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# Do Liquidity and Financial Leverage Constrain the Impact of Firm Size and Dividend Payouts on Share Price in Emerging Economy

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***Abstract:*** *This study investigates the influence of liquidity position and financial leverage on the relationship of share price with firm size and dividend payouts in Pakistan by using the annual panel data of 356 non-financial firms listed on Karachi stock exchange from the period of 1999 to 2013. Pedroni panel cointegration approach confirms the valid long run relationship between considered variables. Results indicate that firm size and dividend payout have significant positive relationship with the firms' stock prices in long run. Results of causality test show the bidirectional causal relationship of firm size and dividend payout with stock prices in non-financial firms of Pakistan. The findings also support the dividend relevance theory, which means dividend payout have significantly impact on stock price, stock returns and firms' value. It is suggested that investors should invest in stock of those firms who pay higher dividend and having large firm size in order to get higher returns on their investments. On the other hand, results also suggest that the coefficient of dividend payout is more than coefficient of firm size. In the light of these findings management of firms should focus more on dividend payout than retained earnings to increase the firms' value in the market.*

***Keywords:*** Firm size, dividend payout policy, investment decision, share prices, interaction term.

## Introduction

In finance, predictions of returns of different securities through macroeconomic variables and micro (firm's level) variable is remains a serious concern of academicians, investors and fund managers. The earliest theory to predict the stock returns was capital assets pricing theory (Treynor, 1961, 1962; Sharpe, 1964; Mossin, 1966; Lintner, 1965). This theory contends that the returns of different securities mainly determined by the single risk factor. In literature the supportive material of capital assets pricing theory are heavily available (Fama & MacBeth, 1973; Lau, Quay, & Ramsey, 1974; Jagannathan & Wang, 1993; Dowen, 1988; Raza, Jawaid, Arif, & Qazi, 2011). On the other hand, some researchers also argue that the returns of any security cannot be predict by analyzing only the risk factor, there are some macroeconomic and micro (firm's level) factors are also determining the returns of different securities (Aggarwal, 1981; Soenen & Hennigar, 1988; Chatrath, Ramchander, & Song, 1997; Jawaid, Haq, et al., 2012; Raza & Jawaid, 2014; Boubaker & Raza, 2016).

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In corporate finance, the dividend policy remains a controversial issue between the higher management and investors. The higher management has to decide two things that, how much should be distributed from earned profit in the form of dividend to shareholders? And how much should be retained for the future investments or as reserves? The prime duty of management is to maximize the wealth of shareholders. Bishop, Crapp, Faff, and Twite (2000) argue that the management should consider the effects of their decisions on share price, when deciding to retain the profits for future investment.

There are two main dividend policy theories explaining the relationship between dividend payout and stock prices namely, dividend irrelevance theory (Metron & Modigliani, 1961) and dividend relevance theory (Gordon, 1963). The dividend irrelevance theory argues that the dividend policy does not affect the stock prices or firm's value. The stock prices and value of firm is only affecting by the investment policies of the firms. This theory is supported by (Black & Scholes, 1973; Chen, Firth, & Gao, 2002; Uddin & Chowdhury, 2005; Adesola & Okwong, 2009).

On the other hand, the relevance theory argues that the dividend policies have significant impact on the stock prices. The firms who pay larger amount of dividends to their shareholders get more stable returns and less volatility in stock prices. The acceptance of dividend relevance theory is supported by (John & Williams, 1985; Benartzi, Michaely, & Thaler, 1997; Myers & Frank, 2004; Dong, Robinson, & Veld, 2005; Maditinos, Sevic, Theriou, & Tsinani, 2007; Anand, 2004; Akbar & Baig, 2010).

The effect of firm size on stock price has been widely discussed in the past literature. In past studies, many of the researchers found that small firms have better stock prices and return as compare to larger firms (Banz, 1981; Stoll & Whaley, 1983; Brennan, Chordia, & Subrahmanyam, 1998, 2004; Pastor & Stambaugh, 2001; Spiegel & Wang, 2005). The most frequently mentioned explanation of better returns and stock prices of small firms is based on liquidity. The returns of larger firms are lower than smaller firms because larger firms are usually more liquid as compare to small firms, and investors are willing to compromise return for higher liquidity.

On the other hand, some of the researchers found that small firms have lower stock prices and return as compare to larger firms (Chan & Chen, 1991; Fama & French, 1996; Berk, 1995; Vassalou & Xing, 2004; Gomes, Kogan, & Zhang, 2002). The most frequently mentioned explanation of lower returns and stock prices of small firms negative response is that the small firms

The main objective of this study is to examine the impact of firm size and dividend payout on stock prices in Pakistan by using the 14 years annual data of 356 companies listed on 24 non-financial sectors of Karachi stock exchange from the period of 1999 to 2012 and by applying more rigorous technique. Furthermore, another objective of this study is to perform estimations with different interaction terms to analyze the influence of liquidity position and financial leverage on the relationship of stock price with firm size and dividend payouts. The rest of paper is organized as follow: Section 2 reviews the empirical literature on the relationship between firm size, dividend payout and stock prices. Section 3 discusses the modeling framework; section 4 shows estimations and results, section 5 discuss the results of sensitivity analyses, section 6 analyze the causal relationship between considered variables and the final section conclude the study and provide some policy implications.

# Literature Review

In this section, some selected literature has been reviewed on the relationship between firm size, dividend payout and stock prices.

Metron and Modigliani (1961) argue that the dividend policy does not affect the stock prices

or firm's value. The stock prices and value of firm is only affecting by the investment policies of the firms. Friend and Puckett (1964) examine the relationship between dividend and stock price in USA. They found the positive relationship between dividend and stock price of the firm. Black and Scholes (1973) support the dividend irrelevance theory by introducing that return on high and low yielding securities are not different. Miller and Scholes (1978) highlight that through dividend payout policy; firm cannot increase its value, as there are many firms to satisfy all types of investors.

Bhattacharya (1979) suggest that dividend payout policy plays an important part to convey information regarding the financial health of a company. Litzenberger and Ramaswamy (1982) find the positive correlation between common stock returns and dividend yield. (Baker, Farrelly, & Edelman, 1985) gather the data 562 firms listed on stock exchange of New York. They mainly collect data from three industry group namely; manufacturing, utilities and wholesale/retail. Results indicate significant relationship between dividend and stock prices. Baskin (1989) indicates significant negative relationship between dividend policy and stock price volatility. Morgan and Thomas (1998) scrutinize the relationship between dividend yield and stock return and found negative relationship between dividend yield and risk adjusted stock returns.

Allen and Rachim (1996) examine the relationship between dividend policy and stock prices and no relation is found between them. Nishat and Irfan (2004) found significant effect of dividend payout and dividend yield on stock price volatility in Pakistan. Abor and Amidu (2006) identify the determinants of dividend policy by employing panel data of 20 listed firms in Ghana stock exchange. It is found that dividend payment is negatively associated with risk. (Nazir, Nawaz, Anwar, & Ahmed, 2010) use the data of 73 non-financial firms listed on capital markets of Pakistan. Panel data have been used from 2003 to 2008. Results show the significant negative relationship of dividend policy and stock price fluctuations.

Naz, Bhatti, Ghafoor, and Husein (2011) empirically identify the impact of firm size on earning management in Pakistan by using the annual data of seventy five companies from 2006 to 2010 of Cement, Sugar and Chemical Sectors. Regression results indicate the negative but insignificant impact of firm size on earning management. Khan, Burton, and Power (2011) examine the effect of dividend policy and share price of 50 non-financial firms listed in Karachi stock exchange. Panel regression shows positive relationship between dividend yields and share prices.

In past literature, many studies have been done to analyze the relationship between firms' size and stock returns. Banz (1981) examine the size effect over a period of 45 years of US stocks, and argues that smaller firms earn higher returns as compare to big firms. Stoll and Whaley (1983) conclude that the returns of larger firms are lower that smaller firms because larger firms are usually more liquid as compare to small firms, and investors are willing to compromise return for higher liquidity. Brown, Kleidon, and Marsh (1983) identify the firms' size effect in Australian stock market and conclude that although the positive impact of firm size is exist in Australian firms but this impact is not stable through time horizon.

(Fama & French, 1993) present the three factor model theory which argues that risk is not the only factor which effect the stock returns, firm size also have an significant impact on stock returns. Horowitz, Loughran, and Savin (2000) identify that the firm size effects are no longer prevalent in stock markets of US. Johnson and Soenen (2003) examine the effect of firm size on firms' performance by using the data of 478 firms of USA from the period of 1982 to 1998. They conclude that big size firms with high level advertising expenditure are more profitable and also having better performance and stock returns. Daniati (2006) analyze the effect of firm size on stock returns by using the data of automotive and textile sectors firms listed on Jakarta stock exchange. Results indicate that the size of the firm has significantly effect on stock prices and stock returns.

# Methodology

In this study, 15 years annual panel data of 356 companies listed on 24 non-financial sectors of Karachi stock exchange have been used from 1999 to 2013. All data are acquired from official website and publications of balance sheet analysis of State bank of Pakistan. All variables are used in logarithm form. After reviewing the empirical studies, the model to analyze the relationship between stock price, firm size and dividend payouts in Pakistan is determined by following function:

$$SP_{i,t} = \alpha_o + \beta_1 GDPG_{i,t} + \beta_2 INF_{i,t} + \beta_3 ROA_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 TAX_{i,t} + \beta_6 LEV_{i,t} + \beta_7 SG_{i,t} + \beta_8 FS_{i,t} + \beta_9 DP_{i,t} + \epsilon_{i,t}$$

In the above model i represent the number of firms in the panel and t represents the number of observations over time. SP is average share price of firms, GDPG is the rate of economic growth which is measured by growth in gross domestic product, INF is inflation which is measured by consumer price index, ROA is return on assets which is measured by total revenues divided by total assets, LIQ is liquidity which is measured by the ratio of current assets to current liabilities, TAX is taxation in terms of ratio of tax to operating income before tax, LEV is financial leverage which is measured by total debts divided by total assets, SG is growth in sales FS is firm size which is measured by total assets and DP is annual dividend payouts.

Im, Pesaran and Shin, and Levin, Lin and Chu panel unit root test have been used to analyze the stationary properties of variables. Common unit root process is the assumption of Levin, Lin and Chu test. The Levin, Lin and Chu test considers the following fundamental ADF specifications:

$$\Delta y_{it} = \alpha y_{i,t-1} + \sum_{j=1}^{pi} \beta_{i,j} \Delta y_{i,t-1} + X'_{it}\delta + \epsilon_{it}$$

Where $\Delta Y_{it}$ is the corresponding panel data series in differenced term, $\alpha = q - 1$, q is the lag order for $\Delta Y_{it}$ that may fall and rise for cross section and $X'_{it}$ is the exogenous variable in the model. Individual unit root procedure is allowed in Im, Pesaran, and Shin panel unit root test. This unit root test combines the individual unit root test to derive a panel specific result. The present study also employs the Pedroni (1999) panel cointegration technique to analyze the long run relationship among variables. In this study we use fixed effect model, Pooled ordinary least square method and Generalized Methods of Moments (GMM) method to analyze the long run coefficients. We have also used Granger causality test to analyze the causal relationship between considered variables.

# Results and Estimations

To check the stationary properties of variables, we use Im, Pesaran and Shin and Levin, Lin and Chu panel unit root tests. Table 1 represents the results of stationary tests. These tests are applied first on the level of variables then on their first difference.

Results of table 1 show that all variables are stationary and integrated at first difference. This implies that the series of variables may exhibit a valid long run relationship.

Since the stationary results from unit root tests confirm that each series of variable are integrated of order one. The panel cointegration technique developed by (Pedroni, 1999) has been used to analyze the long run relationship between our considered variables. The Pedroni's panel cointegration approach has several advantages upon other cointegration methods of panel data.

**Table 1**
Stationary Test Results

| Variables | Im, Pesaran and Shin | | | | Levin, Lin and Chu | | | |
|---|---|---|---|---|---|---|---|---|
| | I(0) | | I(1) | | I(0) | | I(1) | |
| | C | C&T | C | C&T | C | C&T | C | C&T |
| **SP** | -0.102 | -0.138 | -4.123* | -4.912* | -0.584 | -0.578 | -4.470* | -5.125* |
| **GDPG** | -0.136 | -0.868 | -3.813* | -3.255* | -0.614 | -0.752 | -2.987* | -3.568* |
| **INF** | -0.586 | -0.783 | -1.588*** | -4.847* | -0.487 | -1.144 | -1.997** | -4.256* |
| **ROA** | 0.18 | 0.987 | -1.797** | -3.681* | 0.285 | 1.029 | -3.907* | -4.356* |
| **LIQ** | -0.954 | -1.416 | -4.258* | -4.997* | -0.725 | -1.112 | -5.458* | -5.587* |
| **TAX** | -1.058 | -1.498 | -3.258* | -1.989** | -0.92 | -1.084 | -5.025* | -3.505* |
| **LEV** | -0.758 | -1.126 | -2.014** | -4.586* | -0.875 | -1.179 | -4.125* | -7.125* |
| **SG** | -0.603 | -1.12 | -3.869* | -4.258* | -0.545 | -0.772 | -4.279* | -5.009* |
| **FS** | -0.398 | -1.152 | -5.259* | -4.879* | -0.425 | -1.256 | -6.659* | -6.045* |
| **DP** | -0.748 | 0.966 | -3.558* | 4.472* | -0.786 | -0.947 | -4.047* | -3.670* |

*, **, *** indicates significance level respectively at 1%, 5% and 10%.
Source: Authors' estimation.

This approach controls the biasness from country size and also solves the issue of heterogeneity. A panel cointegration technique is examined by analyzing the variables and residuals of a model. The variables should be cointegrated on I(1) while the residuals should be I(0) if the variables are cointegrated. The residuals of the hypothesized cointegration equation can be established from the following equation:

$$SP_{i,t} = \alpha_i + \beta_i^1 GDPG_{i,t} + \beta_i^2 INF_{i,t} + \beta_i^3 ROA_{i,t} + \beta_i^4 LIQ_{i,t} + \beta_i^5 TAX_{i,t} + \beta_i^6 LEV_{i,t} + \beta_i^7 SG_{i,t} + \beta_i^8 FS_{i,t} + \beta_i^9 DP_{i,t} + \emptyset_{it} + \epsilon_{i,t}$$

Where i=1,...,N; t=1,...,T, and N is the number of countries in the panel and T is the number of observations over time. The estimated residuals become:

$$\epsilon_{it} = \rho_i \epsilon_{it-1} + \nu_{it}$$

With the null hypothesis of no cointegration, the residual is I(1) and $\rho_i = 1$. There are two alternative hypotheses. First, the homogenous alternative (within dimension test), $(\rho_i = \rho) < 1$ for all i, and second, heterogeneous alternative (between dimension or group statistics) $\rho_i = 1 <$ 1 for all i.

Pedroni (1999) panel cointegration technique is based on seven panel conitegration statistics. Four of these statistics are based on within dimension test while, the other three statistics is based on group statistics approach by using the appropriate mean and variance, the asymptotic distribution of these statistics follows a normal distribution (Pedroni, 2004).

$$K = \frac{K_{NT} - \mu\sqrt{N}}{\sqrt{\nu}} => N(0,1)$$

Where $K_NT$ represents the corresponding form of test statistics with respect to N and T. $\mu$ and $\nu$ are the moments of the Brownian function that are given in Pedroni (1999). Numerical values of $\mu$ and $\nu$ depend upon the presence of a constant, time trend, and the number of regressors in the cointegration test regression. Results of Pedroni's panel cointegration are presented in table 2.

**Table 2**
Panel Cointegration

| **Estimates** | **Stats.** | **Prob.** |
|---|---|---|
| **SP = f (GDPG+INF+ROA+LIQ+TAX+LEV+SG+FS+DP)** | | |
| Panel v-statistic | -3.431 | 0.000 |
| Panel rho-statistic | -2.977 | 0.002 |
| Panel PP statistic | -3.224 | 0.001 |
| Panel ADF statistic | -1.989 | 0.023 |
| Alternative Hypothesis: Individual AR Coefficient | | |
| Group rho-statistic | -4.265 | 0.000 |
| Group PP statistic | -3.668 | 0.000 |
| Group ADF statistic | -3.023 | 0.001 |
| **SP = f (GDPG+INF+ROA+TAX+LEV+SG+DP+FS x LIQ)** | | |
| Panel v-statistic | -7.406 | 0.000 |
| Panel rho-statistic | -4.729 | 0.000 |
| Panel PP statistic | -4.341 | 0.000 |
| Panel ADF statistic | -3.941 | 0.000 |
| Alternative Hypothesis: Individual AR Coefficient | | |
| Group rho-statistic | -4.832 | 0.000 |
| Group PP statistic | -6.315 | 0.000 |
| Group ADF statistic | -3.913 | 0.000 |
| **SP = f (GDPG+INF+ROA+LIQ+TAX+SG+DP+FS x LEV)** | | |
| Panel v-statistic | -4.871 | 0.000 |
| Panel rho-statistic | -4.376 | 0.000 |
| Panel PP statistic | -2.158 | 0.016 |
| Panel ADF statistic | -3.055 | 0.001 |
| Alternative Hypothesis: Individual AR Coefficient | | |
| Group rho-statistic | 2.335 | 0.000 |
| Group PP statistic | -4.221 | 0.000 |
| Group ADF statistic | -2.78 | 0.003 |
| **SP = f (GDPG+INF+ROA+TAX+LEV+SG+FS+DP x LIQ)** | | |
| Panel v-statistic | -3.75 | 0.000 |
| Panel rho-statistic | -5.898 | 0.000 |
| Panel PP statistic | -1.361 | 0.087 |
| Panel ADF statistic | -2.202 | 0.014 |
| Alternative Hypothesis: Individual AR Coefficient | | |
| Group rho-statistic | -4.033 | 0.000 |
| Group PP statistic | -4.758 | 0.000 |
| Group ADF statistic | -4.186 | 0.000 |
| **SP = f (GDPG+INF+ROA+LIQ+TAX+SG+FS+DP x LEV)** | | |
| Panel v-statistic | -9.586 | 0.000 |
| Panel rho-statistic | -4.751 | 0.000 |
| Panel PP statistic | -4.377 | 0.000 |
| Panel ADF statistic | -3.574 | 0.000 |
| Alternative Hypothesis: Individual AR Coefficient | | |
| Group rho-statistic | 4.989 | 0.000 |
| Group PP statistic | -3.965 | 0.000 |
| Group ADF statistic | -3.877 | 0.000 |

The null hypothesis of Pedroni (2004) panel cointegration procedure is no cointegration.
Source: Authors' estimation.

Results indicate that all the seven test statistics based on both within dimension and group based approach statistics demonstrate the rejection of null hypothesis of no cointegration in the favor of alternative that all considered variables are cointegrated in Pakistan. Gutierrez (2003) argues that group statistics has the best power to judge the cointegration among the test statisctics of Pedroni (1999). It is concluded that our selected variables exhibit a valid long run relationship.

**Table 3**
Hypothesis Test

| **Null Hypothesis** | **Stats.** | **Prob.** |
|---|---|---|
| **Cross Section Effects** | 173.026 | 0.000 |
| **Time Effects** | 99.046 | 0.000 |
| **Hausman Test** | 16.037 | 0.000 |
| **Wu-Hausman Test** | 9.578 | 0.000 |

Source: Authors Estimation

Results of different hypothesis testing are presented in table 3. Wald test is used to analyze the cross section effects and period effects in the model (Greene, 2000). First we test the cross section effects; the null hypothesis is that the cross section effects are absent. The second null hypothesis for period effects is that the period effects are absent. Results of Wald test indicate that both hypothesis are rejected and there is a significantly difference in share price between firms and over time.

Hausman test is used to identify the most preferable method between fixed effects model (FEM) and random effects model (REM) (Greene, 2000; Raza, Jawaid, & Siddiqui, 2016; Azam & Raza, 2016). The null hypothesis of hausman test is that the cross section effects are uncorrelated with the other regressors in the model (Hausman, 1978). If the cross section effect is correlated (null hypothesis is rejected), a random effect model violating the basic assumption of Gauss-Markov and produces biased estimators. If null hypothesis is rejected then fixed effect model is preferred one. Consequently if the null hypothesis is accepted then the estimated result of random effect model is preferred and should be focused on random effect model's results hereafter. The results of Hausman test indicate that alternative hypothesis is accepted and fixed effect model is preferred.

Wu-Hausman test is used to analyze the exogenous properties of the estimated model (Greene, 2000). The rejection of null hypothesis indicates the presence of endogeneity in the model. The endogeneity is an issue when there is a correlation between the parameters and the error term. The results of Wu-Hausman test indicate that null hypothesis is not rejected that's mean there is no simultaneity exist between considered variables. The acceptance of null hypothesis also concludes that the estimators are unbiased and consistent (Greene, 2000).

Table 4 shows the results of long run estimations. Results suggest that the economic growth has a positive and significant impact on share price in all four models which explains that economic growth is a key indicator to enhance the market value of non-financial firms of Pakistan. Results also suggest the positive and significant impact of return on assets on share price which means that those firms which are efficiently utilizing their assets are hiving high share prices. Results of liquidity show a positive and significant impact on share price which means that those firms who have more availability of resource to pay their short term liability, have high share prices. Results of sales growth are also showing positive and significant impact on share price. The above discussion is representing that, investors prefer to invest in the period of economic growth. The investors also prefer those firms to invest who have high liquidity ratio, efficient utilization of assets and having a growing turnover.

**Table 4**
Results of Fixed Effect Estimates of Stock Price model for Pakistan

| **Variables** | **I** | | | **II** | | | **III** | | | **IV** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** |
| **C** | 0.172 | 0.989 | 0.324 | 0.224 | 0.177 | 0.859 | 0.281 | 0.769 | 0.442 | 0.171 | 0.079 | 0.937 |
| **GDPG** | 0.361 | 18.566 | 0.000 | 0.283 | 3.795 | 0.000 | 0.289 | 3.428 | 0.001 | 0.377 | 8.357 | 0.000 |
| **INF** | -0.029 | -0.191 | 0.849 | -0.030 | -0.931 | 0.352 | -0.021 | -0.998 | 0.319 | -0.027 | -1.235 | 0.218 |
| **ROA** | 0.130 | 3.014 | 0.003 | 0.133 | 2.798 | 0.005 | 0.125 | 2.151 | 0.032 | 0.183 | 8.276 | 0.000 |
| **LIQ** | 0.019 | 4.883 | 0.000 | 0.013 | 2.403 | 0.017 | 0.017 | 2.129 | 0.034 | 0.019 | 1.751 | 0.081 |
| **TAX** | -0.001 | -1.473 | 0.142 | -0.015 | -0.477 | 0.633 | -0.009 | -1.528 | 0.127 | -0.018 | -0.766 | 0.444 |
| **LEV** | -0.164 | -1.806 | 0.072 | -0.173 | -4.787 | 0.000 | -0.149 | -1.888 | 0.060 | -0.129 | -2.580 | 0.010 |
| **SG** | 0.343 | 2.341 | 0.020 | 0.313 | 2.597 | 0.010 | 0.339 | 2.280 | 0.023 | 0.370 | 2.743 | 0.007 |
| **FS** | | | | 0.318 | 3.071 | 0.002 | | | | 0.313 | 8.097 | 0.000 |
| **DP** | | | | | | | 0.433 | 6.978 | 0.000 | 0.428 | 3.016 | 0.003 |
| **Adj. R2** | 0.348 | | | 0.372 | | | 0.378 | | | 0.416 | | |
| **F-stats** | 21.998 (0.000) | | | 23.986 (0.000) | | | 25.118 (0.000) | | | 29.258 (0.000) | | |

Source: Authors Estimation

Results indicate the negative and significant impact of financial leverage on share price which means that those firms who have low debt ratio have high share prices. Results indicate the positive and significant impact of firm size and dividend payout on stock prices. The coefficient of firm size indicates that in long run 1% increase in firm size causes the increase in the stock prices by 0.31%. The coefficient of dividend payout indicates that in long run 1% increase in dividend payout causes the increase in stock prices by 0.43%. Results suggest that the both variables firm size and dividend payout are contributing positively to stock prices in non-financial firms of Pakistan and both indicators are proved to be main determinants of stock prices in non-financial firms of Pakistan. The findings also support the dividend relevance theory, which means dividend payout have significantly impact on stock price, stock returns and firms? value. The above discussion is representing that investors are preferred those firms which have low ratio of financial leverage or have low debt. The investors also prefer big firms which pay high dividend payouts. Results show the insignificant impact of inflation and taxation on share price of nonfinancial firms of Pakistan.

Table 5 represents the fixed effect results of interaction terms of firm size, dividend payout, liquidity and financial leverage. The objective of these estimations is to analyze the influence of liquidity position and financial leverage on the relationship of stock price with firm size and dividend payouts. Results of interaction term of firm size and liquidity shows a positive but insignificant impact on share price. It is representing that investors less consider those big firms which has good liquidity ratio. Results of interaction term of firm size and financial leverage shows a negative and significant impact on share price that's mean that, investors more consider those big firms which have low ratio of financial leverage. Results of interaction term of dividend payout and liquidity and interaction term of dividend payout and financial leverage both show a positive and significant impact on share price. It is representing that the investors more consider those firms which are paying good dividend payouts and also having good availability of resources to pay their short and long run liabilities.

**Table 5**
Fixed Effect results of Interaction terms of Firm Size, Dividend Payout, Liquidity and Financial Leverage

| **Variables** | **I** | | | **II** | | | **III** | | | **IV** | | | **V** | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** |
| **C** | 0.171 | 0.079 | 0.937 | 0.149 | 0.152 | 0.880 | 0.147 | 1.054 | 0.293 | 0.199 | 1.461 | 0.145 | 0.271 | 0.796 | 0.427 |
| **GDPG** | 0.377 | 8.357 | 0.000 | 0.367 | 8.358 | 0.000 | 0.311 | 8.608 | 0.000 | 0.317 | 6.978 | 0.000 | 0.313 | 17.177 | 0.000 |
| **INF** | -0.027 | -1.235 | 0.218 | -0.064 | -1.431 | 0.153 | -0.020 | -0.437 | 0.662 | -0.036 | -1.541 | 0.124 | -0.030 | -0.661 | 0.509 |
| **ROA** | 0.183 | 8.276 | 0.000 | 0.256 | 2.253 | 0.025 | 0.133 | 2.561 | 0.011 | 0.291 | 3.016 | 0.003 | 0.205 | 4.284 | 0.000 |
| **LIQ** | 0.019 | 1.751 | 0.081 | | | | 0.015 | 1.819 | 0.070 | | | | 0.017 | 2.953 | 0.003 |
| **TAX** | -0.018 | -0.766 | 0.444 | -0.067 | -0.604 | 0.547 | -0.011 | -0.931 | 0.353 | -0.019 | -0.610 | 0.542 | -0.085 | -0.417 | 0.677 |
| **LEV** | -0.129 | -2.580 | 0.010 | -0.140 | -2.474 | 0.014 | | | | -0.167 | -2.877 | 0.004 | | | |
| **SG** | 0.370 | 2.743 | 0.007 | 0.312 | 2.141 | 0.033 | 0.315 | 2.815 | 0.005 | 0.316 | 2.370 | 0.019 | 0.323 | 2.223 | 0.027 |
| **FS** | 0.313 | 8.097 | 0.000 | | | | | | | 0.374 | 6.957 | 0.000 | 0.317 | 2.789 | 0.006 |
| **DP** | 0.428 | 3.016 | 0.003 | 0.437 | 2.125 | 0.034 | 0.430 | 8.618 | 0.000 | | | | | | |
| **FS x LIQ** | | | | 0.331 | 0.539 | 0.590 | | | | | | | | | |
| **FS x LEV** | | | | | | | 0.382 | 2.703 | 0.007 | | | | | | |
| **DP x LIQ** | | | | | | | | | | 0.435 | 2.162 | 0.031 | | | |
| **DP x LEV** | | | | | | | | | | | | | 0.480 | 3.815 | 0.000 |
| **Adj. R2** | 0.416 | | | 0.381 | | | 0.371 | | | 0.401 | | | 0.411 | | |
| **F-stats (Prob.)** | 29.258 (0.000) | | | 28.125 (0.000) | | | 31.741 (0.000) | | | 29.127 (0.000) | | | 30.458 (0.000) | | |

Note: Dependent variable is stock price
Source: Authors Estimation

## Sensitivity Analysis

In this section to check the robustness of initial results two different sensitivity analyses have been performed namely; pooled ordinary least square (POLS) and generalized methods of moments (GMM).

**Table 6**
Results of Sensitivity Analysis

| Variables | Pooled | | | GMM | | |
|---|---|---|---|---|---|---|
| | **Coeff.** | **t-stats** | **Prob.** | **Coeff.** | **t-stats** | **Prob.** |
| **C** | 0.192 | 0.141 | 0.888 | 0.188 | 1.562 | 0.119 |
| **GDPG** | 0.314 | 8.398 | 0.000 | 0.334 | 8.419 | 0.000 |
| **INF** | -0.022 | -1.414 | 0.158 | -0.016 | -0.222 | 0.824 |
| **ROA** | 0.185 | 2.463 | 0.014 | 0.158 | 2.213 | 0.028 |
| **LIQ** | 0.017 | 1.830 | 0.068 | 0.017 | 2.695 | 0.007 |
| **TAX** | -0.010 | -0.532 | 0.595 | -0.067 | -1.087 | 0.278 |
| **LEV** | -0.138 | -2.113 | 0.035 | -0.141 | -1.715 | 0.088 |
| **SG** | 0.312 | 2.697 | 0.007 | 0.312 | 2.161 | 0.031 |
| **FS** | 0.328 | 8.244 | 0.000 | 0.335 | 8.509 | 0.000 |
| **DP** | 0.432 | 2.563 | 0.011 | 0.436 | 2.186 | 0.030 |
| **Adj. R2** | | 0.448 | | | 0.412 | |

Source: Authors' Estimation

## Pooled Ordinary Least Square (POLS)

The robustness in the initial results of share price model is firstly examined by using pooled ordinary least square (POLS) estimations procedure. Attanasio, Picci, and Scorcu (2000) argue that even simple OLS estimations may be appropriate when the sample period is big enough. In table 6 the results of pooled ordinary least square estimations of bank performance model confirms that the coefficients of all considered independent variables remain same sign and significance after using simple pooled ordinary least square estimations.

## Generalized Methods of Moments (GMM)

The robustness in the initial results of bank performance model is secondly examined by generalized methods of moments (GMM) estimations procedure. Generalized Method of Moments (GMM) technique for panel data first developed by Arellano and Bond (1991) and later subsequently expanded by Blundell and Bond (1998). We have employed generalized methods of moments (GMM) technique in order to avoid for the possible endogeneity.

Table 6 also represents the results of generalized methods of moments estimations of share price model. Results confirm that the coefficients of all considered independent variables remain same sign and significance after using the GMM.

From above, both sensitivity analyses show that the coefficient of considered independents variables have remained same sign and significance even magnitude is also almost same as in fixed effect model. These findings confirm that the initial results are robust.

## Granger Causality Analysis

The direction of causality between dependent and independent variables is analyzed by panel Granger causality test. We determine the causality analysis of our share price model on lag one.

Jones (1989) favors the ad hoc selection method for lag length in Granger causality test over some of other statistical method to determine optimal lag. The results of Granger causality test are reported in table 7.

**Table 7**
Results of Panel Granger Causality Test

| **Variables** | **F-Stats** | **Prob.** |
|---|---|---|
| GDPG does not Granger Cause SP | 11.941 | 0.001 |
| SP does not Granger Cause GDPG | 1.341 | 0.248 |
| INF does not Granger Cause SP | 0.138 | 0.710 |
| SP does not Granger Cause INF | 0.272 | 0.602 |
| ROA does not Granger Cause SP | 9.652 | 0.002 |
| SP does not Granger Cause ROA | 0.107 | 0.744 |
| LIQ does not Granger Cause SP | 8.253 | 0.004 |
| SP does not Granger Cause LIQ | 0.229 | 0.633 |
| TAX does not Granger Cause SP | 1.695 | 0.194 |
| SP does not Granger Cause TAX | 0.064 | 0.801 |
| LEV does not Granger Cause SP | 14.454 | 0.000 |
| SP does not Granger Cause LEV | 0.824 | 0.365 |
| SG does not Granger Cause SP | 17.060 | 0.000 |
| SP does not Granger Cause SG | 8.047 | 0.005 |
| FS does not Granger Cause SP | 9.112 | 0.000 |
| SP does not Granger Cause FS | 5.243 | 0.023 |
| DP does not Granger Cause SP | 10.404 | 0.001 |
| SP does not Granger Cause DP | 20.492 | 0.000 |

Note: The lag length of all focus variables is 1.
Source: Authors' Estimation

Results of table 7 confirm that the bidirectional causal relationship of stock price is found with firm size, dividend payouts and sales growth in nonfinancial firms of Pakistan. On the other side, unidirectional causal relationship of stock price is found with economic growth, return on assets, liquidity and financial leverage. The direction of causality runs from independent variables to stock price. The results also suggest that there is no causal relationship of bank performance with inflation and taxation in nonfinancial firms of Pakistan.

# Conclusion and Recommendation

This study investigates the influence of liquidity position and financial leverage on the relationship of share price with firm size and dividend payouts in Pakistan by using the annual panel data of 356 non-financial firms listed on Karachi stock exchange from the period of 1999 to 2013. Pedroni panel cointegration approach confirms the valid long run relationship between considered variables. Results indicate that firm size and dividend payout have significant positive relationship with the firms' stock prices in long run. Results of causality test show the bidirectional causal relationship of firm size and dividend payout with stock prices in non-financial firms of Pakistan.

Results suggest that the both variables firm size and dividend payout are contributing positively to stock prices in non-financial firms of Pakistan and both indicators are proved to be main determinants of stock prices in non-financial firms of Pakistan. The findings also support the dividend relevance theory, which means dividend payout have significantly impact on stock price, stock returns and firms' value. It is suggested that investors should invest in stock of those firms who pay higher dividend and having large firm size in order to get higher returns on their investments. On the other hand, results also suggest that the coefficient of dividend payout is more than coefficient of firm size. In the light of these findings management of firms should focus more on dividend payout than retained earnings to increase the firms' value in the market.

It is recommended that the investors prefer to invest in the period of economic growth. The investors also prefer those firms to invest who have high liquidity ratio, efficient utilization of assets and having a growing turnover. The investors also prefer those firms which have low ratio of financial leverage or have low debt, pay high dividend payouts. Results of interaction terms of firm size, liquidity and financial leverage suggest that investors less consider those big firms which has good liquidity ratio. Conversely, investors more consider those big firms which have low ratio of financial leverage. Results of interaction term of dividend payout, liquidity and financial leverage suggest that the investors more consider those firms which are paying good dividend payouts and also having good availability of resources to pay their short and long run liabilities.

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