Economic Freedom on Stock Market Performance and Liquidity: Evidence from KSE-100 Index Pakistan

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Abstract

We aimed to find the effect of economic freedom on equity market liquidity and performance. Data is collected for variables for the period 2000-2017. To identify the relationship between variables, we utilize the cointegration approach. The cause and effect relationship is identified with the Granger Causality approach. We have found a direct significant impact of economic freedom and KSE-100 Index return, market capitalization, and trading volume. We observe no causality between economic freedom and return from the stock market. Furthermore, we find long-term effects of economic freedom on stock market performance and its liquidity. Additionally, we find that GDP growth, interest rate, and inflation have a causality with market capitalization, stock market index, and trading volume. The study suggests a cross-sectional analysis using multiple countries' data with a large sample set.

Keywords: Economic freedom, Stock market liquidity, Stock market performance, Cointegration

Introduction

From the last two decades, the concept of economic freedom is getting more interest from researchers and policymakers. It is that aspect of human liberty which is concerned with fewer restrictions on the material autonomy of individuals from the state or any other interest group. This view is related to the classical liberal, who believes in the free markets and private ownership of property. It is widely believed that economic freedom has a relationship with the economic prosperity and capital market capitalization (Chen & Huang, 2009). The extant literature shows that more economic freedom is closely associated with protection of investors and high confidence in the market (La Pota *et al.*, 1997; & Li, 2002). Economic freedom gives the freedom to invest in different markets by diversifying portfolios of investment and bringing efficiency to earn above-average returns in emerging markets (Jon *et al.*, 2003). In this vein, policymakers in emerging economies open up their markets for sharing the benefits of integrated markets through a portfolio of investment. Thus, it is important to explore the main causes, like the economic freedom that influences the internal market's interdependences (Pretorius, 2002). Furthermore, emerging stock markets are characterized by abnormal returns, have

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a low level of association with developed countries, and have scope for maximizing returns through international portfolio diversification (Barkley *et al.*, 2010).
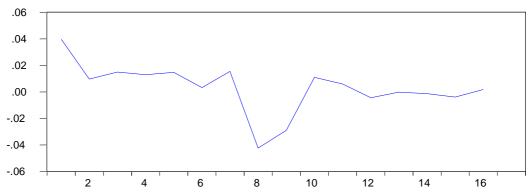
Stocker (2005) suggested that an increase in economic freedom modifies the investment strategy of global investors and their portfolio compositions. Therefore, those investors who wish to earn superior returns would invest in such countries, where there is more economic freedom. Thus, the flow of funds is expected to move to those markets where economic freedom is more than others. Tag, Degirmen, and Saltik (2016) found a positive and significant influence of the economic freedom on foreign direct investments in both developed and developing economies. Ullah *et al.* (2018) found that economic freedom plays an important role in encouraging cross border capital flows. Stocker (2006) further investigated that an increase in a country's economic freedom is positively linked with the improvement in the socio-economic conditions and returns on their investments. Ullah *et al.* (2018) reported a significant role of economic freedom in attracting foreign portfolio investments in emerging markets, including Pakistan. While La Pota *et al.*, (1998) suggested that legal protection to investors explains differences in ownership and financing of firms operating in different countries. Therefore, firms operating in various countries are widely different in their financial and investment structures and each country has a unique business and financial environment that may be investigated in their context.

Similarly, economic freedom may vary from country to country and its role in economic development, as it improves the overall financial and business environment of a country. More specifically, a country with a higher level of economic freedom may have a more attractive environment for business and development of financial institutions which is expected to significantly contribute towards the overall economic development of a country (Chortareas *et al.*, 2013; Pasiouras *et al.*, 2009; Sufian & Majid, 2011). Instead of the fact that the role of economic freedom has been examined in economic development (Altman, 2008; Bergh & Karlsson, 2010), its relationship with the stock markets has recently got the attention of the researchers (Setayesh & Sheidaee, 2016; Ullah at el., 2018).
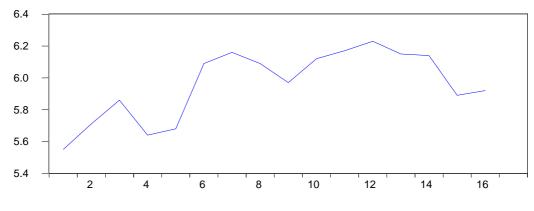
The current study is primarily focused to investigate the long-term relationship of economic freedom with stock market returns and stock market liquidity. The role of economic freedom to stock market volatility has been examined by Setayesh and Sheidaee (2016), while the economic freedom's effect on the foreign portfolio investments is examined by Ullah at el. (2018). However, the relationship of economic freedom with the stock returns and stock market liquidity has been rarely studied. Therefore, this study employed the time series data analysis and used cointegration and causality tests to examine the relationship of the economic freedom with stock market

returns and liquidity patterns in an emerging market like Pakistan, which is different from the other markets in terms of stock market efficiency, regulatory framework, investor's protection and enforcement of contract mechanisms. Therefore, the results of this study will provide a deep insight into the role of economic freedom in two major fundamental factors of the stock market i.e. returns and liquidity. Both of these factors are taken into account by the local as well as foreign investors while taking their investment decision, portfolio managers of investment companies, regulators and policymakers will equally be benefitted by the results of this study. Graphs 1.1 and 1.2 below depict the variations in KSE-100 Index returns and economic freedom returns. Our study has some significant contributions to the literature of the topic under study, particularly in a growing economy like Pakistan.

KSE-100 Index Returns

Economic Freedom

Literature Review

Different dimensions of stock market performance and economic freedom have been discussed in this part. Researchers across the world have tried to explore this topic

in more depth. Fama (1981) studied the impact of macroeconomic variables on stock market performance. Geske and Roll (1983) also studied the same relationship. The scope of literature on this topic was further extended by Bulmash and Trivoli (1991). The authors studied the variations in stock prices due to economic factors like T-bill rates and money supply. They concluded that the money supply has a direct significant effect on share prices, while T-bill rates have a significant negative effect on share prices. The same argument is further presented by the work of Maysami and Koh (2000) from the Singapore stock market. The direct impact of money supply on share returns have been documented by them. On the contrary, they found a negative impact of interest rate on share return. We can find further evidence in this matter from the study of Simpson and Evans (2003). They analyzed the relationship of monetary policy with a stock market performance by employing a cointegration approach. The authors found no significant relationship between the two. These findings and the study of Brahmaserene and Jiranyakul (2007) are in the same line. The authors confirmed a direct impact of the money supply, while an inverse impact of oil price on the exchange rate on stock market performance. The same argument is further supported by Ali (2011) with evidence from the Bangladesh Stock market. The author found a direct impact of EPS, industrial production, market capitalization, and stock market performance, while an inverse impact of foreign remittances, and rate of inflation on equity market performance.

Rana (2013) studied the interest rate impact on stock market returns. The author found a bidirectional causal relationship between the two. Johansen cointegration technique was further used by Phuyal (2016) to measure the effect of interest rate, foreign remittance, GDP, and inflation on stock returns. The results depict that there is a direct significant relationship between GDP, interest rate, remittance, and stock return. However, a long-term negative impact has been observed by inflation on stock return.

If we read further, we find studies explaining the behavior of firm-level factors and stock market volatility. For instance, Black (1976) studied the effect of debt to equity ratio on Stock Price Volatility (SPV). Results show the impact of debt to equity and SPV. Such a decrease in share price lowers the value of equity and increases the debt to equity ratio. The same relationship was also confirmed by Christie (1982). Bekaert and Harvey (1997) suggested that market liberalization reduces stock market volatility i.e. they both have an indirect relationship. Santis and Imrohoroglu (1997) supported this argument and stated that the negative impact of market liberalization has been found on stock market volatility. The results of Yang (1999) and Cunado *et al.* (2006) are in contrast with the above results and argued that both these variables are directly related to each other. Ritter (2005) concluded a negative association between economic growth and equity returns.

Stocker (2005) reported that a rise in economic freedom modifies the investment strategy of global investors and their portfolio compositions. Similarly, Stocker (2006) further investigated that an increase in a country's economic freedom is positively linked with the improvement in the socio-economic conditions and returns on their investments. Moreover, Ritter (2005) reported a negative association between economic growth and equity returns. However, La Pota *et al.* (1998) concluded that the legal protection of shareholders decides the differences in the ownership pattern and financing decisions of firms operating in different countries. In this vein, policymakers in emerging markets initiated the sharing of benefits from the integrated markets through a portfolio of investment. Thus, it is important to explore the main causes like the economic freedom that influences the internal markets' interdependence (Pretorius, 2002). Barkley *et al.* (2010) documented that the emerging equity markets are mainly characterized by abnormal returns and weakly associated with developed markets and have more scope for optimizing returns through international portfolio diversification.

Macroeconomic Variables and Pakistan Stock Market

The impact of macro-economic variables on capital market development is a well-known topic for researchers across the globe. The same relationship was studied in the Pakistan stock market by different researchers. For example, Aliyu (2007) tried to predict future returns of stocks based on historic returns. The author contends that it is possible to predict future earnings of the equity market. Alam and Salah (2009) examined the impact of inflation on growth in equity market returns. The authors found a positive behavior between these two variables. Furthermore, Aurangzeb (2012) studied the impact of interest rates, inflation rates, and stock market performance. The negative impact of interest rates on stock market performance has been found. In addition, the positive impact of industrial production and inflation on stock market performance has been found. This argument is further supported by Saleem, Zafar, and Rafique (2013) who found a positive relationship between the rate of inflation, economic growth, and stock market performance. Zafar (2013) suggested that foreign direct investments and the stock traded have a positive effect on market performance, while interest rates have a negative effect on the stock market performance. Raza *et al.* (2015) extended the scope of this literature and utilized cointegration and error correction techniques. They utilized money supply, capital growth, economic growth, and stock market capitalization as independent variables. The result suggests money supply, economic growth, and remittances have a positive impact on market capitalization.

In a similar manner, recent studies have highlighted the importance of economic freedom in relation to various investments factors; for instance Tag, Degirmen and Saltik (2016) examined that how changes in the level of economic freedom may affect the flow

of foreign direct investments and found that increase in the level of economic freedom could have a positive influence on foreign direct investments in the case of both developed and developing economies. They also concluded further that its role is more prominent in developed economies as the level of economic and monetary freedom is more in the case of developed countries. In this vein, Ullah *et al.* (2018) concluded that economic freedom has an instrumental role in attracting cross border capital flows in those developing countries where there is an increasing pattern in the level of economic freedom. Thus, countries with a higher level of economic freedom are expected to create a more favorable environment for business and development of financial institutions that could further accelerate the overall economic development of a country (Chortareas *et al.*, 2013; Sufian & Majid, 2011). The literature shows that the role of economic freedom has been examined in relation to the economic growth and development in both emerging and developed economies (Altman, 2008; Bergh & Karlsson, 2010), however, its relationship with the stock markets has recently got the attention of the researchers (Setayesh & Sheidaee, 2016). Ullah *et al.* (2018) also concluded that economic freedom has a positive influence on foreign portfolio investments in emerging markets including Pakistan. Therefore, the current study has focused on the role of economic freedom in relation to the stock market returns and liquidity patterns in the stock market of Pakistan as an emerging market with a unique business environment. The size of Pakistan's stock market and information availability, regulatory framework, investor protection, and enforcement of contracts make this market unique to be investigated in its own context.

Methodology and Research Design

This section includes data collection and sampling framework, research models, and variables' definitions.

Data Collection

This study has utilized time-series data. The study used economic freedom, trading volume, KSE-100 Index returns, market capitalization, inflation rate, growth in GDP, and interest rate as variables of the study. The time span of the study is 2000 to 2017. The data related to the KSE-100 Index has been collected from the PSX website while macroeconomic variables' data has been collected from the World Bank database. In addition, the economic freedom index of the Heritage Foundation has been utilized for the measurement of economic freedom.

The study has used the KSE-100 Index, Trading Volume, Market Capitalization, economic freedom index, and GDP in the case of the Augmented Dickey-Fuller test, which suggested that data is not stationary at level. So, the study has used stock market returns which were computed from the KSE-100 Index by taking the log of the ratio of today's index to previous day's index and averaged it for each year, whereas, trading

volume is computed as a percentage change in KSE-100 Index trading volume and averaged it to each yearly value. The economic freedom index is computed by the Heritage Foundation used in this study which is a widely used index that accounts for monetary, financial, investments, trade, and labor freedom in a country. Inflation-adjusted interest rate, inflation rate, and GDP growth are taken from the World Development Index indicators reported by the World Bank.

Statistical Tests

The following tests have been performed:

Augmented Dickey-Fuller (ADF) Test: The ADF test is performed to identify whether or not the variables are stationary at their first level. The test holds the null hypothesis that data is non-stationary at level. All the variables are tested individually. The standardized equation of the Dickey-Fuller test is given below:

$$\Delta y_t = (\rho_1 - 1)y_{t-1} + \sum_{j=2}^{p} \rho_j (\Delta y_{t-j+1}) + \varepsilon_t$$

Johansen Cointegration Test: A cointegration test is used to identify whether or not a long-term relationship exists between variables. Several options are available in this family of technique. We have utilized Johensen Cointegration (1991) approach in our study. In this technique, first, we have to find out the number of equations to be estimated. Next, we have to find out the model that will explain the relationship among variables.

Granger Causality Test: Granger causality test is performed to find cause and effect relationships between the selected variables. This approach holds the hypothesis that variable X does not Granger Cause the variable Y; similarly, variable Y does not Granger Cause the variable X. The variables of the study are also tested for unidirectional and bidirectional causality using Granger (1969) approach. The following equation shows the Granger causality test.

$$y_t = c_1 + \sum_{i=0}^{p} \alpha_i y_{t-i} + \sum_{j=1}^{p} \beta_j x_{t-j} + u_t$$

Results and Discussions

This part of the paper contains the results of the several tests performed. For instance, descriptive statistics, ADF, Cointegration test, and Causality test. The detailed discussion about these results is as follows.

Descriptive Statistics

The following Table 1 shows the descriptive statistics for the selected variables, such as KSE-100 Index returns, trading volume, market capitalization, economic freedom index, inflation rate, interest rate, and growth in GDP for a period of 2000 to 2015.

The results show that the mean value of KSE-100 Index returns is .3%, the average percentage change in the trading volume is .6%, and the average change in market capitalization rate is 1.32. The average value of economic freedom is 5.96, while on average the rate of inflation is 4.6% and the rate of interest is 9.4%, while the mean value for GDP is 4.15%. Also, the data follows a normal distribution as shown by the Jarque-Bera test.

Table 1: *Descriptive Statistics*

	INDEX100 Returns	Trading Volume	Market Capitalization	Economic Freedom	Inflation Rate	Int. Rate	GDPG
Mean	.003	.002	1.327	5.960	9.411	4.629	4.159
Median	.004	.007	2.045	6.030	7.342	5.640	4.328
Maximum	.039	.012	2.045	6.230	20.666	8.681	7.667
Minimum	-.049	-.037	-.389	5.550	2.463	.000	1.606
Std. Dev.	.018	.011	.972	.218	5.725	3.394	1.836
Jarque-Bera	2.517	1.721	2.453	1.580	2.708	1.827	.698
Probability	.284	.234	.293	.453	.258	.401	.705
Observations	16	16	16	16	16	16	16

Augmented Dickey-Fuller Test

The following Table 2 shows results from the ADF test of the variables of the study such as the KSE-100 index, trading Volume, market capitalization, economic freedom index, and GDP. The ADF test is used to identify whether or not the stochastic factor holds a unit root. The null hypothesis of the test states that unit roots are present in data and data is non-stationary. A time-series data is said to be non-stationary if it doesn't follow the intertemporal structure in its higher-order statistics such as kurtosis and skewness. Such kind of data is not fit for OLS because it violates one of the basic assumptions of the OLS. The values of the ADF test are always expressed in negative terms and the probability of rejecting the null hypothesis increases as we move more closer to the value of negativity. An ADF test uses two criteria for decision making. One is the comparison of critical value and tests statistics value for a particular variable. The next criterion is Mikannon p-value. To reject the null hypothesis, we need to get test statistics to value for a variable greater than the critical value and the p-value less than .05 at a 5% level of significance. If we read Table 2, it shows that the critical value at 5% level of significance is -3.6 for all variables, so, a variable having test statistic's value greater than -3.6 (ignore negative sign) will be considered as stationary at level and vice versa. Now reading Table 2, we can see that none of our selected variables have greater test statistics' value than the critical value at 5% level of significance. For instance, KSE-100 Index test statistic's value is -2.149, trading volume value is -1.57, market

capitalization value is -2.91, economic freedom value is -1.68, inflation rate value is -2.39, interest rate value is -2.08 and GDP value is -2.72. Hence, we can say that our data is non-stationary at level as the test statistics are less than the critical values of the test even at a higher level, as shown in Table 2. Therefore, the data of these variables are unfit for regression analysis and it is recommended to use other time series techniques. If we read further in Table 2, we find that after taking 1st difference of the data, all variables become stationary as shown by the results. Therefore, these variables are integrated into order 1 and are represented by I(1). So, these variables are expected to have a long-term relationship as these are integrated at the same level of difference.

Table 2: *Augmented Dickey-Fuller Test*

S. No	Variable	Test Statistics at level	Test Statistics at 1st Difference	Order of Co-integration
1	KSE 100 Index	-2.149	-4.542***	I(1)
2	Trading volume	-1.578	-3.860**	I(1)
3	Market Capitalization	-2.911	-4.071**	I(1)
4	Economic Freedom	-1.686	-3.617 **	I(1)
5	Inflation Rate	-2.393	-5.647***	I(1)
6	Interest Rate	-2.089	-4.053 **	I(1)
7	GDP	-2.721	-5.335***	I(1)

Lag Length Selection

In time-series data modeling, one of the important decisions is the selection of appropriate lag (Naik, 2013). For this purpose, several tests are performed to select an appropriate lag length. Table 4 shows the results of different tests for the selection of lag length. The results of FPE, AIC, HQIC, and SBIC show that the 1st lag of the variables would better model the data and relationship between these variables as the value in front of the 1st lag are significant at 10% level of significance.

Table 3: *Lag Length Selection*

Lag	LL	LR	df	P	FPE	AIC	HQIC	SBIC
1	32.355		1		.000*	-5.225*	-5.245*	-5.184*
2	32.817	.924	1	.336	.000	-5.136	-5.166	-5.055
3	32.824	.015	1	.901	.000	-4.971	-5.015	-4.849
4	32.825	.008	1	.977	.000	-4.804	-4.864	-4.642

Cointegration Test of Stock Market Performance

The following Table 4 depicts results from the cointegration test. The table shows that trace statistics value is more than the critical values for the threshold point 'at most 1'. Therefore, the two equations' model could better explain the relationship. If we read further, the cointegration rank test results are presented in Table 4. Here, the

maximum Eigen statistics show more value i.e. 30.73 than the critical value (25.82) for 'at most 1', again suggesting two integrating models for the study. The results are also confirmed by the p-value i.e. .010.

The results of the main cointegration model show that the economic freedom index has a positive and significant effect on KSE-100 Index returns. These results suggest the existence of the long-term effect of economic freedom on stock market returns. Furthermore, interest rate and GDP growth rate have a positive and significant effect on KSE-100 Index returns, whereas, there is a negative and significant impact of the inflation rate on the KSE-100 Index returns. These results suggest that there exists a long-term relationship of economic freedom index, inflation rate, interest rate, and GDP growth with the KSE-100 Index returns (Coleman & Tettey, 2008; Liow, Ibrahim & Huang, 2006).

Table 4A: *Cointegration Test of Stock Market Performance*

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 5%	Prob.**
None *	.997	84.634	32.118	.000
At most 1 *	.888	30.737	25.823	.010
At most 2	.656	14.957	19.387	.195
At most 3	.401	7.186	12.517	.325
At most 4	.502	7.285	13.515	.425

Table 4B: *Unrestricted Cointegration Rank Test Max-Egine (Trace)*

	Max-Egine			
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 5%	Prob.**
None *	.997	137.515	63.876	.000
At most 1 *	.888	52.881	42.915	.003
At most 2	.656	22.143	25.872	.135
At most 3	.401	7.186	12.517	.325
At most 4	.502	7.285	13.515	.425

Table 4C: *Main cointegration Model*

1 Cointegrating Equation(s):	Log-likelihood		35.85358		
Normalized cointegrating coefficients (standard error in parentheses)					
INDEXR100	EF	INF	INTR	GDP	1
1.000000	.089	-.005	.012	.011	-0.009
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)

Granger Causality test

The following Table 5 contains results from the causality test. Going through Table 5, we see that the null hypothesis 'Economic freedom does not Granger Cause INDEX 100 (KSE-100 Index Return)' could be rejected because the F-statistics value is 6.72 with a p-value of .02. Thus, we can say that the KSE-100 Index return is Granger Caused by economic freedom and economic freedom is not Granger Caused by KSE-100 Index return. In this way, there exists a unidirectional causality effect between economic freedom and index return. We can find unidirectional causality effect relationship between GDP, interest rate, inflation rate, and KSE-100 Index return.

Table 5: *Granger Causality test*

Null Hypothesis:	Obs	F-Statistic	Prob.
Economic Freedom does not Granger Cause INDEXR100	15	6.723	.026
INDEXR100 does not Granger Cause Economic Freedom		.001	.99
Inflation rate does not Granger Cause INDEXR100	15	4.904	.081
INDEXR100 does not Granger Cause Inflation Rate		2.272	.157
Interest Rate does not Granger Cause INDEXR100	15	6.463	.025
INDEXR100 does not Granger Cause Interest Rate R		.586	.458
GDP growth does not Granger Cause INDEXR100	15	5.164	.051
INDEXR100 does not Granger Cause GDP growth		.459	.259

Cointegration of Stock Market Liquidity

The next step in our study is to verify the impact of economic freedom on stock market liquidity. For this purpose, market capitalization and trading volumes are taken as a measure of liquidity. The results are presented in Table 6. The below tables use the Trace and maximum Eigenvalues criteria for decision making. Both these results suggest the use of two integrating equations as shown by the trace statistics value (59.82) as compared to the critical value (42.91) at a 5% level of significance. The use of two integrating equations model for economic freedom and trading volume is also suggested by the maximum Eigenvalue (38.6 as compared to critical value 25.82). Furthermore, the study results of Table 7 showed for economic freedom and market capitalization, interest rate, GDP growth, and rate of inflation. The results from both these tables suggest the use of three integrating equations. We can see a significant positive impact of economic freedom on market capitalization and trading volume of the KSE-100 index. It means that these variables have a long-term relationship between them. Also, growth in GDP and interest rates have a significant positive relationship with market capitalization and trading volume of the KSE-100 index. The negative relationship between inflation rate

and market capitalization and trading volume is also confirmed here. In the conclusion of our discussion, we can say that there exists a significant positive relationship between economic freedom and market liquidity. Our results are in line with the results of Liow, Ibrahim, and Huang (2006), and Coleman and Tettey (2008).

To test the hypothesis that whether or not economic freedom, GDP, interest rate, and rate of inflation causes market liquidity, according to the Granger causality tests performed. The results are shown in Table 8 and Table 9. Accordingly, trading volume and market capitalization are Granger Caused by economic freedom, therefore the null hypothesis of the test is rejected. On the other hand, it can be found that interest rate, GDP and inflation do not Granger Cause trading volume. Moreover, GDP and rate of inflation have unidirectional causality relationships with market capitalization. However, interest rates and market capitalization have a bidirectional causality relationship with each other.

Table 6A: *Cointegration of Stock Market Liquidity (Market Capitalization)*

		Unrestricted Cointegration Rank Test (Trace)		
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 5%	Prob.**
None *	.989	124.250	63.876	.000
At most 1 *	.936	59.826	42.915	.005
At most 2	.659	21.224	25.872	.170
At most 3	.355	6.143	12.517	.442
At most 4	.502	7.285	13.515	.425

Table 6B: *Unrestricted Cointegration Rank Maz-EgineTest (Trace)*

Hypothesized No. of CE(s)	Eigenvalue	Max- Statistic	Critical Value 5%	Prob.**
None *	.989	64.424	32.118	.000
At most 1 *	.936	38.602	25.823	.001
At most 2	.659	15.080	19.387	.189
At most 3	.355	6.144	12.517	.442
At most 4	.402	8.285	14.515	.525

Table 6C: *Main Cointegration Equation*

1 Cointegrating Equation(s):	Log-likelihood			35.85358	
Market Capitalization	EF	INF	INTR	GDP	@TREND(01)
1.000	0.089	-0.005	0.011	0.011	-0.007
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)

Table 7A: *Cointegration of Stock Market Liquidity (Trading Volume)*

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 5%	Prob.**
None *	.953	110.650	63.877	.000
At most 1 *	.893	69.727	42.978	.000
At most 2	.871	35.562	25.187	.002
At most 3	.391	6.937	12.734	.356
At most 4	.294	4.285	9.151	.736

Table 7B: *Unrestricted Cointegration Rank Maz-EgineTest (Trace)*

Hypothesized No. of CE(s)	Eigenvalue	Max- Statistic	Critical Value 5%	Prob.**
None *	.894	42.944	32.119	.001
At most 1 *	.899	32.059	25.821	.006
At most 2	.871	28.717	19.386	.001
At most 3	.391	6.954	12.519	.351
At most 4	.292	4.136	14.585	.714

Table 7C: *Main Cointegration Equation*

1 Cointegrating Equation(s):	Log-likelihood			35.85358	
Trading Volume	EF	INF	INTR	GDP	@TREND(01)
1.000	6.584	-.183	0.013	0.021	-0.002
	(0.628)	(0.036)	(0.000)	(0.000)	(0.000)

Table 8: *Granger Causality test of Market liquidity (Market Capitalization)*

Null Hypothesis:	Obs	F-Statistic	Prob.
EF does not Granger Cause MAKCAP100	15	5.871	.037
MAKCAP100 does not Granger Cause EF		.149	.706
INF does not Granger Cause MAKCAP100	15	5.069	.044
MAKCAP100 does not Granger Cause INF		.2418	.633
INTR does not Granger Cause MAKCAP100	15	6.215	.029
MAKCAP100 does not Granger Cause INTR		6.088	.029
GDP does not Granger Cause MAKCAP100	15	6.815	.022
MAKCAP100 does not Granger Cause GDP		.149	.706

Table 9: *Granger Causality test of Market Liquidity (Trading Volume)*

Null Hypothesis:	Obs	F-Statistic	Prob.
EF does not Granger Cause Tr.VOL100	15	7.748	.021
INF does not Granger Cause Tr.VOL100		0.001	.993
Tr.VOL100 does not Granger Cause INF	15	2.271	.157
INTR does not Granger Cause Tr.VOL100		.924	.355
Tr.VOL100 does not Granger Cause INTR	15	1.71	.215
Tr.VOL100 does not Granger Cause INTR		1.725	.214
GDP does not Granger Cause Tr.VOL100	15	1.714	.215
Tr.VOL100 does not Granger Cause GDP		1.725	.214

Conclusion

The study examines the impact of economic freedom on stock market performance. The study used data of KSE-100 Index returns, trading volume, and market capitalization and economic freedom for a period from 2000 to 2017. The study used the ADF test, Johannson cointegration, and Granger causality to examine the relationship of economic freedom with stock market performance and liquidity. The results of the ADF test shows that KSE-100 Index returns, trading volume, market capitalization, economic freedom, interest rate, inflation rate, and GDP growth are non-stationary at the level and become stationary at the level of 1st difference so these variables are cointegrated at order 0(I). The cointegration test showed that economic freedom has a significant long-term relationship with the KSE-100 Index returns, trading volume, and market capitalization. The results of Granger causality showed that there exists a unidirectional cause and effect relationship of economic freedom with KSE-100 Index returns, trading volume, and market capitalization. Furthermore, the results of macroeconomic variables showed that interest rate, inflation rate, and GDP growth causes a stock market index, trading volume, and market capitalization respectively. The results of the current study can be improved by taking into account a large sample of data and multiple countries' data. Furthermore, a cross-sectional study may be conducted by considering multiple countries' data on economic freedom and stock market performance. Further, the results of the study largely depend on the computed index of economic freedom by the Heritage Foundation, other researchers can compute it for Pakistan by taking into account the macroeconomic variables and may come up with more robust results. The study has several implications; as it provides a deep insight into the relationship of economic freedom with two fundamentals of the stock market i.e. returns and liquidity. The general investors, portfolio managers, foreign investors may take into consideration the level of economic freedom while devising their investment plans. Furthermore, the findings of this study could also be helpful for regulators and policymakers to recommend stringent reforms

pertaining to improvement in the economic freedom in Pakistan that would significantly affect the stock market returns and liquidity.

References

Aduda, J., Masila, J. M., & Onsongo, N. E. (2012). The Determinants of Stock Market Development: The Case for the Nairobi Stock Exchange. *International Journal of Humanities and Social Science, 2*(9), 214-230.

Ali, M. (2011). Impact of Micro and Macroeconomic Variables on Emerging Stock Market Return: A Case on Dhaka Stock Exchange (DSE). *Interdisciplinary Journal of Research in Business, 1*(5), 8-16.

Ali, R., Abrar-ul-haq, M., & Ullah, S. (2015). Macroeconomic Indicators and Stock Market Development. *Developing Country Studies, 5*, 139-149.

Aliyu, S. U. R. (2009). Impact of oil price shock and exchange rate volatility on economic growth in Nigeria: An empirical investigation.

Amtiran, P. Y., Indiastuti, R., Nidar, S. R., & Masyita, D. (2017). Macroeconomic Factors and Stock Returns in APT Framework. *International Journal of Economics and Management, 11*, 197- 206.

Asekome, M. O., & Agbonkhese, A. O. (2015). Macroeconomic Variables, Stock Market Bubble, Meltdown, and Recovery: Evidence from Nigeria. *Journal of Finance and Bank Management, 3,* 25-34.

Anthony Kyereboah-Coleman, Kwame F. Agyire-Tettey. (2008). Impact of macroeconomic indicators on stock market performance: The case of the Ghana Stock Exchange. *The Journal of Risk Finance, 9*(4), 365-378.

Baskota, N. P. (2007). Stock Price Volatility in Nepal. Unpublished M. Phil. Dissertation. Office of the Dean, Faculty of Management, Tribhuvan University.

Black, B. S., & Gilson, R. J. (1998). Venture Capital and Structure of Capital Markets: Banks Versus Stock Market. *Journal of Financial Economics, 47*, 243-277.

Boachie, M., Mensah, I., Frimpong , A., & Ruzima , M. (2016). Interest Rate, Liquidity and Stock Market Performance in Ghana. *International Journal of Accounting and Economics Studies, 4*(1), 46-51.

Brahmasrene, T., & Jiranyakul, K. (2007). Cointegration and Causality between Stock Index and Macroeconomics Variables in an Emerging Market. *Academy of Accounting and Financial Studies Journal, 11*, 17-30.

Bulmash, S., & Trivoli, G. (1991). Time-lagged Interactions between Stock Prices and Selected Economic Variables. *The Journal of Portfolio Management, 17*(4), 61-67.

Chen, N. F., Roll, R., & Ross, S. A. (1986). Economic Forces and Stock Market. *The Journal of Business, 59*(3), 383-403.

Chen, C. R., & Huang, Y. S. (2009). Economic freedom, equity performance and market volatility. *International Journal of Accounting & Information Management, 17*(2), 189-197.

Chia, R., & Lim, S. (2015). Malaysian Stock Price and Macroeconomic Variables: Autoregressive Distributed Lag (ARDL) Bounds Test. Kajian Malaysia, 33, 85-103.

Fama, E. F. (1981). Stock Returns, Real Activity, Inflation, and Money. *The American Economic Review, 71*(4), 545-565.

Eric Girard, Mohammed Omran, (2009). On the relationship between trading volume and stock price volatility in CASE. *International Journal of Managerial Finance, 5*(1), 110-134.

Geske, R., & Roll, R. (1983). The Fiscal and Monetary Linkage between Stock Returns and Inflation. *Journal of Finance, 38*(1), 1-33.

Ullah, H., Wahid, F., Mohmand, M. I. K., & Ali, A. (2020). Foreign Portfolio Investments and Economic Freedom: Empirical Investigation of the World Countries Grouping Based on the Level of Income. *Review of Economics and Development Studies*, *5*(4).

Liow, K. H., Ibrahim, M. F., & Huang, Q. (2006). Macroeconomic risk influences on the property stock market. *Journal of Property Investment & Finance, 24*(4), 295-323.

Kotha, K. K., & Sahu, B. (2016). Macroeconomic Factors and the Indian Stock Market: Exploring Long and Short Run Relationships. *International Journal of Economics and Financial Issues, 6*(3), 1081-1091.

Kuwornu, J., & Victor, O.-N. (2011). Analyzing the Effect of Macroeconomic Variables on Stock Market Returns: Evidence from Ghana. *Journal of Economics and International Finance, 3*(11), 605-615.

Lentina Simbolon, , Purwanto, (2018), The Influence of Macroeconomic Factors on Stock Price: The Case of Real Estate and Property Companies, in John W. Kensinger (ed.) *Global Tensions in Financial Markets. Research in Finance, 34,* 19-39.

Liu, M. H., & Shrestha, K. (2008). Analysis of the Long-Term Relationship between Macroeconomic Variables and the Chinese Stock Market Using Heteroskedasticity Cointegration. *Managerial Finance, 34*, 744-755.

M. Mafizur Rehman and M. Salahuddin, (2013) the determinants of economic growth in Pakistan: Does stock market development play a major role?

Maghayereh, A. I. (2002). Causal Relations Among Stock Prices and Macroeconomic Variables in the Small, Open Economy of Jordan. *Economics and Administration*, *17*(2), 3-12.

Mayasami, R. K., & Koh, T. S. (2000). A Vector Error Correction Model of the Singapore Stock market. *International Review of Economics and Finance, 9*(1), 79-96.

Mukherjee, T. K., & Naka, A. (1995). Dynamic Relations between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model. *Journal of Financial Research, 18*(2), 223-237.

Murcia, J. B. (2014). Macroeconomic Estimation of Selected Philippine Stock Market Indices. *Southeast Asian Interdisciplinary Research Journal, 2*(2), 2-30.

Nieh, C. C., & Lee, C. F. (2001). Dynamic Relationship between Stock Prices and Exchange Rates for G-7 Countries. *The Quarterly Review of Economics and Finance, 41*, 477-490.

Phuyal, N. (2016). Can Macroeconomic Variables Explain Long Term Stock Market Movements? A Study of Nepali Capital Market. *Journal of Business and Management Research, 1*, 26-38.

Phylaktis, K., & Ravazzolo, F. (2005). Stock Market Linkages in Emerging Markets: Implications for International Portfolio Diversification. *Journal of International Money and Finance, 24*, 1031-1053.

Rad, A. A. (2011). Macroeconomic Variables and the Stock Market: Evidence from Iran. *International Journal of Economic and Finance Studies, 3*(1), 1-10.

Rahman, A. A., Sidek Noor, Z. M., & Tafri, F. H. (2009). Macroeconomic Determinants of Malaysian Stock Market. *African Journal of Business Management, 3*(3), 95-106.

Rana, S. B. (2013). Stock Market Returns and Macroeconomic Movements: Is there Causality? *Management and Economic Review, 1*, 14-26.

Ratha, D. (2013). The Impact of Remittances on Economic Growth and Poverty Reduction. Migration Policy. Washington, D.C.

Raza, S., Jawaid, S., Afshan, S., & Karim, M. (2015). Is Stock Market Sensitive to Foreign Capital Inflows and Economic Growth? Evidence from Pakistan. *Journal of Chinese Economic and Foreign Trade Studies, 8*(3), 142-164.

Setayesh, M. H., & Sheidaee, S. (2016). International Journal of Humanities and Cultural Studies. In *International Journal of Humanities and Cultural Studies (IJHCS)   ISSN 2356-5926* (Vol. 1).

Shrestha, P. K., & Subedi, B. R. (2014). Empirical Examination of Determinants of Stock Index in Nepal. NRB Working Paper No. 24.

Simpson, J. L., & Evans, J. P. (2003). Banking Stock Returns and Their Relationship to Interest Rates and Exchange Rates: Australian Evidence. University of Wollongong in Dubai Working Paper, 1-35.

Tag, M. N., Degirmen, S., & Saltik, O. (2016). Do Institutions of Economic Freedom Attract Foreign Direct Investment? Evidence from Panel Data. *Paper Presented at the 20th Annual International Conference on Macroeconomic Analysis and International Finance, Crete, Greece.*

Ullah, A., Anees, M., Ali, Z., & Khan, M. A. (2018). Economic Freedom and Private Capital Inflows in Selected South Asian Economies: A Dynamic Panel Data Evidence. *South Asian Journal of Business and Management Cases*, *7*(1), 41–52.

Yasin, M. (2005). Official Development Assistance and Foreign Direct Investment Flows to SubSaharan Africa. *Asian Development Review, 17*(1), 23-40.