables and using multiple least square regressions on panel data.

3.1. Methodology

This study uses Baskin (1989) USA and Hussainey et al. (2011) UK methodology to find out regression coefficients and other statistical results by using multiple least square regression on panel data. Regression analysis, descriptive statistics and correlation have been found. This will also help to know about multicollinearity problem which can be removed either by dropping the highly collinear variable or by using other techniques such as taking first difference of collinear variables. In this research we have used dropping technique for highly correlated variables to avoid the multicollinearity issue. In order to further validate our results, random effect and fixed effect models testing has also been used. The econometric model under study is as follows:

$$SPV_{it} = \alpha_0 + \beta_1 DY_{it} + \beta_2 DP_{it} + \beta_3 FS_{it} + \beta_4 AG_{it} + \beta_5 LD_{it} + \beta_6 EV_{it} + \beta_7 EPS_{it} + \mu_{it} \quad (A)$$

Where, "*i*" and "*t*" shows cross sectional and time units respectively, SPV is stock price volatility, *DY* is dividend yield, *DP* is dividend payout, *FS* is firm size, *AG* is assets growth, *LD* is long-term debt, *EV* is earning volatility, *EPS* is earning per share and at last "μ" is error term.

In the current study on panel data we have utilized Hausman test to assess as to which of the two models (random effect model [REM] or fixed effect model) is more appropriate to our research. The hypothesis under Hausman tests with chi-square distribution are:
H_0: REM is appropriate
H_1: Fixed effect model is appropriate.

3.2. Variables definitions and measurements

3.2.1. SPV

SPV is the dependent variable whose measurement follows Parkinson (1980) extreme value of highest and lowest stock prices because this method is far superior than taking annual closing and opening prices. It means yearly highest price of stock minus lowest stock price i.e. range is divided by average of lowest and highest share prices, and then raising second power to it. At the end square root is applied to transform the variance to standard deviation comparable.

3.2.2. DY

According to Baskin (1989) *DY* is annual percentage of earning on each stock. It is calculated as total yearly dividends to common stockholders divided by total market value at beginning of the year. An alternative is to express dividend per common share as a percentage of market value of the common share at the beginning of the year.

3.2.3. DP

Payout ratio is the percentage of earnings that is paid out to shareholders as dividends annually. It is calculated by expressing dividend per share as a percentage of *EPS*, or by dividing total cash dividend paid by total net profit attributable to shareholders. Here we should refrain from using the term "profit available for distribution to shareholders" because such a term can be construed to include retained earnings from the previous periods. The *DP* percentage should strictly be confined to a particular year's earnings and dividends.

3.2.4. FS

According to Baskin (1989) we need to control size factor and in this study it is calculated as natural log of total assets at the start of the year. This procedure is in line with Ang and Peterson (1984), Gaver and Gaver (1993) and Olson and McCann (1994). We have preferred to use the natural log of total assets instead of market capitalization to eliminate the impact of leverage. A highly leveraged firm may have a smaller market capitalization despite a very large amount of assets at its disposal. We believe that total assets represent a more appropriate measure of size of the firm. Again, associating the size of a firm to its revenue can also produce misleading results as revenue is dependent on nature of business rather than the size of the company.

3.2.5. AG

AG is percentage increase or decrease in total assets with respect to previous year's total assets. It is calculated by dividing absolute increase/decrease in total assets during the year (i.e., closing total less opening total) to total asset at the beginning of the year.

3.2.6. LD/leverage

This control variable is calculated by dividing *LDs* to total assets owned by the business.

3.2.7. EV

It is calculated as standard deviation of the ratio of operating profit (earnings before interest and taxes) to total assets of the year.

3.2.8. EPS

It is calculated as net income in a year divided by number of common shares outstanding at the beginning of the year.

3.2.9. Expected signs of variables with SPV

DY, *DP* and *FS* are expected to have negative relationship while rest of independent variables are expected to be positively associated with *SPV*.

4. RESULTS AND FINDINGS

Table 1 gives a snap of descriptive statistics of independent and dependent variables of current study with rows containing mean, median, maximum, and minimum along with standard deviation values of all the variables used in this research.

The mean value of *SPV* is 0.5661. By using Parkinson (1980) formula we can calculate standard deviation of stock prices by multiplying mean value of *SPV* (0.5661) with constant value (0.6008) we get (0.3401 or 34.01%). This value 34.01% is in line with Baskin (1989) US results of 36.9%, Allen and Rachim (1996) 29.42% Australian results and Hussainey et al. (2011) 17.66% UK results. The dependent variable (*SPV*) under study has a maximum value of 1.308 and minimum value of 0.1609 which expresses a range of 1.1471 with standard deviation of 0.2385 or 23.85%. Range is calculated by subtracting minimum value from maximum value. These range and standard deviation figures depict stock price fluctuation during the year.

Our study's first main regressor *DY* has the mean value of 0.0693. It has a maximum value of 0.3152 and minimum value of 0.0000038. *DY* has range of 0.3152 after rounding, and the standard deviation of 0.0497 or 4.97%. The second main regressor of this study is *DP*. It has mean value of 0.4910. *DP* has maximum value (1.0000) and minimum value (0.0001). It has the range of 0.9999 with the standard deviation of 27.53%. Coming towards control variables then *FS* is our first control variable. It has the mean value (22.6551), maximum value (26.2942) and minimum value (19.7458). *FS* has the range of 6.5484 with the standard deviation of 141.62%. Statistics available for rest of control variables are in the same fashion.

Table 2 shows the correlation analysis of the variables under study. It explains relationship between dependent and primary independent variables (*DP* and *DY*) which come out negative; and whether this relationship amongst them is significant or insignificant. Correlation analysis also depict in which direction the explanatory variables are related to explained variable (*SPV*) and we can know relationship of main regressors and the control variables with *SPV*.

Table 1: Descriptive statistics

Statistics	*SPV*	*DY*	*DP*	*FS*	*AG*	*LD*	*EV*	*EPS*
Mean	0.5661	0.0693	0.4910	22.6551	0.1822	0.1001	0.0536	24.5262
Median	0.5299	0.0599	0.4393	22.4809	0.1439	0.0600	0.0420	13.8817
Maximum	1.308	0.3152	1.0000	26.2942	1.6975	1.5017	0.5233	319.36
Minimum	0.1609	0.0000	0.0001	19.7458	−0.6691	0.0001	0.0001	-39.05
Standard deviation	0.2385	0.0497	0.2753	1.4162	0.2302	0.1243	0.0590	34.0306
Sum	226.44	27.724	196.39	9062.04	72.891	40.0402	21.4395	9810.465
Sum square deviation	22.696	0.9838	30.229	800.296	21.1407	6.1675	1.3872	462074
Observations	400	400	400	400	400	400	400	400

SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, FS: Firm size, AG: Assets growth, LD: Long-term debt, EV: Earning volatility, EPS: Earning per share

Table 2: Correlation analysis

Variables	*SPV*	*DY*	*DP*	*FS*	*AG*	*LD*	*EV*	*EPS*
SPV	1							
DY	−0.195*	1						
DP	−0.089***	0.428*	1					
FS	−0.049	0.207*	0.333*	1				
AG	0.111**	−0.102***	−0.060	−0.010	1			
LD	−0.018	−0.058	0.003	0.093***	0.291*	1		
EV	0.106**	0.087***	0.242*	−0.001	−0.118**	−0.039	1	
EPS	0.055	0.094***	−0.086	0.156*	0.022	−0.109**	−0.069	1

Values are significant at *1%, **5%, ***10% level of significance. SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, FS: Firm size, AG: Assets growth, LD: Long-term debt, EV: Earning volatility, EPS: Earning per share

From Table 2 it can be seen that first main regressor of current study *DY* is negatively (−0.195*) correlated with *SPV* and this relationship is statistically significant at 1% level. This result is in line with Baskin (1989) on US common stock (−0.643), Hussainey et al. (2011) on UK equity market (−0.2583) and Ramadan (2013) on Jordan (−0.357) while this result is in contrast to Allen and Rachim (1996) study on Australian market which was positive (0.006) and Ilaboya and Aggreh (2013) which was (0.079). The second main regressor of the study *DP* is also negatively (−0.089) related to *SPV* and it shows significant relationship at 10% level of significance. This result is also in line with Baskin (1989) which was −0.542, Allen and Rachim (1996) which was (−0.210), Hussainey et al. (2011) which was −0.4446 and Hashemijoo et al. (2012) which was −0.382.

Moving further to control variables, *FS* is mentioned at first in correlation (Table 2). Dividend policy literature tells; higher the *FS* lower the growth opportunities it have. Such firms are at maturity stage and these firms pay most of their earnings as dividend. The more they pay the fewer *SPV* they have. In the Table 2 it is shown that FS come up with negative (−0.049) relationship to *SPV*. This result resemble the studies of Hussainey et al. (2011) which was −0.1823. The second control variable, *AG* has positive (0.111) significant relationship with *SPV* at 5% level of significance. This is also in line with the study of Allen and Rachim (1996) which was (0.09). It means if there is increase in *AG* there will be corresponding increase in *SPV*.

LD the third control variable shows negative (−0.018) insignificant relationship with volatility of share prices. This negative sign is against the current study's expectation and existing body of literature but there are some studies which showed negative relation of *LD* to *SPV* such as Song (2012) on Toronto stock market showed negative (−0.1928) association of *LD* to stock prices and its volatility. Moving further then *EV* has positive (0.106) significant relationship with *SPV* at 5% level of significance. The more volatile earnings are, the more volatility would be seen in stock prices and the more stable the earnings of a company are, the less *SPV* would be. These results resemble with the studies of Allen and Rachim (1996) which was 0.115, Hussainey et al. (2011) which was 0.1166 and Hashemijoo et al. (2012) which was 0.514. The last control variable of the study "*EPS*" come up with positive (0.055) relationship to stock prices but this is insignificant in Pakistan case. The relation expresses the increase in *EPS* is associated with increase in stock prices of firms listed on KSE. The higher *EPS* the more *SPV*. This relationship supports the existing body of literature. Because earning announcement by companies are sharply incorporated in stock prices. Consequently increase in *EPS* move the stock prices upward and when *EPS* decreased there is corresponding decrease in stock prices.

An important analysis that could be done from Table 2 is to figure out if there is multicollinearity in regressors. *DY* and *DP* possess the highest positive (0.428*) significant correlation. This correlation matched with Allen and Rachim (1996) of 0.424* significant at 5% level. After comparing this correlation (0.428*) with individual correlation of *DY* (−0.195*) and DP (−0.089***) with *SPV* we found that it is comparatively very large. This could cause potential problem at regression analysis.

4.1. Correlation Analysis between Dividend Policy and Control Variables

Some of control variables in our model also possess significant correlation with dividend policy variables. Looking at Table 2 the results expressed that dividend policy itself can be influenced significantly by some of the control variables given in this study. FS shows significant positive (0.333*, 0.207*) correlation with *DP* and *DY* respectively. This show that larger firms normally pay more dividends while small firms do not (Fama and French, 2001). Large firms pay more dividends due to the fact that they

have easy access to financial market for capital financing at lower cost of capital, this ease made them able to distribute large dividends if they wish so (Holder et al., 1998). *AG* has significant negative (−0.102), (−0.06) correlation with *DY* and *DP* at 10% level significance. This is in line with dividend policy literature that the growing firms retain most of their earnings and payout less dividends to equity holders (Higgins, 1974). *LD* has insignificant negative (−0.058) correlation with *DY*. High levered firms payout less amount in dividend due to the fact that bondholders and long-term creditors do not like so (Al-Malkawi, 2007). EV has significant positive (0.087, 0.242) correlation with *DY* and *DP* at 10% and 1% level of significance respectively. Firms with volatile earnings still payout dividend in order to float good signal into the market for keeping stock prices stable. It is due to the fact that firms even with negative income in some years payout dividend in order to maintain their stock prices and not to drop significantly. At last we see there is positive relationship between *EPS* and *DY*. The more company earn per share the more it could pay as dividends to shareholders.

4.2. Multiple Regression Results and Analysis

The study has utilized multiple regression models. This procedure has been used in order to avoid multicollinearity problem existing in dividend policy variables. This method is in line with Baskin (1989), Allen and Rachim (1996) and Hussainey et al. (2011). Referring to Table 2 there is highest positive (0.428*) significant correlation between *DY* and *DP*. Regression results mentioned below have also proved that both main regressors inclusion in one estimation model brings up *DP* insignificant. Consequently we need to drop one of the variable (*DY* or *DP*) to come up with significant results.

4.3. Regression with Dividend Policy

For proving multicollinearity issue between *DP* and *DY* we have estimated our first regression model by incorporating three variables i.e., one dependent variable (*SPV*) and two main independent variables of dividend policy (*DP* and *DY*). Same approach is also used by Hussainey et al. (2011). Table 3 present the results of REM i.e., panel estimated generalized least squares (EGLS) estimates of the first regression model as below:

$$SPV_{it} = \alpha_1 + \beta_1 DY_{it} + \beta_2 DP_{it} + W_{it} \quad (7)$$

Where, "*i*" and "*t*" shows cross sectional and time units respectively, *SPV* is stock price volatility, *DY* is dividend yield, *DP* is dividend payout ratio and W_{it} is composite random effect error term.

Table 3: Regression with dividend policy

Dependent variable: *SPV*				
Method: Panel EGLS (cross-section random effects)				
Variables	**Coefficient**	**Standard error**	**t-statistic**	**P**
C	0.6283	0.0301	20.8895	0.0000
DY	−0.9323*	0.2902	−3.2127	0.0014
DP	−0.0047	0.0547	−0.0876	0.9302

R^2=0.0348, adjusted R^2=0.0292, F-statistics=6.2499, P (F-statistics=0.0022 and D.W=2.0387). Values are significant at *1%, **5%, ***10% level of significance. SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, EGLS: Estimated generalized least squares

Table 3 clearly depicts that *DY* has significant negative relationship with *SPV* in Pakistan at 1% level while *DP* has highly insignificant relationship. These negative relationship of dividend policy variables with *SPV* are our prior expectations and in accordance to previous studies such as Baskin (1989), Hussainey et al. (2011), and Hashemijoo et al. (2012). It is due to multicollinearity between these two main regressors of dividend policy that *DP* turns out insignificant. In the later partial regressions results, it has been proved that both the variables are significantly associated with *SPV*.

4.4. Regression with Dividend Policy and Control Variables

Going through multicollinearity issue and in order to avoid it, the study has added some control variables to see if there is any change in the values of dividend policy (*DP* and *DY*) estimates and to their significant link with *SPV*. Hence we come up with the following thorough estimation model of this study.

$$SPV_{it} = \alpha_1 + \beta_1 DY_{it} + \beta_2 DP_{it} + \beta_3 FS_{it} + \beta_4 AG_{it} + \beta_5 LD_{it} + \beta_6 EV_{it} + \beta_7 EPS_{it} + W_{it} \quad (8)$$

Where, "*i*" and "*t*" shows cross sectional and time units respectively, *SPV* is stock price volatility, *DY* is dividend yield, DP is dividend payout ratio, FS is firm size, *AG* is assets growth, *LD* is long-term debt, *EV* is earning volatility, EPS is earnings per share and at last "W_{it}" is combined random effect error term.

Running the regression on our complete model denoted by Equation (8) we come up with the results in Table 4. By putting a glance over Table 4 we found that both *DP* and *DY* are negative related to *SPV* but only *DY* is significant at 1%. Because of the existence of multicollinearity between the two variables (*DP* and *DY*), not only *DP* but also other control variables are also showing insignificant relationship with *SPV*.

Only *AG* and *EV* amongst the control variables show a significant positive association with *SPV* at 5% level. These results match with Baskin (1989), Hussainey et al. (2011), and Hashemijoo et al. (2012). In order to see the true relationship between *SPV* and all regressors we need to drop one of dividend policy variable

Table 4: Regression with dividend policy and control variables

Dependent variable: *SPV*				
Method: Panel EGLS (cross-section random effects)				
Variables	**Coefficient**	**Standard error**	**t-statistic**	**P**
C	0.6217	0.2504	2.4827	0.0135
DY	−0.9769*	0.2944	−3.3183	0.0010
DP	−0.0133	0.0592	−0.2250	0.8222
FS	−0.0021	0.0114	−0.1835	0.8545
AG	0.1191**	0.0568	2.0976	0.0367
LD	−0.0726	0.1131	−0.6423	0.5211
EV	0.5778**	0.2255	2.5622	0.0108
EPS	0.0007	0.0004	1.5848	0.1139

R^2=0.0698, adjusted R^2=0.0508, F-statistics=3.6685, P (F-statistics=0.008 and D.W=2.11). Value significant at *1%, **5% and ***10% level of significance. SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, FS: Firm size, AG: Assets growth, LD: Long-term debt, EV: Earning volatility, EPS: Earning per share, EGLS: Estimated generalized least squares

i.e., either to drop *DY* or *DP*. As *DP* is giving insignificant result so we decided to drop it first. But before going further we need to apply Hausman test on Table 4 estimates in order to find if fixed effect model could resolve the insignificant problem.

4.5. Hausman Test and Model Appropriateness

After running regression using REM on the basic model of Equation (8) the study has applied Hausman test on the regression estimates using Chi-square distribution. Following are the null and alternative hypotheses under Hausman test:

H_0: REM is appropriate

H_1: Fixed effect model is appropriate.

Table 5 showed that we failed to reject our null hypothesis as probability value is far greater than even 10% significance level. This study's Hausman test result is in contrast to study of Ilaboya and Aggreh (2013) where null hypothesis was rejected and the researcher went for fixed effect model estimation. The Hausman test confirmed REM to be more appropriate for this panel study.

4.6. Regression with *DY* and Control Variables

Based upon regression results of Table 4, *DP* is dropped from the basic model and then regression is run with incorporation of all control variables mentioned earlier. Results in Table 6 are based on the following partial econometric model.

$$SPV_{it} = \alpha_1 + \beta_1 DY_{it} + \beta_2 FS_{it} + \beta_3 AG_{it} + \beta_4 LD_{it} + \beta_5 EV_{it} + \beta_6 EPS_{it} + W_{it} \quad (9)$$

Table 6 has presented the results in line with what was actually expected. Most of the variables come up statistically significant with varying level of significance. Not only the previously presented insignificant variables in Table 4 turns into significant but these variables (*AG*, *EV* and *EPS*) also show the right direction of relation as was expected of them based on Allen and Rachim (1996) and Hussainey et al. (2011) studies. FS and *LD* show negative relationship with *SPV* but this relationship is not statistically significant and we failed to reject our null hypothesis. These two insignificant results also resemble with the previous studies on Malaysian stock market by Zakaria et al. (2012) and Hashemijoo et al. (2012).

DY as before remains negatively associated with *SPV* at 1% significance level hence we have rejected null hypothesis developed above. It means the more a firm pays its profit as dividends the lower will be its *SPV* (Baskin, 1989). *AG* is positively related to *SPV* at 5%, EV is positively related to *SPV* at 1%. Hence we have rejected null hypothesis developed for *AG* and *EV* and found that there is significant positive relationship of these variables (*AG*, EV) with *SPV*. These findings agree with Allen and Rachim (1996) and with current study's prior expected signs. Last but not the least *EPS* also possess positive significant relationship at 10% level, hence once again we have rejected our null hypothesis for *EPS* against alternative hypothesis. In Table 6 Durbin–Watson statistics showed no autocorrelation problem because its value is in acceptable range (1.8-2.2) and R^2 tells 6.98% variation in *SPV* due to the variables mentioned in Table 6. F statistics is also highly significant and confirmed that over all model is good fit. All the results are in accordance to prior expectations and in accord to the findings of Baskin (1989), Allen and Rachim (1996), Adefila et al. (2004), Adesola and Okwong (2009), Chen et al. (2009) and Hussainey et al. (2011).

4.7. Regression with *DP* and Control Variables

To avoid multicollinearity problem and to reach at significant results of dividend policy and control variables with *SPV*, we have dropped *DP* from previous regression Equation (9) due to its insignificant results in Table 4 and high correlation with *DY*. Once again study has dropped other dividend policy variable i.e., *DY* and regressed to find relationship of *DP* with *SPV* in the absence of *DY*. Study has also dropped EPS as a control variable due to its negative insignificant correlation with *DP*. This relationship is against the existing body of literature. The more a company earns the more it could payout as dividend (Fama et al., 1991). On the basis of this insignificant negative correlation; study has dropped it from partial regression model (4) of *DP* because it does not validate *DP* relationship with *SPV*. Following regression model work as estimation equation in the Table 7.

Table 5: Hausman test

Correlated random effects - Hausman test			
Test cross-section random effects			
Test summary	**Chi-square statistic**	**Chi-square d.f**	**P**
Cross-section random	4.5302	7	0.717

Table 6: Regression with DY and control variables

Dependent variable: *SPV*				
Method: Panel EGLS (cross-section random effects)				
Variables	**Coefficient**	**Standard error**	**t-statistic**	**P**
C	0.6333	0.2427	2.6099	0.0095
DY	−1.0008*	0.2731	−3.6641	0.0003
FS	−0.0028	0.0108	−0.2586	0.7961
AG	0.1188**	0.0566	2.0979	0.0366
LD	−0.0732	0.1125	−0.6501	0.5161
EV	0.5670**	0.2198	2.5793	0.0103
EPS	0.0007***	0.0004	1.6702	0.0958

R^2=0.0698, adjusted R^2=0.0535, F-statistic=4.2909, P (F-statistics=0.00035 and D.W=2.1054). Values significant at *1%, **5%, ***10% level of significance. SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, FS: Firm size, AG: Assets growth, LD: Long-term debt, EV: Earning volatility, EPS: Earning per share, EGLS: Estimated generalized least squares

Table 7: Regression with DP and control variables

Dependent variable: *SPV*				
Method: Panel EGLS (cross-section random effects)				
Variables	**Coefficient**	**Standard error**	**t-statistic**	**P**
C	0.5946	0.2465	2.4116	0.0164
DP	−0.0956***	0.0547	−1.7468	0.0816
FS	−0.0014	0.0111	−0.1259	0.8999
AG	0.1352**	0.0575	2.3513	0.0193
LD	−0.0769	0.1130	−0.6811	0.4963
EV	0.5757**	0.2281	2.5239	0.0121

R^2=0.0373, adjusted R^2=0.0233, F-statistic=2.6670, P (F-statistic=0.22105 and D.W=2.10). Values significant at: *1%, **5%, ***10% level of significance. SPV: Stock price volatility, DY: Dividend yield, DP: Dividend payout, FS: Firm size, AG: Assets growth, LD: Long-term debt, EV: Earning volatility, EPS: Earning per share, EGLS: Estimated generalized least squares

$$SPV_{it} = \alpha_1 + \beta_1 DP_{it} + \beta_2 FS_{it} + \beta_3 AG_{it} + \beta_4 LD_{it} + \beta_5 EV_{it} + W_{it} \quad (10)$$

From Table 7, we have found that previously presented insignificant *DP* in Tables 3 and 4 turned out into significant negative relationship with *SPV* at 10% level. This result resembles with Hussainey et al. (2011) study on UK market. FS again comes up with negative insignificant relationship with *SPV* as previous researchers confirmed, e.g., Allen and Rachim (1996). All the signs of coefficients of control variables remain the same as before in *DY* partial regression model (3) and in Table 6. *AG* in this second partial regression model has positive relationship with *SPV* at 5% level. *LD* possess negative association with *SPV* and is in line with Song (2012) and Hashemijoo et al. (2012). At the end *EV* has positive relationship with *SPV* as expected and presented in the studies of Baskin (1989), Allen and Rachim (1996) and more recently in UK market by Hussainey et al. (2011) and Hashemijoo et al. (2012) in Malaysia.

From the Table 7 it can also be observed that R^2 (3.73%) value is lower than the R^2 (6.98%) value of Table 6. Current R^2 value tells that only 3.73% of the variation in *SPV* is explained by *DP* and four control variables. While in the *DY* regression model, up to 6.98% of the variation in stock prices over KSE is explained. This analysis portrays that *DY* is the more relevant dividend policy variable than *DP* in KSE. These results are in accord with the work of Hussainey et al. (2011) in whose study *DY* is more important. Our results are in contrast to Allen and Rachim (1996) in whose study *DP* is more important variable than *DY*. From Table 7 it can also be seen that F statistics is significant at 5% level which confirms that the overall model is a good fit. Durbin–Watson value (2.10) affirms that there is no autocorrelation problem.

4.8. Summary of Discussion, Findings and Analysis

Based upon extensive research on the issue under study in developed countries settings; such as Baskin (1989) on USA, Allen and Rachim (1996) on Australia, Hussainey et al. (2011) on UK, Song (2012) on Canada; and also in developing countries setting such as Adefila et al. (2004) on Nigeria, Pani (2008) on India, Chen et al. (2009) on China, Zakaria et al. (2012) on Malaysia and the latest Ramadan (2013) on Jordon; it has been empirically proved that dividend policy i.e. *DP* and *DY* have significant relationship with stock price volatilities and this relationship can either be positive or negative depending upon the financial and political system a country has.

The results of present study on KSE are found to be in accord to the previous studies in developed and developing countries setting such as mentioned in the above paragraph. We also found that presented coefficient signs of independent variables in Tables 6 and 7 matched to study's expected coefficient signs. Only *LD* and FS in both partial regressions (3) and (4) come out with insignificant negative coefficient. These negative signs matched with the study of Song (2012) on Canadian stock market. Overall findings of current study in both the partial regression models (3) and (4) support the existing dividend policy literature by showing negative significant relationship on *DY*, *DP* and FS (insignificant). It means the more *DP* by the firms listed on KSE the fewer stock price volatilities would be. Beside this, if firms have large size it will have less volatility in their stock prices compares to volatility of small firms listed on KSE. It is due to the fact that large and diversified firms are on maturity stage and such firms have stable earnings, consistent *DP* and stable stock prices, hence, fewer *SPV* (Baskin, 1989). These findings of dividend policy on KSE support the prior studies of Baskin (1989), Allen and Rachim (1996) and more recent Hussainey et al. (2011).

We have found that three control variables *AG*, *EV* and *EPS* have significant positive relationship with *SPV* on KSE. The significant result of *AG* elaborates that firms at growth stage have more volatile stocks in Pakistan. It has been proved empirically by Higgins (1974) that firms on growth stage retain most of their earnings and payout less in dividends. Hence, this decision puts the corporations in uncertainty regarding future cash inflows from their new investment projects. This uncertainty result in more fluctuations in their stock prices which is also proved in the case of Pakistan in this study.

Similarly the more volatile earnings of a company are, the lower is the dividend paid by them. As a result, lower the dividend paid more volatile its stock prices will be (Campbell and Shiller, 1988). EV has proved to have positive significant relationship with *SPV*. Campbell and Shiller (1988) found that earning of a firm is significant positively associated with stock prices. In conformity to his study, current research also found that *EPS* in KSE has significant positive relationship with *SPV* in regression model (3). It depicts that if there is an increase in *EPS* there will be corresponding increase in share price and consequently in *SPV*. This movement in share prices is due to the fact of information hypothesis and EMH (MM et al., 1961). We conclude our analysis by expressing that dividend policy is value relevant to *SPV* in KSE. We also find that there are many other factors (taken as control variables in the study) which affect the volatility of stock prices.

5. CONCLUSION AND RECOMMENATIONS

5.1. Conclusions

The purpose of this study was to investigate the relationship between *SPV* and dividend policy in KSE, Pakistan. For this purpose, study has analyzed empirically a sample of 50 companies listed on KSE from 11 industrial sectors for the period of 2005 to 2012 by utilizing panel data approach. Fixed effect and REMs have been applied, i.e., for empirical estimations panel EGLS techniques is used to find out which model is more appropriate. On the basis of Hausman test we found REM to be more appropriate for empirical estimation. Multiple regression method is used to find relationship between *SPV* and dividend policy variables (*DP* and *DY*) after controlling FS, *AG*, *LD*, *EV* and *EPS* variables. All the results presented in chapter 4 are measured by using REM (panel EGLS) by applying OLS method.

The study concludes that there is significant negative relationship between *SPV* and dividend policy (*DP* and *DY*) in KSE. These results are in line with results presented by Baskin (1989) and Hussainey et al. (2011) in which *DP* and *DY* have significant negative relationship with *SPV*. It means higher the *DY*/*DP* fewer will be the *SPV* over KSE, Pakistan.

There is also statistically significant positive relationship between some of control variables and *SPV* in KSE such as *AG*, *EV* and *EPS*. While remaining control variables such as size has negative relationship with *SPV* as expected but insignificant. This is in accordance to the study of Hussainey et al. (2011). Finally *LD* has also negative insignificant relationship with *SPV*. It resembles to the study of Song (2012) on Canadian stock market. Hence we conclude that significant determinant of *SPV* in current study are *DY*, *DP*, *AG*, *EV* and *EPS*.

Furthermore keeping in view the duration effect theory, companies' stock with high *DY* has less effect of discount rate (cost of capital) fluctuation leading to stable stock prices, because higher *DY* indicates cash inflow in near future (Baskin 1989). Hence a negative relationship can be expected between *SPV* and *DY* which is according to results of current study. Duration effect theory is supported in those studies where *DY* is an important regressor for *SPV* (Allen and Rachim, 1996).

Moreover seeing rate of return effect, companies with lower *DP* and lower *DY* are considered more valuable due to potential growth opportunities. But at the same time growing firms have greater uncertainty (risk) regarding future cash inflows from new investment projects as compared to returns on already placed assets. This makes the firm more risky to invest in. Hence, low *DP* and low *DY*s firms are found to have more volatile stock prices (Baskin, 1989). Rate of return theory explains clearly the inverse relationship between *DY* and *SPV*. Current study concludes with the supporting evidence to rate of return theory by expressing negative relationship between *SPV* and dividend policy in KSE.

Finally keeping in view information effect, dividend announcement presents a positive signal to the market and it also portrays consistent streams of cash inflows to the company in near future. It increases the investor's confidence over the firm soundness and results in more stability of stock prices. Consequently, *DP* and *DY* are expected to be negatively associated with volatility of stock prices (Baskin, 1989).

We have concluded from the empirical results of the study that, duration effect, rate of return effect and information effect, are all supported by results of current study on KSE. From the overall results presented in chapter 4 it is also concluded that the problem statement and research questions have been answered. We found that both dividend policy variables i.e. *DP* and *DY* are negatively related with *SPV* at 10% and 1% level of significance respectively. Study has also concluded that in Pakistan case, *DY* is more important variable for explaining role of dividend policy with volatilities of stock prices. The research objectives to find relationship of dividend policy and other determinants with *SPV* have also been achieved in this research on KSE, Pakistan.

5.2. Recommendations

This study has three important implications/recommendations for common investors, financial institutions and corporate managers of Pakistan. On the basis of results of this study it can be concluded that corporate managers of the firms listed on KSE can use dividend policy as a tool to control/manage *SPV*. They can change the *DP* ratio which will affect *DY*; as a result volatility of their company's stock can be controlled as per their corporate plans. As we know there is negative relationship between *DP*/*DY* and *SPV*, hence corporate managers requiring to reduce their *SPV*, could simply increase dividends and *viz*. Such firms can carry out a cost-benefit analysis to determine if an alternative means of financing (e.g. debt) may be more appropriate to finance their operations instead of retained earnings.

Secondly, individual investors in Pakistan can also benefit from current study. As we know investors have different tax, risk, return, cash dividends and capital gain preferences. Investors in Pakistan can construct portfolio as per their preferences (risk, return and tax) and the findings of this study can help them in this regard. Thirdly, institutional investors such as banks, insurance companies, mutual funds, pension funds can also look at dividend policy theory before constructing their portfolio models of shares in companies listed on KSE. These financial institutions have more advanced knowledge than a common investor, so they can make a better use of dividend policy literature and make their portfolio of investment as per their organization and client demands.

5.3. Limitation of the Study

The results of current study are limited to non-financial corporate sectors and are not applicable to financial sector companies such as banks, insurance companies, mutual funds and pension fund; listed on KSE. The results are generally applicable to non-financial corporate sectors and are not specifically to any particular industry listed on KSE. Again, the results are limited to data period of 2005-2012. An important observation here is that the companies failing to pay consistent dividend during this period were excluded from this analysis.

5.4. Future Research

This research can be extended to companies coming under financial sectors such as pension funds, banks, insurances companies and mutual funds listed on KSE. Also it is possible to explore relationship of dividend policy and *SPV* on KSE by including both financial and non-financial sectors at the same time such as done by Baskin on USA. Another interesting area of research could be to study the impact of an inconsistent or erratic dividend policy on stock prices.

REFERENCES

Adefila, J., Oladipo, J., Adeoti, J. (2004), The effect of dividend policy on the market price of shares in Nigeria: Case study of fifteen quoted companies. International Journal of Accounting, University of Ado-Ekiti, 2, 1-10.

Adesola, W., Okwong, A. (2009), An empirical study of dividend policy of quoted companies in Nigeria. Global Journal of Social Sciences, 8, 85-101.

Allen, D.E., Rachim, V.S. (1996), Dividend policy and stock price volatility: Australian evidence. Applied Financial Economics, 6, 175-188.

Al-Malkawi, H.A.N. (2007), Determinants of corporate dividend policy in Jordan: An application of the tobit model. Journal of Economic and Administrative Sciences, 23, 44-70.

Ang, J., Peterson, P.P. (1984), The leasing puzzle. Journal of Finance, 39(4), 1055-1065.
Arnold, G. (2008), Corporate Financial Management. Harlow: Pearson Education Ltd.
Ball, R., Brown, P., Finn, F.J., Officer, R. (1979), Dividends and the value of the firm: Evidence from the Australian equity market. Australian Journal of Management, 4, 13-26.
Baskin, J. (1989), Dividend policy and the volatility of common stocks. The Journal of Portfolio Management, 15, 19-25.
Bhattacharya, S. (1979), Imperfect information, dividend policy, and "The Bird in The Hand" fallacy. Bell Journal of Economics, 10, 259-270.
Black, F., Scholes, M. (1974), The effects of dividend yield and dividend policy on common stock prices and returns. Journal of Financial Economics, 1, 1-22.
Bodie, Z. (2009), Investments. New Delhi: Tata McGraw-Hill Education.
Brennan, M. (1971), A note on dividend irrelevance and the gordon valuation model. The Journal of Finance, 26, 1115-1121.
Campbell, J.Y., Shiller, R.J. (1988), Stock prices, earnings, and expected dividends. The Journal of Finance, 43, 661-676.
Chen, D.H., Liu, H.H., Huang, C.T. (2009), The announcement effect of cash dividend changes on share prices: An empirical analysis of China. Chinese Economy, 42, 62-85.
Fama, E.F. (1991), Efficient capital markets: Ii. The Journal of Finance, 46, 1575-1617.
Fama, E.F., French, K.R. (1988), Dividend yields and expected stock returns. Journal of Financial Economics, 22, 3-25.
Fama, E.F., French, K.R. (2001), Disappearing dividends: Changing firm characteristics or lower propensity to pay? Journal of Financial Economics, 60, 3-43.
Gaver, J.J., Gaver, K.M. (1993), Additional evidence on the association between the Investment opportunity set and corporate financing, dividend, and compensation policies. Journal of Accounting and Economics, 16, 125-160.
Gordon, M.J. (1963), Optimal investment and financing policy. The Journal of Finance, 18, 264-272.
Gordon, M.J., Shapiro, E. (1956), Capital equipment analysis: The required rate of profit. Management Science, 3, 102-110.
Hakansson, N.H. (1982), To pay or not to pay dividends. Journal of Finance, 37, 415-428.
Hashemijoo, M., Ardekani, A.M, Younesi, N. (2012), The impact of dividend policy on share price volatility in the malaysian stock market. Journal of Business Studies Quarterly, 4(1), 111-119.
Higgins, R.C. (1974), Growth, dividend policy and capital costs in the electric utility industry. The Journal of Finance, 29, 1189-1201.
Holder, M.E., Langrehr, F.W., Hexter, J.L. (1998), Dividend policy determinants: An investigation of the influences of stakeholder theory. Financial Management, 27(3), 73-82.
Hussainey, K., Mgbame, C.O., Chijoke-Mgbame, A.M. (2011), Dividend policy and share price volatility: UK evidence. Journal of Risk Finance, 12, 57-68.
Ilaboya, O.J., Aggreh, M. (2013), Dividend policy and share price volatility. Journal of Asian Development, 2(2), 109-122.
Lintner, J. (1956), Distribution of incomes of corporations among dividends, retained earnings, and taxes. The American Economic Review, 46, 97-113.
Lintner, J. (1962), Dividends, earnings, leverage, stock prices and the supply of capital to corporations. Review of Economics and Statistics, 3(54), 243-269.
Miller, M.H., Modigliani, F. (1961), Dividend policy, growth, and the valuation of shares. The Journal of Business, 34, 411-433.
Miller, M.H., Rock, K. (1985), Dividend policy under asymmetric information. The Journal of Finance, 40, 1031-1051.
Myers, S.C., Majluf, N.S. (1984), Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13, 187-221.
Olson, G.T., McCann, P.D. (1994), The linkages between dividends and earnings. Financial Review, 29, 1-22.
Okafor, C., Mgbame, C., Chijoke-Mgbame, A. (2011), Dividend policy and share price volatility in Nigeria. Journal of Research in National Development, 9, 202-210.
Pani, U. (2008), Dividend Policy and Stock Price Behaviour in Indian Corporate Sector: A Panel Data Approach. Germany: Lambert Academic Publishing.
Parkinson, M. (1980a), The extreme value method for estimating the variance of the rate of return. Journal of Business, 53(1), 61-65.
Profilet, K.A., Bacon, F.W. (2013), Dividend policy and stock price volatility in the US equity capital market. Behavioral Sciences, 20(1), 219-231.
Ramadan, I.Z. (2013), Dividend policy and price volatility. Empirical evidence from Jordan. International Journal of Academic Research in Accounting, Finance and Management Science, 3(2), 15-22.
Ross, S.A., Westerfield, R., Jordan, B.D. (2008), Fundamentals of Corporate Finance. New Delhi: Tata McGraw-Hill Education.
Rozeff, M. (1982), Growth, beta and agency costs as determinants of dividend payout ratios. Journal of Financial Research, 5, 249-259.
Song, X. (2012), The relationship between dividend policy and stock price volatility. Saint Mary's University.
Walter, J.E. (1956), Dividend policies and common stock prices. The Journal of Finance, 11, 29-41.
Walter, J.E. (1963), Dividend policy: Its influence on the value of the enterprise. The Journal of Finance, 18, 280-291.
Zakaria, Z., Muhammad, J., Zulkifli, A.H. (2012), The impact of dividend policy on the share price volatility: Malaysian construction and material companies. Management, 2, 1-8.