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Relationship between Stock Market Volatility, Stock Market Liquidity and Financial Performance of Non-Financial Firms Listed on Pakistan Stock Exchange

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Abstract: This paper analyzed the empirical relationship between different measures of stock market volatility, traded volume, market and accounting measures of financial performance of 260 firms panel data listed on Pakistan Stock Exchange using Generalized Autoregressive Conditional heteroskedasticity (GARCH) and Generalized moments methods (GMM). The study found that financial performance has significant positive relation with traded volume and significant negative relationship with stock market volatility both in two measures. The study used both microeconomic and macroeconomic measures to calculate stock market volatility and both measures have significant effects on financial performance.

Keywords: Stock Market, Volatility, Liquidity, Firms Performance

Introduction

Stock Market is a key indicator of any country's economic and industrial performance and the policies are made to stabilize the economy and corporate sectors. These policies are made on the basis of stock market performance measured by stock market index, stock price returns, traded volume, market capitalization inflation, interest and exchange rates. These financial indicators affect the financial decisions such as hazard management, portfolio choices and corporate performances. Since the last two decades, the stock market volatility is contributing the key investment decisions and stock portfolio development for the investors as well as the portfolio managers for corporate performance through competitive intelligence (Metawa, Noura, et al., 2018).

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 lead to persistence in firms returns. Walkshausl (2013) argued in study that the effect of stock market volatility is associated with the quality of firms. Moreover, the quality of the firm is normally measured by profitability and cash flow variation factors. The study identified that firms which are better in quality have better

profitability ratios and low market volatility in the stock market. High stock market volatility negatively affects the profitability of firms, which leads to low financial performance (Asche, 2018). In addition, Stock liquidity positively affects firm performance because shares command both the cash flows and control rights. The trading of shares with better liquidity position in the market has a central role in the performance of the firm. Liquid market permits the non-block holders to intervene in the market and become the block holders (Maug, 1998). This situation promotes the efficient compensation for management and reduces the managerial opportunism (Edmans, 2009; Admati & Pfleiderer, 2009; Palmiter, 2002). Informed traders are stimulated with the improvement in investment decisions. Thus, a positive relation of stocks liquidity with firm performance is quite plausible.

Performance of Non-Financial Firms in Pakistan

The non-financial sector is an important part of a country's economy and it is a sound, stable and important industrial base for the well-being of any country. The non-financial sector in Pakistan represents a diversified nature of businesses including textile, sugar, food products, beverages and refined petroleum products, Chemicals and pharmaceuticals, trailers and auto parts, fuel and energy manufacturing, mineral products, cement, motor vehicles, information, communication and transport services, paper and paperboard products, electrical machinery and apparatus and other services activities. Disclosure, transparency, true and fair information on business activities related to all these sectors are the importance to all stakeholders.

Table 1: Indicators of Non-Financial Firms listed on Pakistan Stock Exchange

Indicators	2010	2011	2012	2013	2014	2015
Net Profit margin	10.95 %	9.37 %	18.27 %	10.37 %	7.73 %	5.38 %
Return on Assets	15.63 %	13.04 %	25.48 %	13.37 %	9.84 %	5.16 %
Return on equity	54.23 %	43.34 %	83.20 %	42.13 %	29.70 %	15.37 %
Return on Investment	16 %	17 %	19 %	22 %	25 %	24 %

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

Table 2: 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
Total Share Volume (Millions)	42,959	28,018	38,100	54,319	48,494	38,328

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

Based on profitability measures from 2010 to 2015 with decreasing of number of companies and sudden movements of total share volume gave us direction to understand and research this issue. This study aims to explore the relationship between different measures of stock market volatility by using GMM and GARCH model, traded volume and financial performance of non-financial firms.

Research Questions and Objectives

This part of the study addresses the question of relationship between stock market and traded volume with financial performance of non-financial firms listed on Pakistan Stock Exchange.

As discussed earlier the main objective of our study is to examine the link between stock market volatility and financial performance of non-financial firms in Pakistan. In addition the study also aims to check the effect of traded volume on financial performance of non-financial firms listed on Pakistan Stock Exchange from 2001 to 2017.

This study aims to testify the association between stock market volatilities with microeconomic and macroeconomic measurement on performance on non-financial firms. This research study is further divided into four sections. Section two provides literature review of previous empirical work, section three discusses the data and methodology, the section four explains data analysis and interpretation of empirical results and section five explains the conclusion respectively.

Literature Review

The cost of accessing the external capital is high for firms having a high level of stock market volatility. This high cost of capital and high stock market volatility causes the decrease in firm performance. Thus, volatility decreases the future earnings of the firms and decreases their ability to fulfill the financial obligations. Stock market volatility is measured as standard deviation of stock prices index. This situation increases the financial distress cost and bankruptcy cost that leads the firms towards default. A high volatile state of financial markets has an adverse effect on corporate performance and firm value.

Stock market volatility is frequently referred to as a risk indicator as high price fluctuation signals the uncertainty in the markets. The powers among buyers and sellers regularly shift which affects the value of stocks and firm performance. Few studies have been conducted on the relationship between stock market volatility and firm's performance, but little evidence has been found the impact of market volatility on performance (Wang et al., 2015).

The stock market volatility has recently attracted much attention in the finance literature. The focus has been on the impact of volatility on firm's performance listed on Pakistan stock exchange. Merton (1980), Poterba and Summers (1986) and French et al. (1987) relate to stock market volatility to the variation of expected stock returns, and further Timmermann (1993) investigated that degree to which stock market volatility is responsible to the change in the value of stocks and firms performance.

Liquidity of stocks is one of the most important aspects of stock market development. Liquid markets offer many benefits such that they render financial assets more attractive to investors, who can transact in them more easily. In addition, liquid markets allow investors to switch out of equity if they want to change the composition of their portfolio; liquid markets permit financial institutions to accept larger asset-liability mismatches; they allow companies to have permanent access to capital through equity issues, finally liquid markets allow a central bank to use indirect monetary instruments and generally contribute to a more stable monetary transmission mechanism (Sarr & Lybek, 2002).

Thus, there is a positive relation between stock liquidity and firm value. By examining the mechanism through which Tobin's Q measures stock market liquidity enhances firm value, along with three components i.e. operating income to price, leverage, and operating income to assets. Using the

switch to broker anonymity is exogenous to market liquidity that the increase in liquidity leads to an increase in firm value. The results suggest that higher firm value for more liquid stocks seems to stem from enhanced stock prices rather than from better operating performance (Nguyen & Duong, 2016). Further, stock market liquidity is correlated with higher firm performance as measured by Tobin Q. Firms with better liquidity in their stocks tends to have a significantly better performance about their profits (Singh & Gupta, 2015; Dalvi & Baghi, 2014; Uno & Kamiyama, 2010). Arabsalehi et al., (2014) examined the impact of stock market liquidity on companies’ economic performance on 97 selected firms listed on the Tehran Stock Exchange (TSE) from 2003 to 2012. The study found that stock liquidity has a significant positive impact on two firm performance measures i.e. EVA and Tobin’s Q while they found no significant evidence of stock’s liquidity with ROA.

Xiong & Su (2014) using the data of Chinese listed companies over the period from 1998 to 2011 and finds that stock market liquidity helps to improve investment efficiency and mitigate both overinvestment and underinvestment problems.

Methodology

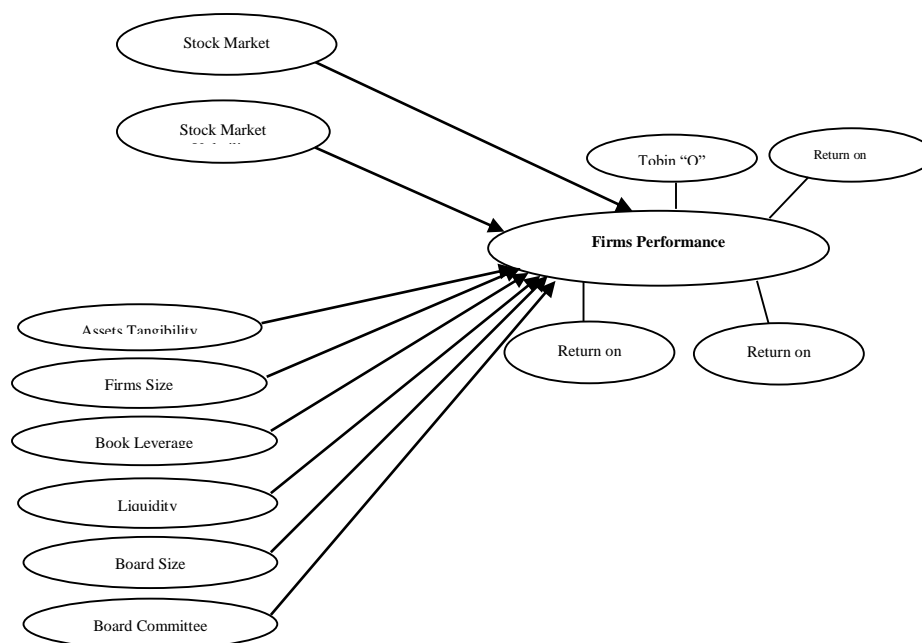
The data comprise 260 companies belonging to the PSE 100 Index for the period 2001 to 2017. The annual data for independent and dependent variables to test the hypothesis was collected through *DataStream* and used two software STATA and EVIEWS.

The study uses the GARCH modeling process consolidated with the system GMM dynamic panel techniques.

There are four dependent performance variables, two independent variables and six control variables

Conceptual Framework

The conceptual framework is developed based on the theoretical background and empirical evidence. This conceptual model explains the relationship between stock market volatility, traded volume and performance of non-financial firms listed on Pakistan Stock Exchange. Furthermore, firms’ performance is subdivided into different dimensions namely return on assets, return on equity, and return on investment and Tobin ‘Q’ ratios. The basic idea behind the conceptual framework is to logically integrate all the aspects of a process that provide a better explanation of the problem.



Variables Calculations

Variables	Symb ol	Measurement Method
Dependent Variables		
Tobin Q:		The market value of equity and liabilities in relation to their book values
Return on Assets:	ROA	Net income earned by a company as a percentage of the total assets
Return on Equity:	ROE	The rate of return on the owner’s equity employed in the business
Return on Investment:	ROI	Net income earned by a company as a percentage of the total investments
Independent Variables		
Stock Market Volatility:	SMV	1) Standard deviation of daily stock returns of firms
		2) GARCH of daily stock returns of firms
		3) Standard deviation of daily stock market index
		4) GARCH of daily stock market index
Stock Market Capitalization:	MktCap	Total stock market capitalization of the firms as a proportion of GDP
Stock Market Liquidity:	SML/TV	The total value of shares traded to GDP
Control Variables		
Liquidity:	Liq	Liquidity is current ratio, which is measured as current asset over current liabilities
Firm Size:	FS	Log of Total sales
Leverage:	LEV	Total debt-to-equity ratio
Tangibility:	Tang	Total fixed assets divided by total assets
Board Size:	BS	Total number of directors on the board
Board Committee:	BC	Total number of board committees in the company

3.2 Hypothesis

- H1_a**: There is no relationship between stock market index and financial performance.
- H1_b**: There is a relationship between stock market index and financial performance.
- H2_a**: There is no relationship between stock market prices of firms and financial performance.
- H2_b**: There is a relationship between stock market prices of firms and financial performance.
- H3_a**: There is no relationship between Stock Market Liquidity of firms and financial performance.

H3_b: There is a relationship between Stock Market Liquidity of firms and financial performance.

Dynamic Panel Model Specification

This study employs the System Generalized Method of Moments (GMM) estimator proposed by Arellano & Bond (1991) and focused on the formulation of a model for empirical estimation of the impact of different measures of stock market volatility and stock market liquidity on firm performance. To avoid the endogeneity problem, the study used the dynamic panel data. The variables calculated/selected are put in the form of a multiple regression equation to achieve the objectives of the study. Each independent variable in this multiple regression is associated with the value of the dependent variable.

Our model specification regarding the relationship between stock market volatility and financial performance of non-financial firms in Pakistan is formulated as follows:

$$Y_{i,t} - Y_{i,t-1} = \alpha Y_{i,t-1} + BX_{i,t} - + \mu_i + \varepsilon_{i,t} \quad (1)$$

Where, $Y_{i,t}$ stands for the logarithm of financial performance, i stands for number of agriculture firms in Malaysia; t - time series

Equation (2) specifies in more detail the econometric model to be estimated.

$$Y_{i,t} = \alpha Y_{i,t-1} + BX_{i,t} - + \mu_i + \varepsilon_{i,t} \quad (2)$$

And Equation (3) explains in detail all the variables in this study.

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

FP_{it} represent the firm performance, SMV_{it} represents stock market volatility, 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.

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

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 the Board committee.

Following the study of Papadamou *et al.* (2014) and in order to check for the robustness of our results two different measures of stock market volatility are constructed. The first one refers to historical volatility is on an annual basis by the standard deviation of daily stock prices of firms and stock market index by STATA. The second one historical volatility is on an annual basis by GARCH of daily prices of firms and stock market index by EViews.

Empirical Results

Firms listed on Pakistan Stock Exchange maintain average the market value of equity and liabilities are 71.3% to book value of equity and liabilities. Moreover, the minimum and maximum values of Tobin Q in this descriptive statistics are 0.000 and 5.618 respectively. The net earnings 10.1% of their total assets and the minimum value of return on assets in this descriptive statistics are -1.008 and the maximum value is 2.899. The average value of return on investment is 0.688 while it has the standard deviation of 1.830. The descriptive statistics show the minimum and maximum values of return in investment -3.479 and 8.947 respectively. Stock market volatility by Standard deviation has the

average value of 0.491 with a standard deviation of 0.278. But the minimum and maximum values of stock market volatility are 0.005 and 0.999 respectively. Stock market volatility by GARCH has the average value of 0.671 with a standard deviation of 0.869. But the minimum and maximum values of stock market volatility are 0.007 and 9.860 respectively. Shown in table 1.1.

Stock market volatility in both measures (standard deviation and GARCH) and through both ways (micro-level, stock market prices and macro-level stock market index) has a significant negative impact on market performance of firms listed on Pakistan Stock Exchange but in different coefficients shown in Tables (2, 3, and 4). The coefficients of stock market volatility show the significant negative impacts on firm's market performance. 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 have strong operating performance as low volatility improves the firm's access to capital. In an efficient market, there should be an association between stock returns and (positive) earnings (Core, et al, .2006; Walkshausl, 2013). Firms bearing the high business risk are unsure about their future incomes and investments. Therefore, an increase in stock market volatility decreases the return on investments (Pandey & Sehgal, 2017).

A high trading volume indicates that stock has 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). The relationship of trading volume with market performance of firms in a multiple dynamic linear regression model. The findings of this study suggested that trading volume results an increase in market performance of firms. A good trading volume indicates better liquidity of stocks and can be easily buy and sells. Also trading volume indicates the better development of stock market, which results an increase in their performance (Thomas Lagoarde-Segot, 2013).

Concluding Remarks

This paper examined the relationship between stock market volatility and stock market liquidity with firms performance. Our analytical setting implies a negative relationship between stock market volatility and firms performance and a positive relationship between stock market liquidity and firms performance. By using panel data for 260 firms our empirical analysis confirms our analytical proposition. Our study has significant policy implications that establish their profile for implementing a successful monetary policy strategy. Given that higher level stock market volatility either macro-level or micro-level may harm firms performance.

Future Implications

This might give us another view about the performance theory. The comparative analysis between countries and sectors in the context of volatility of stock returns can be done.

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Table 1.2: Descriptive Statistics

Variables	Mean	Std Dev	Min	Max	Obs
TQ	0.571	0.713	0	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	1.83	-3.497	8.947	4420
SMV	0.491	0.278	0.0005	0.999	4420
GARCH	0.671	0.869	0.007	9.860	4420
TV	0.295	0.311	0.011	1.681	4420
Liquidity	1.425	1.365	0.1	9.91	4420
FS	9.136	0.836	6.574	16.54	4420
Tang	0.538	0.156	0.25	0.799	4420
Lev	0.421	0.159	0.1	0.699	4420
BS	9.238	1.865	5	14	4420
BC	7.367	1.959	4	12	4420

Note: Table 1.2 reports the descriptive statistics of variables used in the model for non-financial firms during 2001-2017. All the variables used in the model are winsorized at 1% level in both tails of the distribution before descriptive statistics are reported. Each column in the table reports observations, mean, standard deviation, maximum, minimum values. These values are reported about the variables Tobin Q, Return on Assets, Return on Equity, Return on Investment, Stock Market Volatility, Trading Volume, Liquidity, Firm size, Asset Tangibility, Leverage, Board size, Board Committee.

Table 2: Empirical results between Standard Deviation of **Stock Market Index** and Financial performance, Fixed Effects and Generalized Methods of Moments (GMM 2 Step)

Variables	TQ	TQ	ROA	ROA	ROE	ROE	ROI	ROI
Constant	0.260*	0.343*	0.061	0.280*	0.080*	0.881*	0.716*	0.1937
	**	**	**	**	**	**	*	***
FP_(t-1)	0.748*	0.697*	0.727	0.627*	0.457*	0.313*	0.175*	0.290*
	**	**	**	**	**	**	**	*
SMV	0.034*	0.020*	0.008	-	0.030*	-	0.226*	-
	**	**	**	0.010*	**	0.041*	**	0.210*
				*		*		*
Liq		0.070*		0.033*		0.015*		-
		**		**		*		0.040*
								*
Firm Size		0.048*		0.045*		0.131*		0.220*
		**		**		**		**
Leverage		0.018*		0.018		0.481*		-0.087
		*				*		
Tangibility		0.199*		0.165*		0.242*		-
		**		**		**		0.984*
								**
Board Size		0.060*		-0.004		0.02		0.274*
		**						**
Board Committee		0.061*		-0.005		0.061*		-
		**				**		0.187*
								**
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0	0	0	0	0	0	0	0
AR(2)	0.1	0.12	0.163	0.057	0.264	0.528	0.25	0.104
Sargan / Hansen Test Overid	0.64	0.38	0.7	0.422	0.559	0.755	0.7	0.452
Number of Instruments	95	207	89	176	77	207	65	129
Number of firms	260	260	260	260	260	260	260	260

Note: Table 2 reports the results related to two step system GMM dynamic panel model. Independent variable is stock market volatility, which represents the standard deviation of daily 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 presents 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. ROE as net income divided by equity. ROI as net income divided by investment. 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 3: Empirical results between Standard Deviation of **Stock Market Prices of firms** and financial performance, Fixed Effects and Generalized Methods of Moments (GMM 2 Step)

Variables	Varia							
	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 **
Liquidity		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

Table 4: Empirical results GARCH of **Stock market Prices** and Financial performance, Fixed Effects and Generalized Methods of Moments (GMM 2 Step)

Variables	TQ	TQ	ROA	ROA	ROE	ROE	ROI	ROI
Constant	0.021	0.022	0.042	0.04	0.069	-	0.262	2.770
			**			0.229	**	***
						*		
FP_(t-1)	0.877	0.727	0.677	0.668	0.521	0.354	0.264	0.084
	***	***	**	***	**	***	**	*
GARCH	0.343	0.134	0.072	0.022	0.196	-	-	0.375
	***	***	**	***	**	0.211	0.446	***
						**	*	
Liq		0.013		0.003		0.006		0.130
		**		***				***
Firm Size		0.040		0.018		0.083		0.329
		***		***		***		***
Leverage		0.003		0.070		0.180		1.038
				***		*		**
Tangibility		0.401		-		0.335		1.362
		***		0.051		***		***
				*				
Board Size		0.042		0.007		-0.009		0.157
		***		***				***
Board Committee		0.038		0.006		-		0.076
		***		***		0.018		
						**		
Time Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
AR(1)	0	0	0	0	0	0	0	0
AR(2)	0.1	0.23	0.062	0.06	0.176	0.412	0.1	0.559
Sargan / Hansen Test	0.33	0.295	0.55	0.472	0.211	0.573	0.343	0.459
Overid								
Number of Instruments	118	143	67	143	79	138	111	121
Number of firms	260	260	260	260	260	260	260	260

Table 5: Empirical results traded volume as a proportion of GDP with Financial Performance (GMM 2 step)

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** *
TV	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 Committe e		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	0.179	0.113	0.168	0.366	0.689	0.294	0.546	0.256
Overid								
Number of Instrumen ts	73	195	91	148	91	148	79	131
Number of firms	260	260	260	260	260	260	260	260

Note: Table 5 reports the results related to two-step system GMM dynamic panel model. Independent variable is trading volume which is represented as total trading volume as ratio of GDP. 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. 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 over 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.