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The Impact of Trading Volume on Stock Market Returns: A Comparative Analysis of Stock Markets of South Asia

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Abstract:-
This paper attempts to investigate the impact of Trading Volume on Market Returns among the Stock Markets of SAARC countries. The graphical presentation showed that stock markets have stochastic trend and are correlated. Granger Causality Tests are carried out to estimate the association between Trading Volume and Market Returns. The results show that Trading Volume significantly Granger Causes Returns in five major stock markets of SAARC countries.

Keywords: Market Returns, Stock Markets, SAARC, Granger Causality, Trading Volume

1. Introduction

(Hayes, 2019) Stock returns are gains or losses made by the investment over a period of time in the stock market for investor. Stock returns can be expressed as nominal value or in percentage. Total returns are the sum of divided and increase in the value of asset in the stock market over the period of time. Further Stock Market Returns are the financial benefit that investors receive from the market as a whole.

(Hayes, 2019) Volume of trade refers to the number of shares of a security or index traded on the stock market. Daily volume refers to the number of shares traded between daily open and close of the stock market. Value of trading volume plays important role in technical analysis of financial markets. (W.lo & Wang, 2000) trading volume is significant in importance as it is the building block of many financial theories. This research studies the association between volatility, market returns and trading volume in the stock markets of SAARC countries in order to analyze and compare the behavior of these stock markets.

The size of trading activity of financial instruments (volume) or changes in the size of trading activity is the major source for the price and return volatility and it is considered as the process of information diffusion in the capital markets (Yu-Sheng, Hwei-Lin, & Yu-Cheng, The Empirical Linkages among Market Returns, Return Volatility, and Trading Volume: Evidence from the S&P 500 VIX Futures, 2018). In the past literature the trading volume is viewed as substitute for information transmission into the financial markets because the information movement cannot be observed (Lamoureux & Lastrapes, 1990). When information about an asset is disseminated into market it appears in the form of price and volume change, therefore, the information stream in the financial market is captured by the dynamics of returns and volume (Garg & Sampath, Contemporaneous and Causal Relationship between Returns and Volumes: Evidence from Nifty futures, 2018).

The link between returns generated by stock and the size of trading activity has been studied by the researchers from two primary perspectives. First, the concurrent correlation (known as contemporaneous) between return generated by stock and trading volume. (Karpoff J. M., 1987) The researchers extensively recognized positive contemporaneous correlation between the stated variables. A survey was carried by (Karpoff J. M., 1987) about the studies regarding price change-volume relationship. In this paper he documented that 18 studies acknowledged the positive association between volume and price change. He further documented that the trading volume reacts to the flow of facts into the market. (Clark, 1973) and (W & Epps, 1976) applying mixture of distribution (MDH) hypothesis have documented positive concurrent association between trading volume and stock return.

Since 1990, the emphasis of literature has been shifted from concurrent association between trading volume and stock return to dynamic (lead-leg casual) association between return generated by stocks and size of trading activity (Pisedtasalasai & Gunasekarage, 2008). In connection with investigation of Lead-leg association (Lee & Rui, The dynamic relationship between stock return and trading volume; Domestic and Cross country evidence, 2002) acknowledged that stock market returns are not Granger-Caused by size of trading activity. However, (Jain & Joh, 1988) has shown more holistic approach to study the association between returns and volume of trade. The periodic data for every trading hour from New York Stock Exchange (NYSE) was taken and the study documented strong contemporaneous correlation, furthermore the study also presented causal (lead-leg) relationship between volume of trade and returns. (Statman, Thorley, & Vorkink, 2006) suggested the presence of considerable positive affiliation between volume of trade and stock market returns. The casual

association was investigated between stock return and volume of the trade using quantile regression method (Chuang, Kuan, & Lin, Causality in quantiles and dynamic stock return–volume relations, 2009). The study suggested substantial lead-leg (dynamic) effects from volume of the trade to stock returns through quantiles and the casual effect from return to trading volume is stable.

More recent studies (Ahmad, Ahmed, Vveinhardt, & Streimikiene, Empirical Analysis Of Stock Returns And Volatility: Evidence From Asian Stock Markets, 2016), (Wang, Qian, & Wang, Dynamic Trading Volume And Stock Return Relation: Does It Hold Out Of Sample?, 2017), (Karaa, Slim, & Hmaied, Trading Intensity And The Volume-Volatility Relationship On The Tunis Stock Exchange, 2017), (Lau, Lucey, & Roubaud, 2018), (Sheng, Hwei-Lin, & Cheng, The Empirical Linkages among Market Returns, Return Volatility, and Trading Volume: Evidence from the S&P 500 VIX Futures, 2018) and (Sampath & Garg, 2018) document a robust and positive relationship between returns and volume of the trade and vice versa.

This study will include the indices of major capital markets of SAARC countries. The KSE 100 index is selected for the examination of the capital market of Pakistan. S&P BSE SENSEX index is selected from Bombay Stock Exchange of India which is the most tracked bellwether index of BSE, which measures the performance of largest 30 most liquid and financially sound companies. Similarly, DS30 index is selected from Dhaka Stock Exchange of Bangladesh. The DS30 lists all the top 30 financially sound companies of DSE. And NEPSE index is taken from Nepal Stock Exchange for the analysis of financial market of Nepal. NEPSE index is the primary and all market capitalization index of Nepal Stock Exchange. All Share Price Index (ASPI) of Colombo Stock Exchange; which is one of the primary indices of Colombo Stock Exchange; represents the share market price changes and behavior stock market in Sri Lanka and Maldives Stock Exchange Index (MASIX) of Maldives is considered for comparison of stock markets.

The results of this research will provide comprehensive evidence regarding behavior of South Asian stock markets; this will contribute to the expansion of theoretical work on the association of stock index returns, volume of the trade. Furthermore, this study will be of great benefit to the stock market players, portfolio managers, and investors as this study will compare the performance of different stock market indices of South Asian stock markets.

As this study will utilize the data from South Asian stock markets, hence, the results will show the behavior of these markets only. As South Asian countries are developing nations, the stock markets of these countries have recently developed. The old financial data for all the stock markets are not available, therefore the results will be produced with the maximum available financial data. Furthermore, the stock market indices will be used for the analysis, the individual stocks are not taken into account.

2. Literature Review

The previous literature shows that stock market returns and trading volume are studied separately, in pairs and in combination with other factors. Among the vast literature different researchers have developed theoretical work and others have collected empirical data regarding the stated variables. Most of the studies are conducted regarding stock markets of developed nations (EU & USA).

The previous literature has shown that much of the literary work is printed on returns and volume as independent factors, where in comparison very little work is printed on these variables in pairs. For instance relation between stock market price and volume

of sale (Ying, Stock Market Prices and Volumes of Sales, 1966), predictability of returns (Fama & MacBeth, 1973), relation between inflation and returns (Fama & Schwert , 1977), transmission of volatility between stocks (King & Wadhwani, 1990), overconfidence and trading volume (Glaser & Webe, 2007), and increasing returns and economic geography (Krugman & Paul, 2019).

This research is based on the Capital Market Theory presented by (Sharpe, Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk, 1964). This theory is based on the following assumptions.

a) All investors select portfolio on the basis of mean and variance or standard deviation of returns.
b) Short sales are not restricted and all investors can lend and borrow unlimited amount with no taxes.
c) All the capital market securities are marketable with zero transaction cost.
d) All investors are price takers.

Given the above assumptions the expected returns earned by any asset is given by

$$E(Rj) = R_f + \Upsilon \frac{COV\ (Rf, Rm)}{\sigma\ (Rm)}$$

Where risk free rate is denoted by Rf, market risk is denoted by Rm, Υ is the market risk premium per unit of risk, E(Rj) represents the expected returns and σ shows the value of standard deviation of market risk.

The volume of the trade of capital security is very important factor in determining the stock returns of the market. The volume of trade and returns are the two key indicators of trading activity (Mahajan & Singh, 2013). Studying the trading volume together with returns discloses more information about stock market and helps to increase our understanding of the stock market dynamics (Gallant, A. Ronald, P.E. Rossi, & Tauchen, 1992). Furthermore, a theoretical standpoint was produced which suggests that trading volume exposes vital evidence about the quality of traders' information (Blume, Lawrence, Easley, & O'Hara, 1994).

The literature regarding price-volume relation could be sketched from the study of (Osborne, 1959) in his study he attempted to present the model which states that the changes in the stock price is a diffusion process. The initial study indicated that there volume of the trade could be positively correlated to changes in price. Later, positive correlation was found by other researchers such as (Clark, 1973), (Tauchen & Pitts, 1983) and (Harris L. , 1986).

(Granger & Morgenstern, 1963) Carried out empirical study regarding price-volume relation, in this study spectral analysis was conducted using weekly data from 1939-1961 on New York Stock Exchange. This research suggested no association between changes in price and volume of trade, further; two individual stocks also show no noteworthy association between price and volume of the trade. Further, Godfrey, Granger, and Morgen in 1964 studied the market in further detail using daily and transaction data for individual stock. The researchers presented that changes in price are not positively correlated with volume of transaction.

However, correlation between volume of the trade and changes in price was initially presented by (Ying, 1966). Ying used empirical test to detect the association between securities value and volume of the trade. In this study six years data from Standards and Poor's 500 composite indexes was utilized. The empirical tests included chi squared tests, variance analysis, and cross-spectral methods. The main results of Ying's empirical tests were as follows, a fall or rise in the price, on average, is further followed by a fall or rise in the price. A small volume is followed, on the average, by

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a fall in price. A large volume is followed, on the average, by a rise in price. The decrease in volume is followed by the fall in the price & the rise in the price is followed by an increase in the volume.

(Crouch, 1970) Selected indices of the stocks and individual companies stocks and elaborated that daily trading volume is positively correlated with the price change. (Clark, 1973) Using the data from cotton futures market, the researcher established that volume of the trade is positively associated with the square of measure of price change. Similarly, (Morgan, 1976) & (Westerfield, 1977) found that variance of the price is positively correlated with volume of transaction. (Gallant, Rossi, & Tauchen, 1992) Stated that the previous literature is mostly focused on contemporaneous correlation between variations in the price and trading volume, while few studies include cross correlation to study dynamic relationship but they do not attempt to examine causal relation.

(Harris & Raviv, 1993) Suggested a model about the behavior of traders that receive information from the market and this study suggested that price change is positively correlated with trading volume. This model states that traders obtain similar shared information from market but they behave to this information differently, it was referred as difference of opinion. Traders start with same beliefs about the return before information, as the information is available each trader change his belief differently about the return of the asset.

Later on, the attention of researchers shifted from contemporaneous correlation to casual relation among stock returns and volume. The following research studies examine the lead-leg (dynamic) association between the variables of the study. (Campbell, Grossman, & Wang, 1993) Suggested a model which says changes in the price supplemented great volume of the trade will likely to be inverted, however, this reversal will less likely to take place if the volume of trade is less. The volume of the trade may contain information about the future returns (Wang J. , 1994). With the help of this model the researcher studied the causal relation between volume of the trade and capital returns. The researcher found that trading volume is positively associated with returns.

(Lee & Rui, 2000) Studied the casual relationship between volume of the trade and stock returns using data generated daily from New York, London and Tokyo Stock exchanges. In this study the researcher explored that stock returns are not Granger-caused by trading volume. (Kim, 2005) Argued that if there is optimism, then, prices are increased, similarly, if there is pessimism, then, the prices are decreased. Hence, it is argued that if there is an increase in the price, then, trading volume will be higher; similarly, when there is a decrease in the prices, then, trading volume will be lower. Investors are usually restricted to act upon the information when there is short sale, so, demand is decreased with the effect.

More recent studies (Ahmad, Ahmed, Vveinhardt, & Streimikiene, 2016, 22:6), (Wang, Qian, & Wang, 2017), (Karaa, Slim, & Hmaied, 2017), (Lau, Lucey, & Roubaud, 2018), (Sheng, Hwei-Lin, & Cheng, 2018) and (Sampath & Garg, 2018) document a strong and positive link between capital returns and volume of the trade and vice versa.

Empirical Model

$R_{i,t} = \beta_0 + \beta_2 Vol_{s,t} + \varepsilon_t$

where,

$R_{s,t}$ = Stock market return of a specified country at a specified time

$Vol_{s,t}$ = Trading volume of a specified country at a specified time

Hypothesis

H0: Stock Market Returns are positively related with trading volume of the stock market

H1: Stock Market Returns are negatively related with volatility of the stock market

3. Research Methodology

This shall be a quantitative and causal in nature. This study will use the daily data for the capital markets of South Asian countries namely Pakistan, India, Bangladesh and Sari Lanka, Maldives, Bhutan and Nepal. The financial data will be collected from the websites of respective stock markets. The stock market indices used in this research study are nominated on two bases: a) these indices are the major spot price indices of the countries b) The volume chain for these security indices is also available.

The following study will include the indices of stock markets of South-Asian countries as follows. The KSE 100 index is selected for the examination of the capital market of Pakistan. This index performs as standard for the comparison of prices in Pakistan Stock Exchange (PSX). The 100 companies with highest market capitalization are selected, however to insure full representation the company with highest market capitalization from every sector is included in the index. And the S&P BSE SENSEX index is selected from Bombay Stock Exchange of India which is the most tracked bellwether index of BSE, which measures the performance of largest 30 most liquid, and financially sound companies. Similarly DS30 index is selected from Dhaka Stock Exchange of Bangladesh. The DS30 lists all the top 30 financially sound companies of DSE. And NEPSE index is taken from Nepal Stock Exchange for the analysis of financial market of Nepal. NEPSE index is the primary and all market capitalization index of Nepal Stock Exchange. All Share Price Index (ASPI) of Colombo Stock Exchange; which is one of the primary indices of Colombo Stock Exchange; represents the share market price changes and behavior stock market in Sari Lanka. Maldives Stock Exchange Index (MASIX) of Maldives and Royal Security Exchange of Bhutan the smallest stock market of the world is also taken into account for comparison of stock markets.

i. Stock market returns

Stock market returns shall be estimated using the following generalized equation:

$R_{mt} = \ln P_t - \ln P_{t-1}$

where,

$R_{m,t}$ = Stock market return of a country *(i)* at time *t*

$\ln P_t$ = Natural log of the most recent stock price at a time *t*

$\ln P_{t-1}$ = Natural log of the stock price at time *t - 1*

ii. Granger Causality Test

The Granger Causality Test is employed to test the impact of one variable on another. This test show whether variations in one variable bring variations in another variable or not. The impact of trading volume on stock market returns is investigated by the Granger Causality test in this study. The Granger Causality is not true causality but this test predicts the impact of changes in one variable on another variable. Let Y_{1t} be the volume of trading activity and Y_{2t} be the returns. If the past values of Y_{1t} help to predict the values of Y_{2t} than, Y_{1t} granger causes Y_{2t}, and if the past values of Y_{2t} predicts the values of Y_{1t} than, Y_{2t} granger causes Y_{1t}.

$$Y_{1t} = \phi + \sum_{i=1}^{p} \alpha_i Y_1, t\text{-}i + \sum_{i=1}^{p} \beta_i Y_2, t\text{-}i + \varepsilon_{1t} \quad (3.3)$$

$$Y_{2t} = \phi + \sum_{i=1}^{p} \varrho_i Y_1, t\text{-}i + \sum_{i=1}^{p} \gamma_i Y_2, t\text{-}i + \varepsilon_{1t} \quad (3.4)$$

In model 3.3 if all the values of β jointly are zero than it would imply that Y_{2t} does not granger causes Y_{1t}. Similarly, in model 3.4 if all the values of γ jointly are zero than

it would imply that Y_{1t} does not granger causes Y_{2t}. In these two models if Y_{1t} causes Y_{2t} but Y_{2t} does not causes Y_{1t} than there is unidirectional relation. If both Y_{1t} and Y_{2t} causes one another than the bidirectional information flow is present.
To perform granger causality test E-views software is utilized.

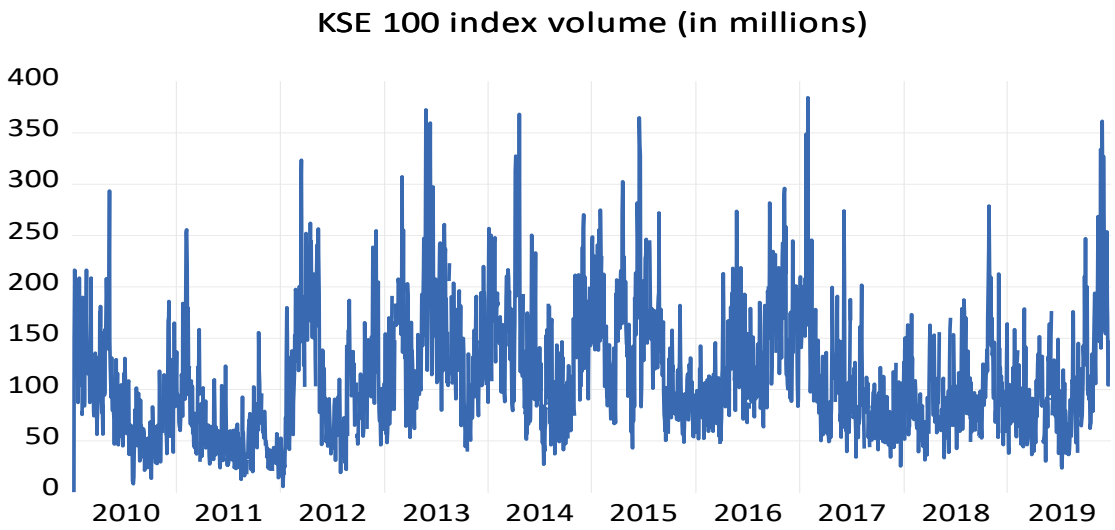
iii. Data Analysis Tools

Stationarity tests shall be performed to study the reliability of the data. Panel data regression shall be conducted using EViews software to study the relationships between the variables.

4. Results and Estimation

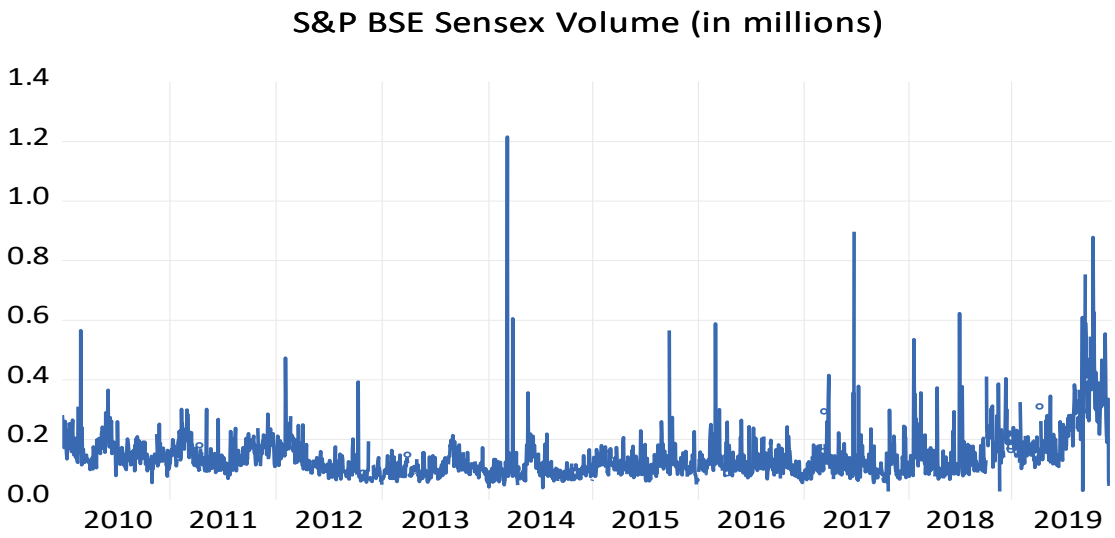
i. Time series graphs *for Trading Volume*

Time series graphs of historic values of trading volume of six major stock markets of SAARC countries are plotted in line chart and the fluctuations in the line shows the spread of the data. The graphical representation shows that all the six stock indices have performed variedly. The value of trading volume in millions is taken on Y-axis and years are taken on X-axis.



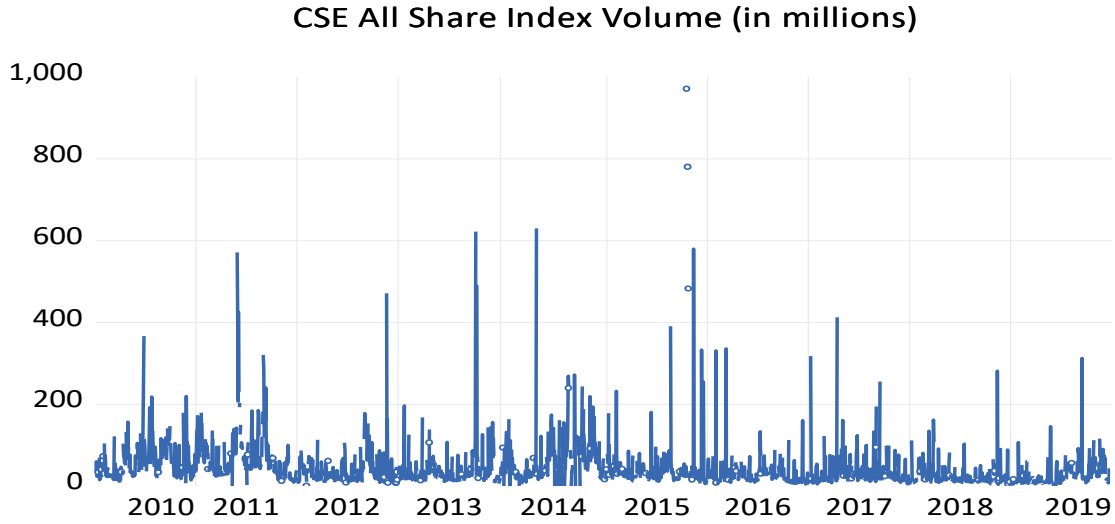
Graph 4.1 KSE 100 Index

Trading volume data for KSE 100 index is plotted in graph 4.1. The Graph shows that KSE 100 index has performed similarly though out the period. The trading volume started from 200 million at the beginning of the period and it reaches above 350 million at certain places. The graph further showed that continuous ups and downs are present and in the year 2019 upward trend is presented.



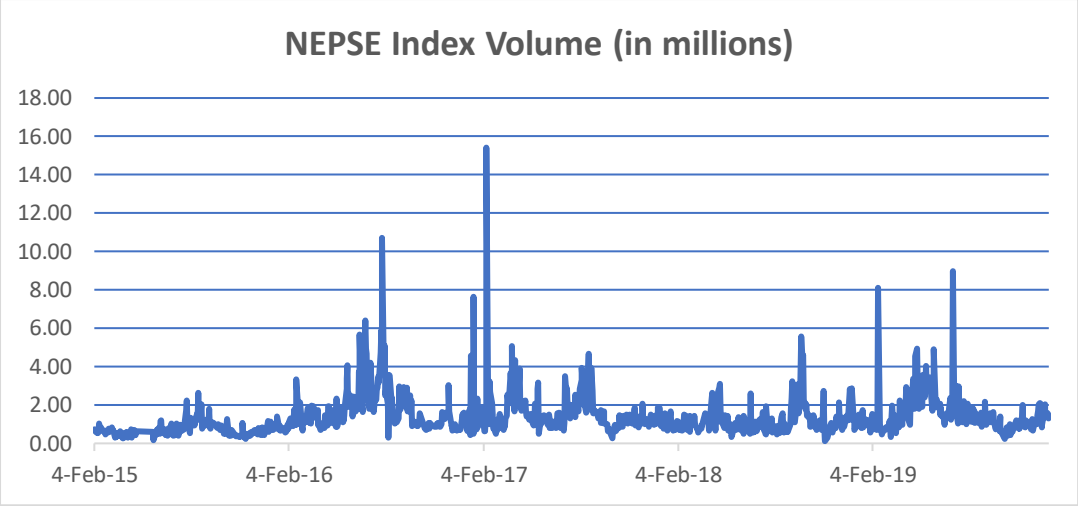
Graph 4.2 S&P BSE Sensex Index

Trading volume data from 2010 to 2019 for S&P BSE Sensex of Bombay Stock Exchange is plotted in graph 4.2. Trading volume started from 0.2 million at the beginning of the period and reached the above 1.2 million as well in 2013 and at the end the trading volume was below 0.2 million. The graph further shows that outliers are also present in the data and these outliers are in the positive Y-axis which shows that performance of the index at some points is far good then others.



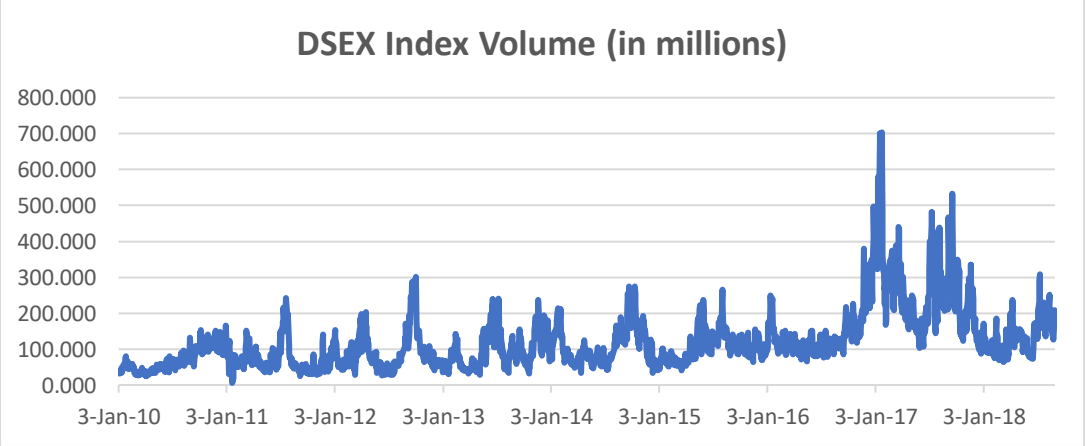
Graph 4.3 CSE All Share Index

The trading volume values for CSE All Share index of Colombo Stock Exchange are plot ted in graph 4.3. The graph shows that at the beginning of period trading volume was below 200 million and at end of period same trading volume is observed for the index. The outliers are also present in the data which shows the index is volatile. The trading volume for index also reached above 600 million in 2013 and 2014.



Graph 4.4 NEPSE Index

The trading volume data of NEPSE index is plotted in graph 4.4. The data was available only from 2015 onward. At the beginning trading volume was below 2 million, with volatile progression the trading volume reached its maximum value above 14 million in 2017 and at the end the value approached to 2 million. The graph shows that upward trend is present in the data.



Graph 4.5 DSEX Index

The values for DSEX index of Dhaka Stock Exchange are contrived in graph 4.5. Trading volume data was not available for the year 2019 for DSEX index. The graph shows that upward trend in trading volume is present in the data. At the beginning trading volume was below 100 million and it reached above 200 million at the end with ups and downs in the middle. The maximum value was 700 million in 2017 for DSEX index.

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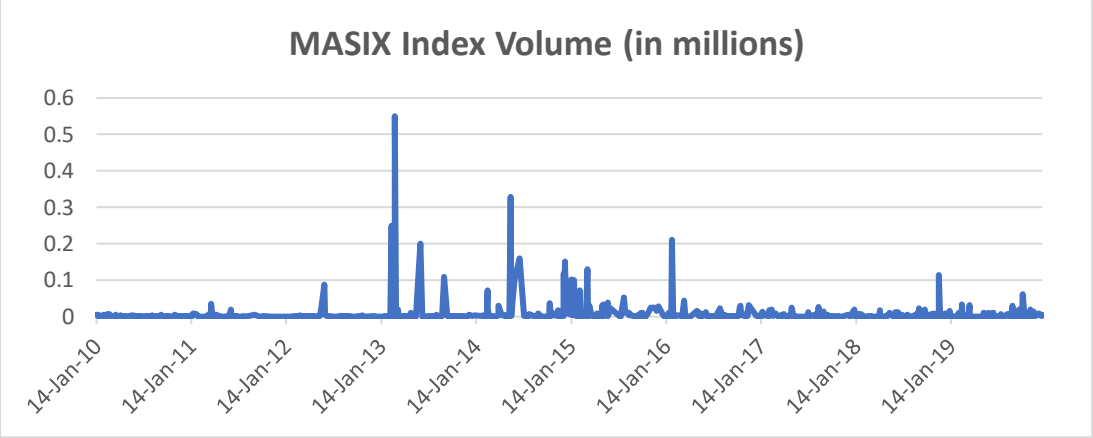

Graph 4.6 MASIX Index

Trading volume data for MASIX index of Maldives Stock Exchange is plotted in graph 4.6. The graph shows that it is the most volatile index as great differences are observed in data. The trading volume stated in hundreds and also reached above 0.5 million in 2013.

ii. Descriptive Statistics of Trading Volume

Table 4.1

	CSE All Share Index	DSEX Index	KSE 100 Index	MASIX Index	S&P BSE Sensex Index	NEPSE Index
Mean	28.95889	177.1502	104.0130	732.5188	16678.01	1.415659
Std. Dev.	34.17067	101.0446	50.41481	3076.099	10359.93	1.014847
Skewness	5.152272	1.881166	1.528320	10.73873	2.463410	5.369048
Kurtosis	42.83513	7.463574	6.746267	153.8654	12.31910	57.67592

Table 4.1 represented descriptive statistics of all six indices. Since mean of the data shows the center of the data, the mean for CSE All Share index is 28.95. Standard deviation reflects the dispersion of the data around the mean. The value of SD for CSE All Share index was 34.17. The volume data of CSE All Share index is skewed with large peaks as the values of skewness and kurtosis are 5.15 and 42.83 respectively. The descriptive statistics for DSEX index showed that mean is around 177.15. The DSEX volume data is not very much skewed and has flat shape. The trading volume data for KSE 100 index showed similar results to DSEX index with little peaks and flat shaped data. The standard deviation value of MASIX showed that it has great volatility as compared to other stocks. The data is very much peaked for MASIX index. S&P Sensex index has also performed similarly to MASIX index with highest SD value of 16678 and very little skewness. Trading volume data for NEPSE index showed that the data is peaked with little skewness and the mean is around 1.4 and with least SD value 1.01 which showed little variation in the data of NEPSE index.

The values of standard deviation in table 4.1 represent the fact that every stock market has volatility which is different from other markets, it shows the dispersion of values around squared average returns of the market. The highest value for standard deviation 10359.93 is recorded for S&P BSE Sensex index. However, the lowest

value for standard deviation 1.014847 is recorded for NEPSE Index which is least volatile trading volume among all the stock indices.

iii. Dynamic association between Trading Volume and Market Returns

Granger Causality tests are carried out in order to determine the dynamic association between trading volume and stock market returns. The results for every stock market are plotted below.

Table 4.2 KSE 100 Index

KSE 100 Index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 09:46			
Sample: 1/04/2010 12/31/2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	2476	1.7224	0.1789
RETURNS do not Granger Cause VOLUME		16.0923	0.0000001

The results of granger causality test for KSE 100 Index are plotted in table 4.2 where the first null hypothesis is not accepted because the p-value is greater than 0.1 which shows that trading volume granger causes market returns however second hypothesis is accepted with the p-value less than 0.1 explaining that returns does not granger cause trading volume.

Table 4.3 S&P BSE Sensex Index

BSE Sensex index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 10:03			
Sample: 1/04/2010 12/31/2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	2425	1.25688	0.2847
RETURNS do not Granger Cause VOLUME		3.41327	0.0331

The results of granger causality test for S&P BSE Sensex Index are plotted in table 4.3 where the first null hypothesis is not accepted because the p-value is greater than 0.1 which shows that trading volume granger causes market returns however second hypothesis is accepted with the p-value less than 0.1 explaining that returns does not granger cause trading volume.

Table 4.4 CSE All Share Index

CSE All Share Index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 10:09			
Sample: 1/04/2010 12/31/2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	2392	0.51992	0.5946
RETURNS does not Granger Cause VOLUME		7.32605	0.0007

The results of granger causality test for CSE All Share Index are plotted in table 4.4 where the first null hypothesis is not accepted because the p-value is greater than 0.1 which shows that trading volume granger causes market returns however second hypothesis is accepted with the p-value less than 0.1 explaining that returns does not granger cause trading volume.

Table 4.5 NEPSE Index

NEPSE Index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 10:14			
Sample: 1 1134			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	1128	21.2007	0.000
RETURNS does not Granger Cause VOLUME		6.6216	0.0014

The results of granger causality test for NEPSE Index are plotted in table 4.5 where the first null hypothesis is accepted because the p-value is less than 0.1 which shows that trading volume does not granger cause and market returns. Similarly, second hypothesis is also accepted with the p-value less than 0.1 explaining that returns also does granger cause trading volume in NEPSE Index.

Table 4.6 DSEX Index

DSEX Index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 10:19			
Sample: 1/03/2010 8/30/2018			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	2084	2.2082	0.1102
RETURNS does not Granger Cause VOLUME		33.3933	0.000

The results of granger causality test for DSEX Index are plotted in table 4.6 where the first null hypothesis is not accepted because the p-value is greater than 0.1 which shows that trading volume does not granger cause and market returns. Second hypothesis is accepted

with the p-value less than 0.1 explaining that returns also does granger cause trading volume in DSEX Index.

Table 4.7 MASIX Index

MASIX Index			
Pair wise Granger Causality Tests			
Date: 11/06/20 Time: 10:29			
Sample: 1/14/2010 12/30/2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
VOLUME does not Granger Cause RETURNS	771	0.26799	0.765
RETURNS does not Granger Cause VOLUME		0.09667	0.9079

The results of granger causality test for MASIX Index are plotted in table 4.7 where the first null hypothesis is not accepted because the p-value is greater than 0.1 which shows that trading volume granger causes market returns. Similarly, second hypothesis is also not accepted with the p-value greater than 0.1 explaining that returns also granger causes trading volume in MASIX index.

5. Discussion and Conclusion

Dynamic association between trading volume and stock market returns is determined in this section. For this purpose, Granger Causality Tests are employed on all the Stock Indices individually. The combined results are plotted in Table 13.

Table 5.1

Index	Null Hypothesis	Obs	F-Statistic	Prob.
KSE 100 Index	VOLUME does not Granger Cause RETURN	2476	1.7224	0.1789
	RETURN does not Granger Cause VOLUME		16.0923	0.0000001
BSE Sensex index	VOLUME does not Granger Cause RETURN	2425	1.25688	0.2847
	RETURN does not Granger Cause VOLUME		3.41327	0.0331
CSE All Share Index	VOLUME does not Granger Cause RETURN	2392	0.51992	0.5946
	RETURN does not Granger Cause VOLUME		7.32605	0.0007
NEPSE Index	VOLUME does not Granger Cause RETURN	1128	21.2007	0.000
	RETURN does not Granger Cause VOLUME		6.6216	0.0014
DSEX Index	VOLUME does not Granger Cause RETURN	2084	2.2082	0.1102
	RETURN does not Granger Cause VOLUME		33.3933	0.000
MASIX Index	VOLUME does not Granger Cause RETURN	771	0.26799	0.765
	RETURN does not Granger Cause		0.09667	0.9079

	VOLUME			

The results of Granger Causality test in Table 5.1 shows that significant positive association is present between Trading Volume and Stock Market Returns of KSE 100 Index, S&P BSE Sensex Index, CSE All Share Index, DSEX Index and MASIX Index. The volume granger causes return in the above five indices. These results are in line with literature which also suggests positive relation between trading volume and returns (Datar, Naik, & Radcliffe, 1998), (Lee & Swaminathan, 2000), (Gervais, Kaniel , & Mingelgrin, 2001), (Kocagil & Shachmurove , 1998) and (Wang, Qian, & Wang, 2017). The strongest association is observed in MASIX Index. However, NEPSE index showed no relation between trading volume and market returns. The results also show that returns do not cause volume in all the stock markets except for the MASIX index.

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