The Role of Stock Market Development in Influencing the Firms Performance: A Study Based on Pakistan Stock Market

Sophee Sulong[1], Qasim Saleem[1] & Zeeshan Ahmed[2]

[1] Department of Finance and Economy (FEB), University of Sarawak (UNIMAS), Kota Samaharan, Malaysia

[2] Department of Lahore Business School (LBS), University of Lahore (UOL), Gujrat Campus, Punjab, Pakistan

Correspondence: Qasim Saleem, Department of Finance and Economy (FEB), University of Sarawak (UNIMAS), Kota Samaharan, Malaysia. E-mail: qami2006@yahoo.com

Abstract

The study aims to examine the role of stock market development in influencing the performance of non financial firms listed on Pakistan Stock Exchange from 2001 to 2017. Stock market development is a foremost issue of debate nowadays in emerging and developing economies. The theories and empirical studies strongly refer that stock market development is a tool to mobilize the savings and investment to promote the industrialization and firms performance. This study is an effort to establish the empirical relationship between stock market development and firm's performance. Three indicators of stock market development like stock market volatility,stock market liquidity and stock market liquidity are used for assessing the book and market performance of firms. For this purpose two-step system Generalized Method of Moments (GMM) estimator was employed in a dynamic panel model for empirical testing of hypothesis. The findings indicates that stock market volatility is a significant factor which which attempts to decrease the firm performance. On the other hand, stock market capitalization and stock market liquidity significantly causes the increase in firm firm performance.

Keywords: stock market development, stock market capitalization, stock market liquidity, Pakistan Stock Exchange, firm performance

1. Introduction

A well-developed financial system improves the efficiency of capital allocation with more productive investments (Rafael et al., 1999). Furthermore, equity markets are illiquid and highly concentrated which play a prominent role in the development of the stock market and are considered as main factors of stock market development. It seems to assume that stock market measures the ability of firms to mobilize the capital and their performance (Bokpin & Ishaq, 2008). Notably, the equity markets and firms operating in stock markets are facing the serious issues related to their performance after the financial crisis. A large part of the savings of an economy is intermediated with productive investments through financial markets and intermediaries (Levine, 1997). Since capital accumulation is a fundamental determinant for the long-term growth of any firm and an efficient financial system is essential for the development of an economy. Therefore, stock market development plays an important role for predicting the future economic growth and survival of firms (Kunt & Maksimovic, 1996; Singh, 1997; Levine & Zervos, 1998).

Developed stock markets are more liquid, less volatile, highly concentrated and is associated with high stock market capitalization. Existing models suggested that stock market development is a multifaceted concept involving issues of market size, liquidity, volatility, concentration, integration with world capital markets, and institutional development. The development of stock market is likely to be affected by stock market volatility, stock market capitalization, and trading volume. All these indicators play a decisive role for the development of stock market which in turn increases the performance of firms. This leads to the expectations that as the stock market develops, firms would prefer equity financing over debt financing in return less burden on firms' profits (Agarwal & Mohtadi, 2004).

Numerous studies has been done in relation to macroeconomic factors and firm specific factors in the way of stock market development at aggregate and firm level. In Pakistan number of studies has been done on stock market development but no empirical study has been done on the role of stock market development in influencing

the firms performance. The study enlarge the theoretical span of stock market development which influence the firms' performance in a dynamic panel model. This is the first empirical study that addresses the role of stock market development in influencing the performance of non-financial firms' listed on Pakistan Stock Exchange. The study have provided new insight about the role of stock market development in influencing the firms' performance. The study also incorporated the additional measure of firm performance (Tobin Q) which is a market measure of firms' performance. It has provided a better explanation about the role of stock market development in the market performance of firms such as Tobin 'Q'. Moreover, the study attempts to contribute in the existing empirical evidence through dynamic panel model.

1.1 Stock Market Development in Pakistan

It is widely known in finance research that the development of the stock market is very important for economic development and for firms operating in any country. Pakistani stock market is one of the emerging and developing market in this stage which affects the overall economy and companies' performance. It is one of the most leading and liquid stock exchange of financial capital established in Pakistan. There are 35 sectors listed on Pakistan Stock Exchange, which contribute to total stock market capitalization.

According to the Pakistan Economic Survey (Government of Pakistan, 2007), for the fiscal year 2006–07, Pakistan's GDP is estimated to be US$143 billion. This makes stock market capitalization approximately 49 per cent of GDP. KSE 100 index is the most popular way that tracks the overall stock prices in the market. It is a market capitalization-weighted index of 100 stocks which included the largest market capitalization firms from each of the 35 sectors. The securities traded in the market included ordinary shares, preference shares, redeemable certificates and term-finance certificates (corporate bonds). where ordinary shares is the most traded security.

Table 1 shows that market capitalization has an increasing trend which means the higher market capitalization of firm and higher liquidity of stocks traded in the market. A total 652 companies were listed in 2010 with share capital of Rs. 910 billion, and a market capitalization of Rs 2774.5 billion and total share volume was Rs 42,959 million. Stock market capitalization tends to have an increasing trend and reached to an amount of Rs 7,306 in 2015, indicating a major determinant of stock market development.

Table 2 shows that PSE-100 index has an upward trend from 2001-2007 and reached its peak with 14075.83 points. The declining trend can be observed in 2008 due to the world financial crisis and big loss due to variations in market capitalization, high stock market volatility, stock market liquidity and uncertain behavior. Moreover, firms' performance is badly affected by these factors and investors are reluctant to invest in stock markets due to poor performance of the stock market (Economic Survey of Pakistan, 2009). The Pakistan Stock Exchange (PSE) 100 index started to decrease from 12022.46 points in 2010 to 11347.66 points in 2011. This decrease is only 674.8 points in the index, but aggregate market capitalization had increased from 2775 Billion in 2010 to Rs 3317 billion in 2011.

Table 1. Pakistan stock exchange

Description	2010	2011	2012	2013	2014	2015
Total Listed Companies	652	639	591	569	559	560
New Companies Listed	8	1	3	4	4	6
Funds Mobilization (Billion)	112	31	115	30	38	29
Total Listed Capital (Billions)	910	944	1,070	1,116	1,153	1,178
Total Market Capitalization (Billions)	2,775	3,317	3,493	5,337	7,023	7,306
Total Share Volume (Millions)	42,959	28,018	38,100	54,319	48,494	38,328
Average Daily Share Volume (Millions)	173	117	150	221	237	186

Source: State Bank of Pakistan, Economic Survey and Pakistan Stock Exchange (2010-2015).

Table 2. PSE 100 Index (Pakistan) yearly returns

Years	Beginning Price	Ending Price	Gain or Loss	Percent Gain/ Loss
2001	1507.59	1273.06	-234.53	-15.56%
2002	1273.06	2701.42	1428.36	112.20%
2003	2701.42	4471.82	1770.4	65.54%
2004	4471.82	6218.46	1746.64	39.06%
2005	6218.46	9556.61	3338.15	53.68%

2006	9556.61	10040.5	483.89	5.06%
2007	10040.5	14075.83	4035.33	40.19%
2008	14075.83	5865.01	-8210.82	-58.33%
2009	5865.01	9386.92	3521.91	60.05%
2010	9386.92	12022.46	2635.54	28.08%
2011	12022.46	11347.66	-674.8	-5.61%
2012	11347.66	16905.33	5557.67	48.98%
2013	16905.33	25261.14	8355.81	49.43%
2014	25261.14	32131.28	6870.14	27.20%
2015	32131.28	32816.31	685.03	2.13%
2016	32816.31	47806.97	14990.66	45.68%

Source: Pakistan Stock Exchange (2010-2016).

1.2 Problem Statement

Most of the researchers think that stock market development is good for country's growth and firm performance (Valeriano, 1999; Kunt & Levine, 1996; Singh, 1997; Levine & Zervos, 1998; Booth et al., 2001; Morck et al., 1988; Yermack, 1996; Gompers et al., 2003). Some scholars believe it is not by (Stiglitz, 1994; Shleifer & Vishny, 1986; Bencivenga & Smith 1991; Bhide, 1993; Singh, 1997). There is some ambiguity about this issue. How this issue will be resolved and what is actual truth and scenario?. As an emerging market, Pakistan Stock Market is not stable and highly volatile due to unanticipated market shocks. Also, the stock market volatility affects the stock market liquidity, and it happens because of too much variation of stock market prices. This leads to low level of investors' confidence due to reliability issues in the stock market, and as a result, it indicates the unreliable economic growth and firm's stock prices (Ali et al., 2010).

1.3 Study Objective

The study attempts to investigate the general objective about the role of stock market development in influencing the performance of non-financial firms. For this purpose, the study developed the specific objectives. First, to analyze the role of stock market volatility in influencing the firm performance. Secondly, to analyze the impact of stock market capitalization on firm's performance. Thirdly, the study aims to analyze the impact of stock market liquidity on the performance of non-financial firms listed on Pakistan Stock Exchange.

2. Literature Review

Firms Performance is the mainstream theme of corporate finance and is a crucial component for financing decisions. The firms' performance and the components of the firms' performance are the most extensive research area in the field of finance. A well-developed stock market minimizes the cost, maximizes the benefits and increases the firms' performance (Myers & Majluf, 1984). In this way, they can achieve the objective of maximization of shareholder's wealth.

The amount of book and market values of equity depends upon the stock market development. Firm performance depends upon this development of the stock market and other firm-specific factors. These factors are the firm's characteristics, availability of funds, market timing, market conditions, business risk, macroeconomic conditions and development of stock markets which directly affect the firms' performance. Moreover, performance of firm changes over the period of time with the growth and changes in regulatory framework as well as capital market conditions (Mahmud & Qayyum, 2003). Along with these factors, stock market development is one factor which is also likely to affect the performance of firms.

Moreover, the factors like stock market capitalization, stock market volatility and stock market liquidity play an immense role in the development of stock market. As the stock market continues to develop, investors and firms are confident about their investment. Firms are sure about their investments and future stream of incomes which is likely to increase the performance of firms. Moreover, performance of firm changes over the period of time with the growth and changes in regulatory framework as well as capital market conditions (Mahmud & Qayyum, 2003). Along with these factors, stock market development is one factor which is also likely to affect the performance of firms.

The pecking order hypothesis suggested that firm issues equity in the stock market when stock market overvalues it or develops. In the case of information asymmetry in the market, they use profits to meet their financing needs, but this profit depends upon the performance of firms. Pandey (2001) postulated that increases in profitability induces the firms to utilize the internal funds for their investments and are less likely to go for debt financing. High

profitable firms have better performance, and they are in a good position to go for internal financing. But as the stock market goes to develop, share trading in the market becomes over values which consequently reduces the debt-equity ratio when the stock market develops.

Market capitalization ratio, GDP growth, Stock market liquidity, investment, returns on stock market is determinative factors for stock market development (Garcia & Liu, 1999; Levine & Zervos, 1998b; Bekaert & Harvey, 2000; Edison & Warnock, 2003; La Porta et al., 1997; Rajan & Zingales, 2003; La Porta et al., 2006). Henry (2000) found a strong relationship between the growth rate of investment and changes in stock market valuation measured by returns on the stock market, turnover ratio, and trading volume as a share of GDP.

Alti et al. (2012) argued that in emerging markets, the quality of information flow is poor, and investors wait for subsequent confirmation news to set stock prices which leads to persistence in firms returns. Walkshausl (2013) argued in a study that the effect of stock market volatility is associated with the quality of firms. Stock market capitalization indicates the firm's ability to allocate the funds in investment projects and provide significant opportunities for risk diversification to investors (Sukcharoensin, 2013). Firms are having more liquid stocks have better operating performance and capital gains. Levine and Zervos, 1998 measured the stock market liquidity as the value of stock trading to the size of the stock market. Stock market liquidity can also be measured through trading volumes which is a source of information for investors and a signal of new information release. Trading volumes are an increasing function of the stock market development which develops a significant role in firm performance (Hamon & Jacquillat, 1992; Krigman et al., 1999).

The study cannot ignore the market capitalization, stock market volatility, and stock market liquidity that determine the firms' performance. A strong theoretical reason believes that market capitalization, volatility of the stock market and liquidity of stocks matters in investment decisions that affect the firm performance (Frank & Goyal, 2009; Graham & Leary, 2011).

3. Methodology

3.1 Sample Selection

The data is collected from financial statement of firms listed on Pakistan Stock Exchange over the period 2001-2017. The sample size of this study is consisted upon 206 non financial firms and ratio data is used for empirical testing of the hypothesis. The study have used accounting ratios and market ratios in a dynamic panel model. In developing our research, we selected a series of dependent variables to measure the firm's performance; focusing on market ratio which is Tobin Q and accounting ratios are return on assets (ROA), return on equity (ROE) and return on investment (ROI). Independent variables are stock market volatility (SMV), stock market capitalization (Mkt Cap) and trading volume (TV) which are determinants of stock market development (SMD). We also considered other control variables such as liquidity ratio, firm size, leverage, asset tangibility , board size and board committee, that are commonly used to measure the firm performance (Cochran & Wood, 1984; Kakabadse et al., 2001; Simpson & Kohers, 2002; Wenzel & Thiewes, 1999; Wokutch & McKinney, 1991).

Table 3. Variable definitions for regression equations

Variables	Symbols	Measurements Scale	Formula
Dependent Variables			
Tobin Q:	T 'Q'	The market value of equity and liabilities in relation to their book values	MV/BV
Return on Assets:	ROA	Net income earned by a company as a percentage of the total assets	NI/ TA
Return on Equity:	ROE	The rate of return on the owner's equity employed in the business	NI/ Equity
Return on Investment:	ROI	Net income earned the total investments	NI/ Total Inv
Independent Variables			
Stock Market Volatility:	SMV	Standard Deviation of Daily Market Price Index	St. Dev
Stock Market Capitalization:	MktCap	Total stock market capitalization of the firms as a proportion of GDP	MktCap/GDP
Stock Market Liquidity:	SMV	The total value of shares traded to GDP	TV/GDP
Control Variables			
Liquidity:	Liq	Liquidity is current ratio	CA/CL
Firm Size:	FS	Log of Total sales	Log (Sales)
Leverage:	LEV	Total debt-to-equity ratio	Debt/Equity
Tangibility:	Tang	Total fixed assets divided by total assets	FA/TA
Board Size:	BS	Total number of directors on the board	
Board Committee:	BC	Total number of board committees in the company	

3.2 Model Specification

The study focused on the formulation of a model for empirical estimation of the impact of stock market development on firm performance. Firm performance is an important factor which increases the shareholder's wealth. All the models were designed based on theoretical and empirical evidence. In this way, the study developed the following dynamic panel model for empirical testing.

$$FP_{it} = \beta_1 FP_{it-1} + \beta_2 SMD_{it} + \beta_3 Liq_{it} + \beta_4 FS_{it} + \beta_5 Lev_{it} + \beta_6 Tang_{it} + \beta_7 BS_{it} + \beta_8 BC_{it} + \varepsilon_{it} \qquad (1)$$

The lagged value of dependent variable is included as independent variable to make the model as dynamic. This shows the speed of adjustment and mean reversion behavior of firm performance. Last year's firm performance affect the current year's firm performance. FP_{it} represent the firm performance, SMD_{it} represents stock market development, Liq_{it} represents liquidity, FS_{it} represents firm size, Lev_{it} represents leverage, $Tang_{it}$ represents tangibility, BS_{it} represents board size and BC_{it} represents board committee.

$$FP_{it} = \beta_1 FP_{it-1} + \beta_2 SMV_{it} + \beta_3 Liq_{it} + \beta_4 FS_{it} + \beta_5 Lev_{it} + \beta_6 Tang_{it} + \beta_7 BS_{it} + \beta_8 BC_{it} + \varepsilon_{it} \qquad (2)$$

FP_{it} represent the firm performance, SMV_{it} represents stock market volstility, Liq_{it} represents liquidity, FS_{it} represents firm size, Lev_{it} represents leverage, $Tang_{it}$ represents tangibility, BS_{it} represents board size and BC_{it} represents board committee.

$$FP_{it} = \beta_1 FP_{it-1} + \beta_2 MktCap_{it-1} + \beta_3 Liq_{it} + \beta_4 FS_{it} + \beta_5 Lev_{it} + \beta_6 Tang_{it} + \beta_7 BS_{it} + \beta_8 BC_{it} + \varepsilon_{it} \qquad (3)$$

FP_{it} represent the firm performance, $MktCap_{it}$ represents stock market capitalization, Liq_{it} represents liquidity, FS_{it} represents firm size, Lev_{it} represents leverage, $Tang_{it}$ represents tangibility, BS_{it} represents board size and BC_{it} represents board committee.

$$FP_{it} = \beta_1 FP_{it-1} + \beta_2 SML_{it} + \beta_3 Liq_{it} + \beta_4 FS_{it} + \beta_5 Lev_{it} + \beta_6 Tang_{it} + \beta_7 BS_{it} + \beta_8 BC_{it} + \varepsilon_{it} \qquad (4)$$

FP_{it} represent the firm performance, SML_{it} represents stock market liquidity, Liq_{it} represents liquidity, FS_{it} represents firm size, Lev_{it} represents leverage, $Tang_{it}$ represents tangibility, BS_{it} represents board size and BC_{it} represents board committee.

3.3 Statistical Analysis

The study used the dynamic panel model for the empirical estimation of hypothesis. The dynamic model is the one that has a lag value of the dependent variable as an independent variable (Davidson & Mackinnon, 2004). However, the error term in the dynamic panel model is correlated with lag dependent variable even though it is not serially correlated (Baltagi, 2008). Using dynamic panel data, the assumptions of serial correlation and heteroskedasticity in error term can be violated. Fixed effect and random effect cannot solve this issue in a dynamic regression model due to the correlation between lagged regressors and error term (Wawro, 2002).This impact was captured through the most advanced econometric tools and techniques (GMM) through xtabond2.

3.4 Results

A valid model should fulfill the validity of instrumental variables (Arellano & Bond, 1991) and is normally distributed. First, the study tested the non-existence of serial correlation among error terms usually first and second order serial correlation test. Specifically, the differenced residuals should provide significant negative value in first-order serial correlation with no evidence of second-order serial correlation. Secondly, the study tested the exogeneity of instruments with no over identified restrictions which ensures the consistency of estimates and is captured through Sargan and Hansen test. This test ensured that instruments were valid and were not correlated with the error term.

3.5 Descriptive Statistics

Descriptive statistics summarize and describe the data in such a way which is easier to interpret. These descriptive statistics detect the unusual behavior of data and outliers. The summaries about data sample and measure which are mean, standard deviation, minimum and maximum values of the variables used in this study. The results related to the descriptive statistics presented in Table 4.

The result shows that Tobin Q has the average value of 0.571 with a standard deviation of 0.713. It indicates that on average the market value of equity and liabilities are 57.1% to book value of equity and liabilities. On the other hand, the average value of return on assets is 0.101 while the standard deviation is 0.303. Firms listed on Pakistan Stock Exchange maintain the net earnings 10.1% of their total assets. The average value of return on equity is 0.266 with a standard deviation of 0.871. This indicates that on average, firms in Pakistan have the net incomes of 26.6% of total shareholders' equity. The average value of return on investment is 0.688 while it has the standard deviation of 1.830.

Stock market volatility has the average value of 0.491 with a standard deviation of 0.278. The result shows that the average value of market capitalization of firms listed on Pakistan Stock Exchange is 0.877 while it has the standard deviation of 0.692. Trading value shows an average value of 0.295 with a standard deviation of 0.311.

Table 4. Descriptive statistics

Variables	Mean	Std Dev	Min	Max	Obs
TQ	0.571	0.713	0.000	5.618	4420
ROA	0.101	0.303	-1.008	2.899	4420
ROE	0.266	0.871	-1.939	6.791	4420
ROI	0.688	1.830	-3.497	8.947	4420
SMV	0.491	0.278	0.0005	0.999	4420
MCAP	0.877	0.692	0.050	2.593	4420
TV	0.295	0.311	0.011	1.681	4420
Liquidity	1.425	1.365	0.100	9.910	4420
FS	9.136	0.836	6.574	16.540	4420
Tang	0.538	0.156	0.250	0.799	4420
Lev	0.421	0.159	0.100	0.699	4420
BS	9.238	1.865	5.000	14.000	4420
BC	7.367	1.959	4.000	12.000	4420

3.6 Correlation Analysis

Correlations analysis is a method of statistical evaluation, which is used to see the strength of the relationship between two or more variables. There may be a perfect positive correlation, perfect negative correlation, partial correlation and no correlation. An important concern with this correlation analysis is that all the explanatory variables are partially correlation, therefore multicollinearity problem does not arise.

Table 5 shows that Return on assets has a positive correlation with Tobin Q (0.2841), further ROE has a positive correlation with Tobin Q (0.1363) and ROA (0.3889). Return on investment has a positive correlation with Tobin Q (0.1607), return on assets (0.2590) and return on equity (0.1351). Stock market volatility has a positive correlation with Tobin Q (0.0337), return on assets (0.0197), return on equity (0.0214) and return on investment (0.0022).

Stock market capitalization has positive correlation with Tobin Q (0.0734), return on assets (0.0543), return on equity (0.0343) and stock market volatility (0.0374) whereas negative correlation with return on investment (-0.0084). Trading volume has positive correlation with Tobin Q (0.2020), return on assets (0.1380), return on equity (0.0636), and return on investment (0.0634), stock market volatility (0.0206) and stock market capitalization (0.0056). Liquidity has positive correlation with Tobin Q (0.2726), return on assets (0.0877), return on equity (0.0039), and return on investment (0.0686), stock market volatility (0.0126), stock market capitalization (0.0268) and trading volume (0.3223).

4. Results

4.1 Stock Market Volatility and Firms Performance

Table 6 shows the results related to the impact of stock market volatility calculated by standard deviation of daily market price index on Tobin Q, ROA, ROE and ROI. The lag value of dependent variable is considered as independent variable to make the model as dynamic panel model. The findings of this study suggested that lagged value of dependent variable has a significant impact on current level of Tobin Q, ROA, ROE and ROI value. The significance indicates that the model is dynamic in nature. This shows the mean reversion behavior where past performance affects the current level of performance.

Stock market volatility has a significant negative impact on market performance of firms listed on Pakistan Stock Exchange. The findings of this study suggested that stock market volatility adversely affect the development of stock market. Moreover, stocks are traded in the market at lower prices and firms operating in Pakistan face the risk of a decrease in their earnings. These firms are not in a good position about their operations and investments. The stock market is not developed while facing high volatility in the stock market and is more likely to increase the business risk. This particular situation shows that stock market volatility decreases the performance of firms. Therefore, it has statistically significant impact in firm level investment decisions and market performance (Morck et al., 1990). Stock market volatility creates the uncertainty in the

market and firms in the market are unsure about their performance. This particular situation has a negative impact on the performance of firms and they suffer. Low stock market volatility would likely to have strong operating performance as low volatility improves the firm's access to capital. Moreover, stock market volatility affect the market conditions adversely and stock price decreases. It creates uncertainty in the market and firms operating in the market are unsure about their income streams. It increases the business risk in the market and decreases the firm performance (Dutt & Jenner, 2013). Therefore, an increase in stock market volatility decreases performance. Moreover, it also increases the uncertainty in the market and the level of stock market development decrease. This particular situation increases the business risk and decreases the firm performance. Consequently, the firm's performance decreases and they suffer (Agrawalla, 2006).

4.2 Stock Market Capitalization and Firms Performance

Table 7 shows the relationship between stock market capitalization and performance in a multiple dynamic linear regression model. The significance of lagged value of dependent variable shows that model is dynamic in nature. Firms temporarily deviate from current level of performance and then revert back with a mean reversion behavior. The result shows that stock market capitalization significantly and positively affects the performance of firms. It indicates that firms with better market capitalization are operating well and have better prices of stocks traded in the market. It tends to increase the development of the stock market which is more likely to increase the firm performance (Ahmad et al., 2012). This particular situation increases the performance of firms and shareholders get positive returns on their equity investments. Firms with better market capitalization have better performance in the shape of their profits (Ewing & Thompson, 2016). This optimism increases the performance of firms and firms operating in such an environment get some positive returns on their investments. The higher the stock market capitalization of firms, the higher the funds available for the firms. This shows the positive relationship between market capitalization and the profits of firms (Matthew & Odularu, 2009).

4.3 Traded Volume and Firms Performance

Table 8 shows the relationship of trading volume with firm performance in a multiple linear dynamic regression model. The lagged value of dependent variable is significant indicating that model is dynamic in nature. Moreover, the results indicates that trading volume is a significant factor lies in the stock market which tends to increase the firm performance. A high trading volume indicates that stock have better liquidity position in the market and buying and selling is easy. Shares are traded in the market easily, which is more likely to increase the market performance of firms. Therefore, it is concluded that firms with better trading volume have better liquidity position of their stocks which in turn increase their market performance (Hamon & Jacquillat, 1992; Krigman et al., 1999).

5. Conclusions

The study analyzed the nexus between stock market development indicators and performance of non financial firms listed on Pakistan Stock Exchange over the period 2001-2017 in a dynamic panel model. The study concluded about the three significant stock market development indicators like stock market volatility, stock market capitalization and trading volume. The study identified that stock market volatility significantly causes the decrease in firm performance. However, stock market capitalization and trading volume of firms results an increase in firm performance. The study found that the increase of stock market development helps to increase the firm performance and market value of firms. Stock market develops with low market volatility, high stock market capitalization and high traded volume. Firms operating in a developed stock market are efficient in operations and have a consistent stream of income. These firms have better investment opportunities which tends to increase their performance. Moreover, they have better stock prices, high liquidity of stocks and low volatility in the market. Investors prefers to invest in a well developed stock market which in turn results an increase in firm performance.

References

Agarwal, S., & Mohtadi, H. (2004). Financial markets and the financing choice of firms: Evidence from developing countries. *Global Finance Journal*, *15*(1), 57-70. https://doi.org/10.1016/j.gfj.2003.10.004

Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance*, *28*(3), 423-442. https://doi.org/10.1016/s0378-4266(02)00408-9

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structures in developing countries. *The Journal of Finance*, *56*(1), 87-130. https://doi.org/10.1111/0022-1082.00320

Chaudhry, I. S., Malik, A., & Faridi, M. Z. (2010). Exploring the causality relationship between trade liberalization, human capital and economic growth: Empirical evidence from Pakistan. *Journal of*

Economics and International Finance, *2*(9), 175-182.

Demirgüç-Kunt, A., & Levine, R. (1996). Stock markets, corporate finance, and economic growth: an overview. *The World Bank Economic Review*, *10*(2), 223-239. https://doi.org/10.1093/wber/10.2.223

Easterly, W., & Levine, R. (1997). Africa's growth tragedy: policies and ethnic divisions. *The Quarterly Journal of Economics*, *112*(4), 1203-1250. https://doi.org/10.1162/003355300555466

Frank, M. Z., & Goyal, V. K. (2009). Capital structure decisions: Which factors are reliably important? *Financial Management*, *38*(1), 1-37. https://doi.org/10.1111/j.1755-053x.2009.01026.x

Garcia, V. F., & Liu, L. (1999). Macroeconomic Determinants of Stock Market Development. *Journal of Applied Economics*, *2*(1).

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, *118*(1), 107-156. https://doi.org/10.1162/00335530360535162

Graham, J. R., & Leary, M. T. (2011). A review of empirical capital structure research and directions for the future. *Annual Review of Finance. Economics*, *3*(1), 309-345. https://doi.org/10.2139/ssrn.1729388

Henry, P. B. (2000). Do stock market liberalizations cause investment booms?. *Journal of Financial Economics*, *58*(1-2), 301-334. https://doi.org/10.1016/s0304-405x(00)00073-8

Krugman, P. (1999). Balance sheets, the transfer problem, and financial crises. In *International Finance and Financial Crises* (pp. 31-55). Springer, Dordrecht. https://doi.org/10.1007/978-94-011-4004-1_2

La Porta, R., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of Economic Literature*, *46*(2), 285-332. https://doi.org/10.1257/jel.46.2.285

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1997). Legal determinants of external finance. *The Journal of Finance*, *52*(3), 1131-1150. https://doi.org/10.1111/j.1540-6261.1997.tb02727.x

Levine, R. (1998). The legal environment, banks, and long-run economic growth. *Journal of Money, Credit And Banking*, 596-613. https://doi.org/10.2307/2601259

Mahmud, M., & Qayyum, A. (2003). The Relationship between Economic Growth and Capital Structure of Listed Companies: Evidence of Japan, Malaysia, and Pakistan [with Comments]. *The Pakistan Development Review*, 727-750. https://doi.org/10.30541/v42i4iipp.727-750

Masood, O., & Javaria, K. (2017). Liquidity Risk Management and Financial Performance of Islamic Banks: Empirical Evidence from Global Islamic Banks. *Journal of Islamic Financial Studies*, *3*(02), 62-70. https://doi.org/10.3366/edinburgh/9780748647613.003.0007

Memon, G. R. (2007). Education in Pakistan: The key issues, problems and the new challenges. *Journal of Management and Social Sciences*, *3*(1), 47-55.

Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, *20*, 293-315. https://doi.org/10.1016/0304-405X(88)90048-7

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*(2), 187-221. https://doi.org/10.1016/0304-405X(84)90023-0

Pandey, I. M. (2001). Capital structure and the firm characterstics: Evidence from an emerging market.

Singh, A. (1997). Financial liberalisation, stockmarkets and economic development. *The Economic Journal*, *107*(442), 771-782. https://doi.org/10.1111/j.1468-0297.1997.tb00042.x

Stiglitz, J. E., & Uy, M. (1996). Financial markets, public policy, and the East Asian miracle. *The World Bank Research Observer*, *11*(2), 249-276. https://doi.org/10.1093/wbro/11.2.249

Sukcharoensin, P., & Sukcharoensin, S. (2013). The analysis of stock market development indicators: Evidence from the ASEAN-5 equity markets. *International Journal of Trade, Economics and Finance*, *4*(6), 343. https://doi.org/10.7763/ijtef.2013.v4.314

Walkshäusl, C. (2013). The high returns to low volatility stocks are actually a premium on high quality firms. *Review of Financial Economics*, *22*(4), 180-186. https://doi.org/10.1016/j.rfe.2013.06.001

Appendix

Table 5. Correlation analysis

	TQ	ROA	ROE	ROI	SMV	MCap	TV	Liq	FS	Tang	Lev	BS	BC
TQ	1.0000												
ROA	0.2841	1.0000											
ROE	0.1363	0.3889	1.0000										
ROI	0.1607	0.2590	0.1351	1.0000									
SMV	0.0337	0.0197	0.0214	0.0022	1.0000								
MCap	0.0734	0.0543	0.0343	-0.0084	0.0374	1.0000							
TV	0.2020	0.1380	0.0636	0.0634	0.0206	0.0056	1.0000						
Liq	0.2726	0.0877	0.0039	0.0686	0.0126	0.0268	0.3223	1.0000					
FS	0.1313	0.2237	0.1237	0.1291	0.0334	0.0995	-0.0531	-0.0147	1.0000				
Tang	-0.1422	-0.1145	-0.0695	-0.0164	-0.0400	-0.0161	-0.1627	-0.2022	0.0166	1.0000			
Lev	-0.0572	0.0350	0.0802	-0.0051	-0.0226	0.0105	-0.0125	-0.1815	0.0271	0.0104	1.0000		
BS	0.1319	-0.0280	-0.0287	0.0163	-0.0270	0.0160	-0.1755	0.0711	0.1747	-0.0191	-0.0211	1.0000	
BC	0.0799	-0.0235	-0.0137	0.0066	-0.0235	0.0082	-0.1424	0.0630	0.1515	-0.0136	-0.0201	0.1120	1.0000

Note. Table 5 presents the correlation matrix between the dependent variable and the explanatory variables. It shows the direction of relationship between the variables. All the independent variables are partially correlated that indicates no multicollinearity issue. The correlation is among Tobit Q, Return on Assets, Return on Equity, Return on Investment, Stock Market Volatility, Stock Market Capitalization, Trading Volume, Liquidity, Firm size, Asset Tangibility, Leverage, Board size, Board Committee. "***", "**" and "*" shows the significance level at 1%, 5% and 10% respectively,

Table 6. Estimation results of Tobin Q, return on assets, return on equity and return on investment based on stock market volatility

Variables	TQ	TQ	ROA	ROA	ROE	ROE	ROI	ROI
Constant	0.325***	0.071	0.068	0.014	0.150***	0.291*	0.712**	-0.153
FP$_{(t-1)}$	0.823***	0.756***	0.491***	0.645***	0.461***	0.330***	0.255***	0.090**
SMV	-0.276**	-0.238**	-0.602**	-0.051**	-0.134**	-0.112**	-0.979**	-0.503**
Liq		0.006		0.005***		-0.013**		0.115**
Firm Size		0.043***		0.024***		0.058***		0.160*
Leverage		-0.219**		0.043		-0.020**		1.368**
Tangibility		-0.412**		-0.123**		-0.152*		0.786
Board Size		0.074***		-0.009**		-0.070**		0.14
Board Committee		-0.072**		-0.006		0.02		-0.171
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0	0	0	0	0	0	0	0
AR(2)	0.1	0.2	0.105	0.057	0.253	0.528	0.056	0.558
Sargan / Hansen Test Overid	0.177	0.286	0.112	0.422	0.13	0.524	0.831	0.6
Number of Instruments	95	143	67	119	85	178	87	143
Number of firms	260	260	260	260	260	260	260	260

Note. Table 6 reports the results related to two step system GMM dynamic panel model. Dependent variable is Firm Performance, and independent variable is Stock Market Volatility which represents the yearly standard deviation of Stock Market Index/return from 2001 to 2017. Column 1 to 2 presents the results related to the effect of stock market volatility on TQ. Column 3 to 4 present the results related to the effect of stock market volatility on ROA. Column 5 to 6 present the results related to the effect of stock market volatility on ROE. Column 7 to 8 present the results related to the effect of stock market volatility on ROI. Tobin Q is calculated as market value of assets and liabilities over book value of assets and liabilities. Return on Asset is calculated as net income divided by total assets. Rest is liq represents liquidity ratios and is calculated as current assets to current liabilities, Firm size is the log values of total sales, leverage ratio is total debt over total assets, tang is the tangible assets to total assets, whereas board size is total number of board of directors, Board committee is total number of directors in audit committee as corporate governance variables. The significant value of AR (1) shows the existence of first order serial correlation that null hypothesis of no first difference autocorrelation among the error terms is rejected. However, AR (2) is insignificant showing that no second order serial correlation in level regression among error term. Sargan / Hansen test overid value is insignificant, indicating the validity of instruments and are not over identified. Overall, the results of AR (1), AR (2) and Sargan / Hansen test shows that GMM is correctly specified with no identification issues. Figures in parentheses shows the standard errors; "***", "**" and "*" shows the significance level at 1%, 5% and 10% respectively.

Table 7. Estimation results of Tobin Q, return on assets, return on equity and return on investment based on stock market capitalization

Variables	TQ	TQ	ROA	ROA	ROE	ROE	ROI	ROI
Constant	0.191	-0.14	-0.03	-0.187**	0.009	0.233	0.636***	-1.832**
FP$_{(t-1)}$	0.781***	0.852***	0.754***	0.540***	0.433***	0.351***	0.076***	0.092***
Mkt Cap	0.079***	0.065***	0.060***	0.029***	0.087**	0.051***		0.319***
Liq		0.007**		0.004**		0.005		0.114***
Firm Size		0.012		0.044***		0.067***		0.164**
Leverage		-0.057		-0.365		0.246***		0.728
Tangibility		-0.529**		-0.251**		-0.357**		0.698***
Board Size		0.034**		0.019**		0.040**		0.176
Board Committee		-0.024**		0.022***		0.023		-0.214***
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0	0	0	0	0	0	0	0
AR(2)	0	0	0.061	0.103	0.288	0.414	0.639	0.58
Sargan / Hansen Test Overid	0.082	0.239	0.123	0.207	0.108	0.472	0.627	0.621
Number of Instruments	73	178	91	167	85	167	85	143
Number of firms	260	260	260	260	260	260	260	260

Note. Table 7 reports the results related to two step system GMM dynamic panel model. Dependent variable is Firm Performance, and independent variable is Stock Market Capitalization which represents the Stock market capitalization as proportion of GDP from 2001 to 2017. Column 1 to 2 presents the results related to the effect of stock market volatility on TQ. Column 3 to 4 present the results related to the effect of stock market volatility on ROA. Column 5 to 6 present the results related to the effect of stock market volatility on ROE. Column 7 to 8 present the results related to the effect of stock market volatility on ROI. Tobin Q is calculated as market value of assets and liabilities over book value of assets and liabilities. Return on Asset is calculated as net income divided by total assets. Rest is liq represents liquidity ratios and is calculated as current assets to current liabilities, Firm size is the log values of total sales, leverage ratio is total debt over total assets, tang is the tangible assets to total assets, whereas board size is total number of board of directors, Board committee is total number of directors in audit committee as corporate governance variables. The significant value of AR (1) shows the existence of first order serial correlation that null hypothesis of no first difference autocorrelation among the error terms is rejected. However, AR (2) is insignificant showing that no second order serial correlation in level regression among error term. Sargan / Hansen test overid value is insignificant, indicating the validity of instruments and are not over identified. Overall, the results of AR (1), AR (2) and Sargan / Hansen test shows that GMM is correctly specified with no identification issues. Figures in parentheses shows the standard errors; "***", "**" and "*" shows the significance level at 1%, 5% and 10% respectively.

Table 8. Estimation results of Tobin Q, return on assets, return on equity and return on investment based on traded volume

Variables	TQ	TQ	ROA	ROA	ROE	ROE	ROI	ROI
Constant	0.323***	0.278***	0.027***	-0.333***	-0.035	0.01	-0.514	-0.755
FP$_{(t-1)}$	0.673***	0.789***	0.530***	0.0515***	0.484***	0.276***	0.343***	0.243***
Mkt Cap	0.256***	0.059***	0.081***	0.0732***	0.161***	0.246***	0.549***	0.440**
Liq		0.030***		0.003		-0.019		0.005
Firm Size		0.049***		0.038***		0.069***		0.199***
Leverage		0.097**		0.051		-0.004		-0.128
Tangibility		0.081***		0.015		-0.142		0.168
Board Size		0.059***		0.013***		-0.059***		-0.107
Board Committee		0.077***		0.019***		0.002		0.038
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0	0	0	0	0	0	0	0
AR(2)	0.1	0.092	0.094	0.091	0.211	0.689	0.785	0.31
Sargan / Hansen Test Overid	0.179	0.113	0.168	0.366	0.689	0.294	0.546	0.256
Number of Instruments	73	195	91	148	91	148	79	131
Number of firms	260	260	260	260	260	260	260	260

Note. Table 8 reports the results related to two step system GMM dynamic panel model. Dependent variable is Firm Performance, and independent variable is Stock Market liquidity which represents the traded volume as proportion of GDP from 2001 to 2017. Column 1 to 2 presents the results related to the effect of stock market volatility on TQ. Column 3 to 4 present the results related to the effect of stock market volatility on ROA. Column 5 to 6 present the results related to the effect of stock market volatility on ROE. Column 7 to 8 present the results

related to the effect of stock market volatility on ROI. Tobin Q is calculated as market value of assets and liabilities over book value of assets and liabilities. Return on Asset is calculated as net income divided by total assets. Rest is liq represents liquidity ratios and is calculated as current assets to current liabilities, Firm size is the log values of total sales, leverage ratio is total debt over total assets, tang is the tangible assets to total assets, whereas board size is total number of board of directors, Board committee is total number of directors in audit committee as corporate governance variables. The significant value of AR (1) shows the existence of first order serial correlation that null hypothesis of no first difference autocorrelation among the error terms is rejected. However, AR (2) is insignificant showing that no second order serial correlation in level regression among error term. Sargan / Hansen test overid value is insignificant, indicating the validity of instruments and are not over identified. Overall, the results of AR (1), AR (2) and Sargan / Hansen test shows that GMM is correctly specified with no identification issues. Figures in parentheses shows the standard errors; "***", "**" and "*" shows the significance level at 1%, 5% and 10% respectively.

Copyrights