Volume: 4, Issue: 10
Page: 88-98
2020

ISSN 2520-4750 (Online) & ISSN 2521-3040 (Print)

International Journal of Science and Business

Investigating the relationships between stock exchanges' total trade and total value in Bangladesh

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Abstract:
This study investigates the relationships of total trade and total value between the Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) in Bangladesh. To get the results, various unit root tests, the Granger causality test, and the Johansen cointegration test are employed. Daily data from January 2015 to May 2017 is used to check the relationship. The empirical results of unit root tests (Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test, Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) Test, and Elliott–Rothenberg–Stock (ERS) test) evidenced that total trade and the total value of DSE and CSE are stationary at their first differences. The Granger causality test found that total trade and the total value of DSE cause total trade and the total value of CSE and also total trade and the total value of CSE causes total trade and the total value of DSE meaning that there is bidirectional causality exists between the selected variables. The Johansen cointegration test showed that there is no cointegrating relationship among the variables indicating that there is no long-run relationship among total trade and total value between DSE and CSE.

IJSB
Accepted 14 September 2020
Published 18 September 2020
DOI: 10.5281/zenodo.4036073

Keywords: Dhaka Stock Exchange, Chittagong Stock Exchange, Total trade, Total value, Granger Causality test, Johansen Cointegration test.

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1. INTRODUCTION

In this 21st century, the world's economic development is mostly controlling by the capital market. The Global economic betterment is largely depending on this market which is serving as a major vehicle of economic growth. Allocation of economic resources into productive activities of the economic and capital market helps to ensure the pricing of securities, which are traded in these markets. The capital market conducts its function through the stock exchanges, where individuals and institutions trade their financial securities for long-term investment. These exchanges are denoting as share or the stock market. About 60 major stock exchanges are available around the world and their range of size is quite surprising. In the spectrum of the world capital market, the heights position is holed by the mighty New York Stock Exchange (NYSE). This exchange represents 18.5 trillion US dollars in market capitalization and holds about 27% of the total market for global equities. The NYSE itself is bigger than the world`s 50 smallest major exchanges, where even added together with the tiny island of Malta, Cyprus, and Bermuda all these three stock exchanges cover just only 0.01% of total world market capitalization. Among these 60 major markets, about 93% of the world total share market is made up by three continents namely North America about 40%, Asia about 33%, and Europe about 20% (source: http://www.visualcapitalist.com/all-of-the-worlds-stock-exchanges-by-size/), and the remaining 7% is covered by Middle East, Australia NZ, Africa, and South America.

The foremost function of the stock market is to expedite the buying and selling of shares, stocks, bonds, securities, and debentures. Security exchange is not only a market for old securities and shares but also newly issued securities and shares. Capital market syndicates are related to the supply and demand of new capital and the stock exchanges facilitate such transactions. Stock exchange trade is known as an oral or electronic transaction of securities/ shares/ stocks/ debentures, where one party buys from others. A strong and functioning stock exchange has considerable effects on the growth of an economy in developing countries like Bangladesh. In recent years' Bangladeshi capital market has grown much faster than the other segments of the financial markets. This growth was initially fueled by stronger economic fundamentals. Afterward, speculative forces had taken various key market indicators like capitalization, price-earnings ratio, and market turnover. Bangladeshi capital market is one of the smallest in Asia but the third largest in the South Asian region. Last two decades several institutional and regulatory advancements of this country's capital market have emerged. Furthermore, this change has been sighted by diversified capital market intermediaries. At present, this market institutions and intermediaries are of the following types: stock exchanges, stockbrokers, merchant bankers and portfolio managers, assets management companies, credit rating companies, trustees, and Investment Corporation of Bangladesh (ICB). The primary segment of the capital market is operated through the private and public offering of equities and bond instruments. The secondary segment of the Bangladesh capital market is institutionalized by two full-fledged automated stock exchanges namely Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). The instruments in these exchanges are equity securities (shares), debentures corporate bonds and treasury bonds. DSE is the largest stock exchange in Bangladesh. DSE was incorporate as East Pakistan Stock Exchange Association Limited in 1954. After the liberation war its trading was discontinued for five years and in 1976 restarted. About 95% of the total Bangladesh capital market has been covered by it. CSE is one of the twin financial hubs of the country which was established in 1991. Many researchers have conducted a large number of studies on stock

exchanges around the globe on the subject of stock exchanges for the last few decades. The result of those investigations highlights the status of various stock markets around the world.

This study tries to analyze the relationships between stock exchanges` total trade and total value in Bangladesh. The exploration of this relationship between Bangladeshi stock exchanges is highly important. Farther more, it is evidenced that a few numbers of study has conducted on this issue regarding DSE and CSE.

2. LITERATURE REVIEW

The stock market plays a pivotal role in the industrialization and economic development of a country. The relationship between various variables of the stock exchange is an important area for research and findings of this relationship may help the interested people for prognosticating the market profit. For this, many researchers tried hard to find out the relationship between different variables of stock markets. For example, Mun *et al.* (2008) evaluated the interrelationship between the stock market and economic growth for the period 1977 to 2006 in Malaysia. Granger causality test was employed and the results indicated a unidirectional relationship between two variables, running from the stock market to the economic growth in Malaysia. Acikalin *et al.* (2008) examined the relationships between returns in the Istanbul Stock Exchange (ISE) and macroeconomic variables of the Turkish economy. They applied the cointegration test, vector error correction (VEC) model and causality test on a quarterly dataset. The causality test found uni-directional relationships between macro indicators and ISE index, indicating that macro indicators (changes in GDP, foreign exchange rate and current account balance) have an effect on the ISE index but the ISE index has no effect on macro indicators. Nguyen and Pham (2014) examined the relationship between stock market development and economic growth in Canada and Australia. The data period was from 1981 Q3 to 2012 Q3. The results of the Granger causality test showed that the stock market development significantly causes economic growth in Canada but no significant evidence about the causality relationship between stock market development and economic growth in Australia. Teker and Alp (2014) analyzed the granger causality between interest rates and stock market for four emerging markets in Turkey, Brazil, China and Hungary by using daily data. Here unit root test and Granger causality test are applied. The result of Granger causality indicated that the causal relationship and direction differs between the countries and the maturities.

Saleem and Alifiah (2017) tried to find out the causal relationship between a macroeconomic variable and stock prices in Pakistan for the period from 1990 to 2015, where the cointegration test and Granger causality test was used. The Granger causality test result showed unidirectional causality running from interest rate to stock prices and no causality was observed for inflation rate and exchange rate. Kisaka and Mwasaru (2012) examined the causal relationship between foreign exchange rates and stock prices in Kenya from November 1993 to May 1999. In their work, they used the unit root test, cointegration test and Granger causality test. The empirical results indicated that Kenya`s stock prices caused exchange rates. It means that Kenya`s stock price is influenced by exchange rates. Bhuvaneshwari and Ramya (2017) tried to focus on exchange rates and stock market prices of India from January 2006 to December 2015, where they applied unit root tests, Karl's Pearson correlation test, Johansen cointegration test and the Granger causality test. The results revealed bidirectional causality between variables, meaning that exchange rates and stock market prices are influenced by each other. Alagidede *et al.* (2010) investigated the nature of the causal linkage between stock markets and foreign exchange markets in Australia, Canada, Japan,

Switzerland, and the UK from 1992 to 2005. Three different variations of the Granger causality test are applied and they found causality from exchange rates to stock prices for Canada, Switzerland, and United Kingdom; weak causality in the other direction is found only for Switzerland. The Hiemstra-Jones test is used to examine the possible nonlinear causality and the results evidenced causality from stock prices to exchange rates in Japan and the weak causality of the reverse direction in Switzerland.

A wide number of studies are done in Bangladesh to investigate the causal relationship between various variables of the stock market. For example, Rahman and Uddin (2008) investigated the interaction between stock price and Exchange rate on the emerging economy of Bangladesh, where they considered monthly nominal exchange rates of the US dollar, euro, Japanese yen, pound sterling and monthly values of Dhaka Stock Exchange General Index (GI) from June 2003 to March 2008. For this, the unit root test, cointegration test and Granger causality test are applied. The Granger causality test showed that stock prices Granger cause exchange rates of the US dollar and Japanese yen but there is no causal relationship between stock prices and exchange rates of the euro and pound sterling. Ali (2011) investigated the causal relationship between stock prices and macroeconomic aggregates in Dhaka Stock Exchange (DSE). He applied unit–root tests, cointegration test and the Granger causality test, and tried to find out the relationship between the DSE Stock Index and the thirteen macroeconomic variables, viz., consumer price index, deposit interest rate, foreign exchange rate, export payment, gross domestic product, investment, industrial production index, lending interest rate, broad money supply (M1), national income deflator, foreign remittances and total domestic credit using monthly data for the period 1987 to 2010. The result evidenced that the DSE share price index (DSI) does not Granger cause consumer price index (CPI), deposit interest rate, export receipt, GDP, investment, industrial production index, lending interest rate and national income deflator. But unidirectional causality is found from DSI to broad money supply and total domestic credit. Besides, bi-directional causality is also identified from DSI to exchange rate, import payment and foreign remittances. Afzal and Hossain (2011) investigated the causal relationship between four macroeconomic variables and the Dhaka Stock Exchange (DSE) stock price using the cointegration and Granger causality test. The result evidenced that unidirectional causality exists from the stock market to exchange rate and money supply in the short run. From bivariate Error-Correction models, it is found that long-run causality exists from M1 (total notes and coin in circulation and Deposit Money Banks (DMBs) demand deposits), M2 (total money supply (M1) and Time Deposits with DMBs) to stock market and from stock market to inflation rate. Ahamed and Imam (2007) investigated whether current economic activities in Bangladesh can explain stock market returns in the long-run horizon. They used the cointegration test, vector error correction model and Granger causality test. The result of the Granger causality test depicted that the change of interest rate Granger causes stock market returns unidirectionally implies that the stock market index is not a leading indicator for the economic variable of the change in interest rate. Taking into consideration the above literature, this study put a step forward to investigate the relationship between stock exchanges' total trade and total value in Bangladesh.

3. METHODOLOGY

In this study, the succeeding econometric tools are used for analyzing the data. First, unit root tests (i.e. ADF, PP, KPSS, ERS) are used to check whether the selected data are stationary or not-stationary. Second, the Granger causality test is applied to find out the direction of causality between the variables. Finally, the Johansen cointegration test is used to test the

existence of long-run relationships between the variables. To get this result E-views 8.0 econometric software was utilized.

3.1 Unit root tests

Before analyzing the data in an empirical study, we should make a stationarity test which is commonly done by unit root test. There are a variety of unit root tests used in econometric literature namely, the Augmented Dickey-Fuller (ADF) test, Phillips-Perron (PP) test, Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) Test, and Elliott–Rothenberg–Stock (ERS) test. In this study, four-unit root tests have been used to investigate whether the data used in this study are stationary or not. The ADF test developed by American statisticians David Dickey and Wayne Fuller who developed the test in 1981 shows under the null hypothesis of a unit root, this statistic does not follow the conventional *t*-distribution, and they derive asymptotic results and simulate critical values for various test and sample sizes. The Augmented Dickey-Fuller (ADF) test constructs a parametric correction for higher-order correlation by assuming that the series follows an AR (Auto Regressive) process and adding lagged difference terms of the dependent variable. The PP test proposed by Peter C. B. Phillips and Pierre Perron (1988) demonstrates an alternative (nonparametric) method of controlling for serial correlation when testing for a unit root. The PP method estimates the Non-Augmented Dickey-Fuller test equation and modifies the -ratio of the coefficient so that serial correlation does not affect the asymptotic distribution of the test statistic. The KPSS test was proposed by Denis Kwiatkowski, Peter C. B. Phillips, Peter Schmidt and Yongcheol Shin in 1992. This test is used for testing a null hypothesis that an observable time series is stationary around a deterministic trend (i.e. trend-stationary) against the alternative of a unit root. The ERS test was developed by Elliott, Rothenberg and Stock (ERS) in 1992 as a modification of the augmented Dickey-Fuller test (ADF). For series featuring deterministic components in the form of a constant or a linear trend, ERS developed an asymptotically point optimal test to detect a unit root.

3.2 Granger causality test

This study applied the Granger causality test proposed by British Economist Granger (1969). It is a statistical hypothesis test for identifying whether one selected variable is useful in forecasting another. Granger defined the causality of the relationship based on two principles. First, the cause happens before its effect and second, the cause has unique information about the future values of its effect. That means causality could be tested for measuring the ability to the future values of a variable prior values of another variable. A variable "X" is said to Granger cause variable "Y". If it can be shown usually through t-test and F-test on lagged values of X, that X values provide statistically significant information about future values of Y. As a powerful test to explore causality in varied types of situations, the main approach in this study is to employ the Granger causality test.

3.3 Johansen cointegration test

Finally, the Johansen cointegration test is applied, developed by Johansen (1988) a Danish statistician and econometrician, to investigate the existence of long-run cointegration between the variables. Two types of Johansen cointegration tests are tested in this paper, either with trace or with eigenvalue. The null hypothesis of the Johansen cointegration test indicates that there is no cointegration, if this hypothesis is not accepted it evidenced that there is cointegration between the variables.

4. DATA

The set of data was used daily data on the logarithm of the total value in Taka (million) and total trade of Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE) from 1st

January 2015 to 31st May 2017; it was compiled from the official website of DSE (http://www.dsebd.org) and CSE (http://www.cse.com.bd) accessed in 31st May 2017. The total value in taka and total trade of DSE denotes as (*ltvd*) and (*lttd*); for CSE it denotes as (*ltvc*) and (*lttc*). The descriptive statistics of the data set used in this paper are depicted in Table 1 and Table 2.

Table 1. Descriptive statistics of DSE and CSE total value in taka (million).

Variables	Means	Standard deviation	Variables (logarithms)	Means	Standard deviation
tvd, Total value in taka (million) of DSE	5586.551	3425.294	*ltvd*	8.504417	0.46
tvc, Total value in taka (million) of CSE	396.7015	236.0566	*ltvc*	5.865156	0.45

Source: Software output

Table 2. Descriptive statistics of DSE and CSE total trade.

Variables	Means	Standard deviation	Variables (logarithms)	Means	Standard deviation
ttd, Total trade of DSE	117870.5	37770.01	*lttd*	11.63305	0.29
ttc, Total trade of CSE	15651.23	5463.701	*lttc*	9.604976	0.31

Source: Software output

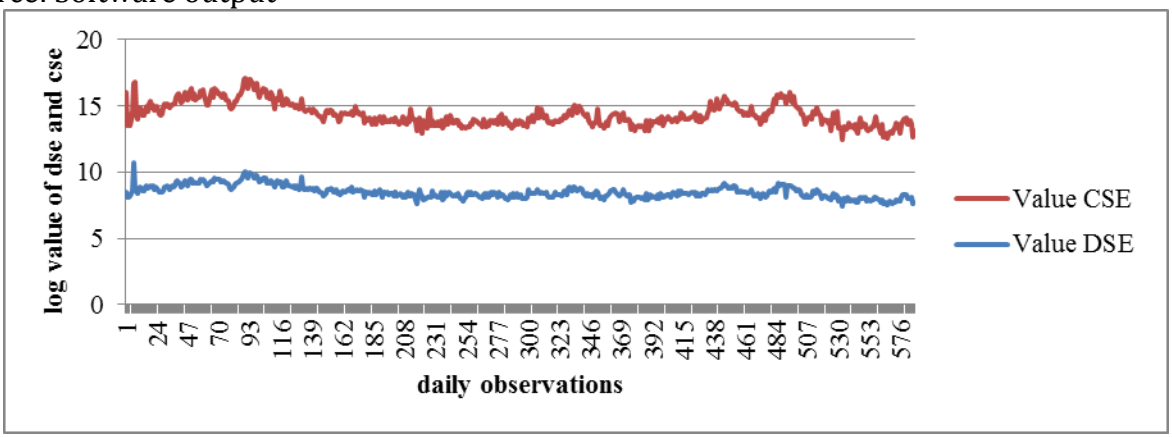

Figure: 1

Figure: 1 exhibits the total value of DSE and the total value of CSE from 1st January 2015 to 31st May 2017. Those daily data horizontally are shown in the figure as daily observation and the log value of DSE and CSE shown vertically.

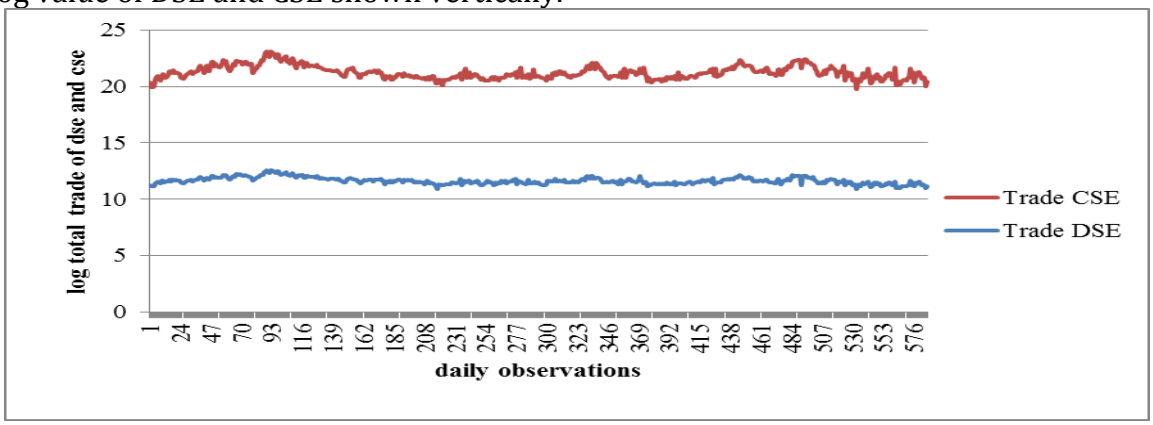

Figure: 2

Figure: 2 exhibits the total trade of DSE and total trade of CSE from 1st January 2015 to 31st May 2017. Those daily data horizontally are shown in the figure as daily observation and the log total trade of DSE and CSE has shown vertically.

5. EMPIRICAL RESULTS AND DISCUSSIONS

Table 3: Unit root test results of two variables (DSE and CSE) value and trade.

Variables	Test	Level	First difference	Details
ltvd	ADF	-3.395878**	-24.79449***	SIC, Int
ltvd	ADF	-4.916166***	-24.78755***	SIC, Int, Tr
ltvd	PP	-5.351540***	-47.37825***	NW, B, Int
ltvd	PP	-8.225198***	-47.48292***	NW, B, Int, Tr
ltvd	KPSS	1.513582	0.064560*	NW, B, Int
ltvd	KPSS	0.276103	0.045431**	NW, B, Int, Tr
ltvd	ERS	1.421546***	0.320509***	SIC, SOLS, Int,
ltvd	ERS	3.350316***	0.425697***	SIC. SOLS, Int, Tr
ltvc	ADF	-3.5588***	-22.14155***	SIC, Int
ltvc	ADF	-3.946182***	-22.121448***	SIC, Int, Tr
ltvc	PP	-10.06036***	-76.692214***	NW, B, Int
ltvc	PP	-10.85300***	-76.81913***	NW, B, Int, Tr
ltvc	KPSS	0.755218	0.196625***	NW, B, Int
ltvc	KPSS	0.362846	0.112246*	NW, B, Int, Tr
ltvc	ERS	15.06952	0.324009***	SIC, SOLS, Int,
ltvc	ERS	10.78830	0.282450***	SIC. SOLS, Int, Tr
lttd	ADF	-3.742574***	-24.71627***	SIC, Int
lttd	ADF	-4.681160***	-24.72742***	SIC, Int, Tr
lttd	PP	-5.864535***	-45.72997***	NW, B, Int
lttd	PP	-7.167490***	-46.16028***	NW, B, Int, Tr
lttd	KPSS	0.887123	0.137666***	NW, B, Int
lttd	KPSS	0.163469**	0.061379***	NW, B, Int, Tr
lttd	ERS	2.489668**	0.129512***	SIC, SOLS, Int,
lttd	ERS	6.964320	0.266770***	SIC. SOLS, Int, Tr
lttc	ADF	-4.662753***	-19.64377***	SIC, Int
lttc	ADF	-4.711131***	-19.65099***	SIC, Int, Tr
lttc	PP	-8.121477***	-51.72373***	NW, B, Int
lttc	PP	-8.134985***	-51.94478***	NW, B, Int, Tr
lttc	KPSS	0.258497***	0.102698***	NW, B, Int
lttc	KPSS	0.249836	0.066540***	NW, B, Int, Tr
lttc	ERS	2.329129**	0.071636***	SIC, SOLS, Int,
lttc	ERS	4.608681**	0.115555***	SIC. SOLS, Int, Tr

Source: Software output

Notes: ltvd and *ltvc* are the log total value of DSE and CSE respectively. *lttd* and *lttc* are the log total trade of DSE and CSE. SIC is Schwartz Information Criterion, Int is Intercept, Tr is a linear trend, NW is Newey-West band with choice, B is Bartlett kernel, SOLS is Spectral ordinary least square (OLS). ***, **, and * represent that variables are stationary at 1 percent, 5 percent, and 10 percent significant levels, respectively.

Stationarity Test (Value):

To check the stationarity of the data, this study applied various unit root tests; these are the Augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller (1981), the Phillips–Perron (PP) test proposed by Phillips and Perron (1988), the Kwiatkowski–Phillips–Schmidt–Shin (KPSS) test proposed by Kwiatkowski *et al.* (1992), and the Elliott– Rothenberg–Stock (ERS) test proposed by Elliott *et al.* (1996). These four-unit root tests provide evidence that the variable of the log value of DSE and CSE are stationary in their first differences when both intercept and trend intercept are considered. In ADF and PP test the log value of DSE and CSE are stationary in their level when both intercept and trend intercept are considered. We observe the difference in KPSS, where the log value of both markets is not stationary in their level where intercept and trend intercept is used. In the ERS test, the log value of DSE is stationary but the log value of CSE is not stationary in their level, where intercept and trend & intercept are considered.

Stationarity Test (Trade):

From those unit root tests, which are discussed under the stationarity test for the value of both stock markets, provided evidence that the variables, namely the log total trade of DSE

and CSE are stationary in their first difference. In their level, ADF, PP model show that the log total trade of DSE and CSE are stationary when both intercept and trend intercept are considered. For DSE under KPSS, when an intercept is considered and under the ERS model when trend intercept is considered; in trade is not stationary in their level. At the same time under the KPSS model, the CSE log total trade is also not stationary when the trend intercept is considered in its level.

Considering the facts and results discussed above, it is considered that variables are stationary at their first difference.

Table 4: Granger causality test results of total trade between the Dhaka Stock Exchange and Chittagong Stock Exchange.

Dependent variable	Sources of causation (independent variables)	
	lntdse	*lntcse*
4.1 *lntdse*	–	8.17000***(0.00) ←
4.2 *lntcse*	58.1258***(0.00) ←	–

Source: Software output

Note: *lntdse* and *lntcse* indicating log total value of DSE and log total value of CSE respectively. The sign (←) denotes the existence and direction of causality, and the sign (–) means does not exist causality.

Table 5: Granger causality test results of Total Value between the Dhaka Stock Exchange and Chittagong Stock Exchange.

Dependent variable	Sources of causation (independent variables)	
	lntvdse	*lnvcse*
5.1 *lntvdse*	–	18.9735***(0.00) ←
5.2 *lnvcse*	188.070***(0.00) ←	–

Source: Software output

Note: *lnvdse* and *lnvcse* indicating log total value of DSE and log total value of CSE respectively. The sign (←) denotes the existence and direction of causality, and the sign (–) means does not exist causality.

The Granger causality results from Table 4 shows that the null hypothesis of non-causality between *tdse* and *tcse* is not accepted at a 5% level of significance, since the p-value 0.00 and 0.00 are less than the critical value of 0.05. It indicates that the causal relationship is present between *tdse* and *tcse*. Equation (4.1) from Table 4 depicts that the total trade of CSE cause total trade of DSE meaning that the total trade of CSE has a predictive power to forecast the total trade of DSE. Similarly, the result of equation (4.2) depicts that the trade of DSE causes trade of CSE and trade of DSE has a predictive power to forecast trade of CSE. Furthermore, the Granger causality results reported in Table 4 indicate bidirectional causality between the trade of DSE and trade of CSE in the stock market of Bangladesh. This implies that trade of DSE and trade of CSE are interconnected and very well serve as complements to each other. The Granger causality results from Table 5 presents that, the null hypothesis of non-causality between *tvdse* and *tvcse* is not accepted at a 5% level of significance, since p-value 0.00 and 0.00 are less than the critical value of 0.05. It means that a causal relationship is present between *tvdse* and *tvcse*. Equation (5.1) from Table 5 shows that the total value of CSE Granger causes the total value of DSE. It means that the value of CSE has a predictive power to forecast the value of DSE. The result of equation (5.2) shows that the value of DSE Granger

causes the value of CSE, meaning that the value of DSE plays a role in forecasting the value of CSE. Thus, the Granger causality results reported in Table 5 indicate bidirectional causality between the total value of CSE and the total value of DSE. It means that the value of DSE and the value of CSE are interconnected. The above-mentioned tables representing that, total trade and the total value of DSE and CSE are strongly interconnected. These two stock exchanges of Bangladesh work as a complement to each other.

Table 6: Johansen cointegration estimation results between *ttdsc* and *ttcse* in Bangladesh.

6.1 Rank test (trace)

Number of cointegration	Eigenvalue	Trace	5% Critical value	Prob.**
None*	0.049891	40.31648	15.49471	0.0000
At most 1*	0.018048	10.58180	3.841466	0.0011

Source: Software output

Note: *ttdse* denote total trade of DSE and *ttcse* denote total trade of CSE

6.2 Rank test (maximum eigenvalue)

Number of cointegration	Eigenvalue	Max-eigen statistic	5% Critical value	Prob.**
None*	0.049891	29.73469	14.26460	0.0001
At most 1*	0.018048	10.58180	3.841466	0.0011

Source: Software output

Note: Trace test indicates two cointegrating eqn(s) at the 0.05 level; *denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values.

Table 7: Johansen cointegration estimation results between *tvdse* and *tvcse* in Bangladesh.

7.1 Rank test (trace)

Number of cointegration	Eigenvalue	Trace	5% Critical value	Prob.**
None*	0.087146	58.31147	15.49471	0.0000
At most 1*	0.009143	5.336365	3.841466	0.0209

Source: Software output

Note: *tvdse* denote the total value of DSE and *tvcse* denote the total value of CSE

7.2 Rank test (maximum eigenvalue)

Number of cointegration	Eigenvalue	Max-eigen statistic	5% Critical value	Prob.**
None*	0.087146	52.97510	14.26460	0.0000
At most 1*	0.009143	5.336365	3.841466	0.0209

Source: Software output

Note: Trace test indicates two cointegrating eqn(s) at the 0.05 level; *denotes rejection of the hypothesis at the 0.05 level; **MacKinnon-Haug-Michelis (1999) p-values

Table 6.1 first row exhibits the null hypothesis, there are no relationships between *ttdse* and *ttcse*, which is rejected at a 5% level of significance when the trace value (40.31648) is higher than the critical value (15.49471). It means that a relationship exists between the selected variables. In Table 6.2 first row shows Max-eigenvalue (29.73469) is higher than the critical value (14.26460) for this reason the null hypothesis is also rejected, indicating that there are cointegrated relationships between *ttdse* and *ttcse*. However, Table 6.1 and 6.2 second row depict the null hypothesis of at most one, there is at least one cointegrated relationship between two variables, is not accepted representing no relationship between the variables. Since the critical value of both tables is less than the trade value of them. In Table 7.1 first row narrates the same results as Table 6.1. Because here (Table 7.1) trace value (58.31147) is higher than the critical value (15.49471) at a 5% level of significance, which evidenced that the null hypothesis is rejected, delineating a relationship between *tvdse* and *tvcse*. A similar

result is found in Table 7.2. But Table 7.1 and 7.2 second row state that the null hypothesis of at most one cointegration is rejected at 5% level of significance, which validates, there is no cointegration. Although, in the case of "none" above tables interpret cointegrated relationships between the variables but those table highlights, there is no cointegration. When "at most one" is considered from the aforesaid discussion it is excogitating that there is some dissimilarity present, that`s why different results are shown. The Bivariate model can only show at most one cointegrating relation which is not evidenced here. So, we can assume that there is no long-run relationship between total trade and total value between DSE and CSE because each stock exchange in Bangladesh is distinctively well established.

6. CONCLUSION

This study aimed to investigate the causal relationships between stock exchanges` total trade and total value in Bangladesh. This study emphasized total trade and the total value of the Dhaka Stock Exchange and Chittagong Stock Exchange for the period expanding from January 2015 to May 2017. Applying various stationarity tests (ADF, PP, KPSS, ERS), the Granger causality test and the Johansen cointegration test; tried to find out the relationships. According to the stationarity test, the empirical results show there is no unit root denoting selected variables that do not maintain pattern and these variables are changeable over the period. The Granger causality test results exhibit a bidirectional causal relationship between DSE and CSE`s total trade and total value. This result indicates that though these two markets are distinctive and well established they are indirectly interdependent meaning that one stock market is a complement to another stock market. So, the increase and decrease in one stock exchange affect the other one. Similarly, any fluctuation in Bangladeshi stock exchanges, as alike stock market crash, may also adversely affects both stock exchanges. The Johansen cointegration test result shows long-run cointegration is not identified representing no correlation between the selected variables. This paper's result of the cointegration test evidenced that both stock exchanges in Bangladesh are not correlated, because they are well established and conduct their activities according to their specific rules and regulation under the control of a statutory body named Bangladesh Securities and Exchange Commission (BSEC).

In conclusion, the above discussion indicates a positive relationship between Bangladesh`s two stock exchanges. We did not explore all possible determinants of the causal relationship between the stock exchanges in Bangladesh. This investigation only focused on the relationship of total trade and total value. The findings of this paper will be useful for a potential investor before taking any investment decision in the Bangladeshi stock market. The observations, which are drawn from such studies may help justify the studies of future researchers.

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Cite this article:

Shaikh Mostak Ahammad & Md. Azmir Sharif (2020). Investigating the relationships between stock exchanges' total trade and total value in Bangladesh. *International Journal of Science and Business, 4*(10), 88-98. doi: https://doi.org/10.5281/zenodo.4036073

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