

RELATIONSHIP BETWEEN THE SHARIAH AND NON-SHARIAH COMPLIANT STOCK INDEXES IN BANGLADESH: A CO-INTEGRATION AND VAR APPROACH

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Abstract

The study examines the relationship between the Shariah and non-Shariah compliant stock indexes in Bangladesh over the period 20 January 2014 to 11 February 2018. This study uses Johansen and Juselius co-integration and Vector Autoregressive (VAR) models to analyze the long-run and short-run relationships between stock indexes. The empirical results reveal that there is no long-run association between the Shariah-compliant stock index and its conventional counterpart. But Variance Decomposition analyses confirmed the discrepancies in the variances of the respective index. Besides, the impulse response function showed that the Shariah and Non-Shariah compliant stock indexes react positively to the shocks of each other. The findings imply that the Shariah-compliant stock Index of the Dhaka Stock Exchange in Bangladesh appears to have no long-run co-movement with Non-Shariah-compliant stock indexes, while the impulse response function test confirms a positive relationship between stocks of each other.

Keywords: VAR, Shariah compliant stock index, Co-movement, Co-integration

1. Introduction

The recent financial crisis has sparked the discussion concerning the stability of financial markets, and the use of Shariah compliant equity markets specifically. Shariah-compliant equity markets prevent instability of financial markets, and their spillover effects, they strongly call for the elimination of all forms of prohibited elements in the lens of Shariah, such as interest, and excessive uncertainty which, in turn, reduce the probability of reoccurrence of financial crises. Thus, there is a call for choosing a financial market that complies with Shariah tenets to reduce the risk of the conventional market for promoting a stable financial market.

One of the major issues that financial markets in general and equity markets in particular face, is coping with increasing risks from growing global economic integration. The 2007–2009 financial turbulence evidenced that the fall of US financial markets heavily affected the global markets. For instance, the dangers emerge out a co-movement of the stock market with other equity markets across borders. In other words, the stock market co-movement provides better portfolio benefits to the investors for shifting their risk and returns. Rua (2009) refers to the

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co-movement of the stock market as the tendency of two or more stock market indexes to move together in the same direction, suggesting stock prices are positively correlated and ultimately leads to loss of any potential opportunity to diversify (Jebran, 2014). But, the notion conflicts with a theoretical stance that postulates portfolio diversification are plausible when stock prices are negatively correlated since the portfolio diversification benefits are possible at a low level of correlation in a domestic stock market with that of cross-border ones. In the seminal work of Grubel (1968), international portfolio diversification seeks higher returns and lower risks in world stock markets as compared to portfolio diversifications in domestic markets. On the other hand, market integration plays an essential role in the growth of a domestic stock market; improves trade partners across global markets, and consequently advances economic growth. It enhances factor productivity, reduces the cost of capital, and improves better corporate governance. In addition, it boosts the liquidity and size of the stock market (Dewandaru et al., 2014).

Alongside studying the relationship of the stock market, there is a financial contagion, which is among the most widely used variable in the literature of finance. The financial contagion shows a phenomenon, which co-movement across different markets changes temporarily (Dewandaru et al., 2014). It can be classified into pure and fundamentals. The pure contagion refers to shocks transmitted excessively, since these are beyond any idiosyncratic disturbances and fundamental link (Forbes and Rigobon, 2002; Bae et al., 2002; Eichengreen et al., 1996), whereas the fundamental contagion indicates the transmission of shocks through the integration of financial market and trade relationships (Calvo and Reinhart, 1996; N'Diaye et al., 2010).

Therefore, the analysis of the relationship among stock markets should be of particular interest to investors, policymakers, and academicians in emerging countries. Nevertheless, a large body of literature exists in the field of conventional financial markets, but there is very little empirical and theoretical research on the nature of the relationship of Islamic stock markets with conventional ones, especially the Bangladesh stock market.

The study aims to examine the relationship between Shariah and Non-Shariah compliant stock indexes performance in Dhaka Stock Exchange (DSE), Bangladesh. To the best of our knowledge, this is one of few studies that examine the relationship of the stock market with conventional ones. The motives behind conducting this study include several justifications. First, the common justification is for identification of the nature of Islamic stock market relationship which provides international investors opportunities to diversify their capital to obtain maximum gains with minimum risks. Second, most of the studies widely determine the conventional relationship of stock markets in developed countries stock markets (Baele, 2002; Diebold and Yilmaz, 2009 and Xiao and Dhesi, 2010), and a few

studies have been conducted to examine the relationship and integration of Shariah-compliant stock market indexes (Arshad and Rizvi 2013; Majdoub and Mansour 2014; Nazlioglu, Hammoudeh, and Gupta, 2015). Third, the relationship of Islamic stock market in Bangladesh needs further research, since most of the studies are done after the recent financial crisis showed evidence empirically that the performance of the Islamic stock market was better than their counterparts, suggesting that they provide plausible diversification opportunities in both tranquil and turmoil periods (Abbes and Trichilli, 2015). The reason that Islamic stock indices perform better than conventional ones were explained to their specific features Saiti, Bacha, and Masih (2014). Their characteristics include ethical and rational screenings to eliminate financial interest based transactions and prohibition of financial assets like derivatives etc. To that end, it limits the adaptations of Islamic equity markets with other markets (Saadaoui and Boujelbene 2015). As a result, Islamic products are less risky. In general, Islamic stocks are different from conventional stocks. The former is based on Islamic Shariah principles, while the latter does not work on Shariah principles. Moreover, the risk-return trade-off of the Islamic stock market will also be different from traditional stock markets. Therefore, it gives ample space to this study to fill the gap of the co-movement of the Islamic stock index in Bangladesh.

The study has several contributions. Firstly, the study extends the extant literature in the dynamics of the relationship between the Shariah and Non-Shariah compliant indexes in Bangladesh and also emerging economies. Up to date, this is the first research which explores the dynamic relationship of Shariah and Non-Shariah compliant stock indexes in the context of Bangladesh. Second, this study used all datasets since the formation of the Shariah-compliant stock index in Bangladesh so that it provides comprehensive insights about the Shariah-based stock market. Third, study findings are assumed to provide significant volume information to local and foreign investors who are interested in portfolio divergence. Finally, this study applies several econometric methods to examine the co-movement among the indexes to get more robust results.

The remainder of the study is as follows. Section 2 illustrates a literature review. Section 3 describes the dataset and econometric specification. Section 4 reports empirical results. Section 5 concludes the paper with recommendations and future research suggestions.

2. Literature Review

Globalization is the process of integration that has increased the financial market interdependency around the world. Interdependency among the financial market may provide good or bad experiences to investors in the context of profitability. Due to the global stock market uncertainty, changes in the geopolitical situation, and

financial policy-making, researchers, investors, and policymakers are highly attentive to the issue of market movement. In recent years, financial market stability has been discussed a lot; align with this, how the stock market move together has been studied considerably. Researchers have used various methods and techniques in this area of stock market co-movement. Bonfiglioli and Favero (2005) did not find any long-run interrelationship between the stock markets of the US and Germany; however, in the short run, a shock in the US stock market affects the German stock market. They used monthly data from January 1980 to September 2002. To investigate the short term relationship and detect contagion effects of share price, researchers applied the VECM techniques. D'ecclesia and Constantini (2006) also employed serial correlation common features (SCCF), VECM, and co-integration methods to detect the short-run co-movement and long-run co-integration between different stock markets, namely, UK, US, Canada, and Japan. Researchers used monthly data spanning from the year 1978 to 2002. The result shows that with the US leading, four markets move together in the short-run; however, three different trends are recognized in the long-run scenario. Hoque, (2007) studied the co-movement between developed and developing countries using cointegration and VECM analyses. This study used daily data from 1 January 1990 to 31 December 2000 and examined the stock price co-movement of Bangladesh with the U.S.A, Japan, and India. The empirical results found that there was a long-run relationship among variables. Hence, these findings helped the cross broader countries investors for taking their investment decision, since there were no diversifications benefits exist. Abd Majid and Haj Kassim (2010) tested in their study the result of integration among five Islamic stock markets, viz. Malaysia, Indonesia, the UK, the US, Japan. The findings showed that investors benefitted by diversifying their investment in the Islamic stock markets. The diversification is done through economic grouping to the developed and developing countries' stock markets.

In addition, Albaity and Ahmad (2011) studied the risk-return relationship and the response how the same firm-specific variables, specifically, market-to-book ratio, market capitalization, market risk, price-earnings ratio, and total debt made an impact on the return between Kuala Lumpur Shariah Index (KLSI) and Kuala Lumpur Composite Index (KLCI). This study used panel data technique and considered the study period 2000 to 2006 on 300 observations. The results showed that market size and market-to-book ratio are the most influential Shariah-compliant firms return but beta and market-to-book ratio are the most significant variable for determining Non-Shariah firms return. Guyot (2011) studied eighteen world and regional indexes that cover both Islamic and conventional criteria under a broad perspective of the Dow Jones family. This study emphasized to understand the market equity and price dynamics among the selected Islamic stock indexes. The findings showed that equity market efficiency varies among the variables and it depends on investors' sentiment,

behavior, and religious guidelines. According to Shariah principles criteria, Investors are ready to bear additional cost but they can't compromise with the principle of Shariah. El Alaoui et al., (2015) used wavelet techniques and investigated the co-movement dynamics between Dubai Islamic Financial Market (DFM-UAE) index return with its regional counterpart return. They report that DFM-UAE along with GCC and Saudi stock markets move in the same direction in the long run at the same level of volatility and risk as to the Global Sukuk index. They also pointed out a strong non-homogeneous relationship across a scale and different periods using Wavelet. Chowdhury, Haque, and Islam (2017) showed that the Islamic stock market in Bangladesh slightly affecting other stock markets and not as strong as Kuwait. At the same time, the Global Islamic stock market was found to have little influence on the Bangladesh Islamic stock market. Similarly, Sahabuddin, Muhammad, Dato, Shah and Rahman (2018) examined the co-movement between Shariah-compliant stock index (EMAS) and ten Sectorial stock price indexes (Finance, Industries and Production, Industries, Plantation, Properties, Technologies, Tin and Mining, Trade and Services, Construction and Consumer) in Malaysian stock market. The empirical results showed that there are cointegration and long-run relationship among the variables. Alahouel and Loukil (2020) outlined that Islamic assets vagueness is diverse from conventional vagueness level as a result of Shariah monitoring and gharar probation. The findings of Alahouel and Loukil (2020) also recommend that conventional ambiguity is higher than Islamic one. The OLS interpretations demonstrates that this ambiguity of conventional financial does not have any significant impact on Islamic financial counterparts. Moreover, Islamic financial ambiguity seems have insignificant influence on conventional one except Dow Jones pair. Anwer et al. (2020) resulted that higher tendency factors of total expenditure are higher productivity and higher retained earnings as well as lower asset growth and debt capital structure.

This study is the pioneering endeavor to investigate the relationship between the Shariah and Non-Shariah compliant indexes in Dhaka Stock Exchange, Bangladesh. The implication of this study is to contribute in numerous ways to the existing literature. First, to the best of our knowledge, from the perspective of the Bangladesh capital market, this is the first study to investigate the dynamic relationship of Shariah and Non-Shariah compliant stock indexes. Second, this study uses the data since the formation of the Shariah-compliant stock index in Bangladesh, thus believes to provide valuable insights regarding the market dynamics. Third, the study findings are expected to offer notable understanding and insights to domestic and international investors, who are keen on portfolio diversification. Fourth, this study is poised to add valuable knowledge to the current body of literature from the perspective of a developing economy. Lastly, the application of several econometric methods to explore the inter-dependence of the indices is believed to provide robust results and help to understand the market comprehensively.

3. Methodology and data

The paper examines the relationship between Shariah and Non-Shariah compliant stocks indexes in Bangladesh using several econometric tests, such as Unit Root Test, Johansen Co-integration, and Vector Autoregression (VAR) for addressing the issue of the dynamic relationship between the series.

3.1 Johansen Co-integration Test

This paper applies a co-integration test developed by Johansen and Juselius to examine the long-run relationship between series as it is a better-suited technique to investigate the association between the series in the case of a large number of observations. It uses VAR statistics to choose a suitable lag number as estimating the co-integration requires a selection of it as a prelude.

Vector Autoregression (VAR) equation, Y_t is assumed to be stationary and error term is vector $n \times 1$, so the equation can be written as follows:

$$Y_t = \mu + \Pi_1 Y_{t-1} + \Pi_2 Y_{t-2} + \Pi_3 Y_{t-3} \dots \dots \dots + \Pi_k Y_{t-k} + e_1 \quad (1)$$

Vector Error Correction Model can be deduced by first differencing of the above equation and is rearranged as follows:

$$\Delta Y_t = \mu + \Pi_1 \Delta Y_{t-1} + \Pi_2 \Delta Y_{t-2} + \Pi_3 Y_{t-3} \dots \dots \dots + \Pi_k \Delta Y_{t-k} + e_1 \quad (2)$$

There are two measures for test for Co-integration, namely Trace test and Maximum Eigen value test. The specifications of the tests are shown as follows:

$$\varphi_{Trace} = -T \sum \ln(1 - \varphi_1) \quad (3)$$

The trace postulates the null hypothesis which states that there is no co-integration while the alternative hypothesis states that there is co-integration, the rejection of the null hypothesis implies significance which suggests for almost Shariah and non-Shariah stock returns have long-run relationships.

On the other hand, the Maximum Eigen value test hypothesizes there is no long-run relationship between Shariah and non-Shariah stock returns in Bangladesh as a null hypothesis and the alternative hypothesis states there are long-run relationships between Shariah and non-Shariah stock returns. Maximum Eigen test is specified as follows:

$$\varphi_{Max} = -T \ln(1 - \varphi_{1+1}) \quad (4)$$

3.2 Data

This study strives to examine the relationship between Shariah and Non-Shariah Compliant Stock Indexes Performances in the context of Bangladesh. The official website of the Dhaka Stock Exchange is the source of data. The study considers day-to-day data from the period of 20 January 2014 to 11 February 2018, taking into

account 5 trading days from Sunday to Thursday; that makes 990 observations in total. The Dhaka Stock Exchange Shariah (DSES) index is based on Shariah-compliant principles which are taken as a proxy for the Islamic index. It complies with Shariah standards strictly in the selection of companies under the Index. The Dhaka Stock Exchange 30 index is designated as a proxy of the conventional index.

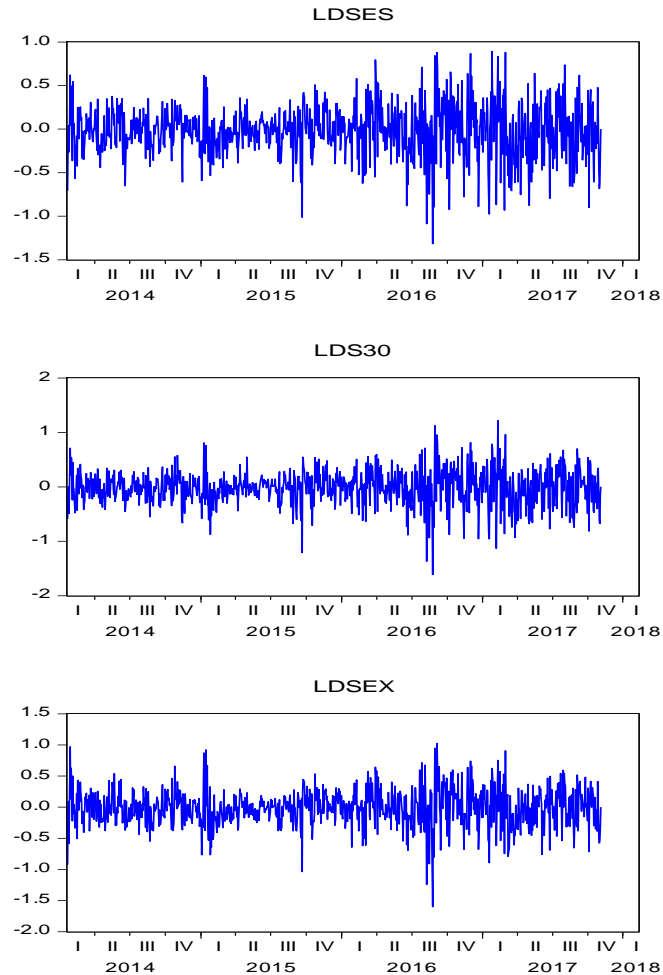


Fig .1. Return series

The first Islamic stock index in Bangladesh named DSEX Shariah Index (DSES) was first introduced in 2014 by the Dhaka Stock Exchange (DSE). The introduction was made to enable the investors' participation in equity investment that is attuned with Sharia principles. It is expected to oblige as a Shariah-compliant broad market benchmark evaluating the Bangladesh equity market performance. In designing DSES, SandP and Dow Jones Indices served as a consultant to DSE. The Index is constructed as a subset of DSEX that the broad market index of DSE. Thus, the DSES is comprised of those stocks which are incorporated in the parent index and

pass the Shariah compliance standard screening system. In the case of screening, there are two broad parameters, namely, sector based screen and accounting based screen.

4. Results and Discussion

4.1 Summary statistics

Table 1 represents the summary of statistics between the Shariah and Non-Shariah compliant stock indexes return data set. The result indicates that the conventional index or DSEX has a maximum mean return (-0.012%) compared to its Shariah counterpart. This result implies that investors can earn more by investing in conventional or non-Shariah stocks instead of investing in Shariah-compliant stocks. The higher standard deviation of the Shariah-compliant index compared to the conventional one signifying higher volatility in the former than the latter. However, the kurtosis statistics are positive and higher than 3 for both indexes, reflecting leptokurtic distribution. Also, the results specify that the data sets of three indexes are negatively skewed and indicate left-skewed index distribution. Figure 1 above displays the time plot of the return series in a log form for both indexes. The graphic analysis represents that the three indexes are volatility clustering where the small volatility is followed by the large and vice versa, which endorse that the indexes follow similar movements. Precisely, the indexes track the same upward and downward trends and specify co-movement between the two series. Nevertheless, over time the stock price index series appeared to have an upward trend.

Table-1: Summary of Statistics

	LDSES	LDS30	LDSEX
Mean	-0.017802	-0.014816	-0.012812
Median	-0.013150	-0.002640	-0.009217
Maximum	0.891881	1.217751	1.024403
Minimum	-1.316032	-1.613437	-1.600254
Std. Dev.	0.290992	0.313923	0.288859
Skewness	-0.292623	-0.326171	-0.209002
Kurtosis	4.209832	4.735842	4.789873
Jarque-Bera	74.50600	141.8463	139.3579
Sum	-17.62408	-14.66760	-12.68422
Sum Sq. Dev.	83.74490	97.46349	82.52180
Observations	990	990	990

Table-2 represents the correlation matrix that shows that all the variables (Indexes) are strongly correlated with each other. The results show that there is a

strong correlation between Shariah (DSES) and Non-Shariah compliant stock indexes (DS30 and DSEX) respectively.

4.2 Correlation Matrix

Table-2: Correlation Matrix

	LDSES	LDS30	LDSEX
LDSES	1		
LDS30	0.93	1	
LDSEX	0.89	0.91	1

4.3 Unit Root Test Result

This study employs two frequently used techniques to determine the stationarity of the datasets; these are Phillips and Perron (1988) and Dickey-Fuller (1979) tests. The results in Table 3 indicate that both indexes - Shariah and Non-Shariah are non-stationary at levels but stationary at the first difference. This result authenticates the assumption of the co-integration test, which is pertinent to the datasets stationary of identical order.

Table 3: Unit root test

	ADF		PP	
	Level	First difference	Level	First difference
DSES	-1.2803	-26.1632***	-1.5358	-26.4633***
DS30	-1.6988	-26.3932***	-1.894	-26.7278***
DSEX	-1.5773	-25.7074***	-1.8319	-26.1961***

4.4 Co-integration test

The results of the co-integration test are tabulated in the following table, which shows that no co-integration exists among the variables, suggesting there is no long-run relationship between Shariah and Non-Shariah compliant stock indexes in this study. Therefore, the results imply that there are portfolio diversification benefits that exist among the variables.

To that end, VAR is often used to explain the possible short-run relationship among the variables, which is consistent with the theoretical underpinning of time series data sets. Given that this paper uses VAR to examine the relationship between Shariah and Non-Shariah stock indexes in Dhaka Stock Exchange (DSE). In connection with portfolio diversification benefits, interest in Shariah Index is continuously growing and becoming popular among investors nationally and internationally since its inception on January 20, 2014.

Table 4: Co-integration test

Co-integration test based on Trace Statistics					
Null	Alternative	Trace Statistics	Critical value (0.05)	P-value	Result
$r = 0$	$r = 0$	18.78581	29.79707	0.5084	No Co-integration
$r \leq 1$	$r = 1$	2.621821	15.49471	0.9814	
$R \leq 2$	$r = 2$	0.062221	3.841466	0.8030	
Co-integration test based on Maximum Eigenvalue					
Null	Alternative	Maximum Eigenvalue	Critical value (0.05)	P-value	Result
$r = 0$	$r = 0$	16.16399	21.13162	0.2154	No Co-integration
$r \leq 1$	$r = 1$	2.559600	14.26460	0.9716	
$R \leq 2$	$r = 2$	0.062221	3.841466	0.8030	

4.5 VAR

Table 5: Unrestricted VAR Model

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.112546	0.088417	1.272900	0.2032
C(2)	-0.181228	0.088550	-2.046619	0.0408**
C(3)	0.010089	0.087776	0.114942	0.9085
C(4)	0.030981	0.087492	0.354105	0.7233
C(5)	0.067854	0.082691	0.820568	0.4120
C(6)	0.125060	0.082395	1.517812	0.1292
C(7)	-0.015232	0.009119	-1.670292	0.0950
C(8)	0.050633	0.095805	0.528507	0.5972
C(9)	-0.095246	0.095949	-0.992678	0.3209
C(10)	0.078234	0.095111	0.822559	0.4108
C(11)	-0.035138	0.094802	-0.370642	0.7109
C(12)	0.058957	0.089601	0.658000	0.5106
C(13)	0.123886	0.089280	1.387612	0.1654
C(14)	-0.012019	0.009881	-1.216349	0.2239
C(15)	-0.043555	0.087216	-0.499389	0.6175
C(16)	-0.036969	0.087348	-0.423238	0.6722
C(17)	-0.074299	0.086585	-0.858106	0.3909
C(18)	-0.025704	0.086304	-0.297836	0.7658
C(19)	0.313524	0.081569	3.843685	0.0001**
C(20)	0.079568	0.081276	0.978979	0.3277
C(21)	-0.009790	0.008996	-1.088323	0.2765

Note. ** represent the significance level of 5%

4.6 Granger Causality Tests

When the VAR model cannot give a clear picture of short-run and long-run causality, Granger causality among variables requires to be tested (Engle and Granger, 1987). For identifying the led-lag relationship among the variables, the Granger causality test is applied widely in the econometric model (Granger, 1988). From the granger causality test, it is possible to show the bidirectional, unidirectional, and no causality relationship.

The results reveal that the Granger causality between Non-Shariah and Shariah-compliant stock indexes is statistically significant at a 5% level of significance, indicating the causality is unidirectional running from Non-Shariah to Shariah-compliant stock index.

Table 6: Granger Causality Tests

Direction of Causality	Obs	F-Statistic	Prob.
LDS30 does not Granger Cause LDSES	988	0.98427	0.3741
LDSES does not Granger Cause LDS30	0.47349	0.6230	
LDSEX does not Granger Cause LDSES	988	2.84101	0.0588**
LDSES does not Granger Cause LDSEX	1.39180	0.2491	
LDSEX does not Granger Cause LDS30	988	1.38764	0.2502
LDS30 does not Granger Cause LDSEX	1.60197	0.2020	

Note. ** represent the significance level of 5%

4.7 Variance Decomposition (VDC) test

The Variance decomposition test is very applicable to discover the contribution of variance to the variances of the other variables. The results are stated in Table 7.

Table 7: Variance Decomposition Test

	DSES				DS30			DSEX		
1	0.2855	100.00	0.0000	0.3094	85.369	14.630	0.2816	80.264	4.5640	
2	0.2904	99.901	0.0330	0.3140	85.587	14.370	0.2875	79.510	4.5018	
3	0.2912	99.375	0.2200	0.3145	85.330	14.351	0.2883	79.188	4.4930	
4	0.2912	99.319	0.2268	0.3146	85.291	14.347	0.2884	79.154	4.4906	
5	0.2912	99.315	0.2289	0.3146	85.289	14.347	0.2884	79.152	4.4904	
6	0.2913	99.315	0.2292	0.3146	85.289	14.347	0.2884	79.152	4.4904	
7	0.2913	99.315	0.2292	0.3146	85.289	14.347	0.2884	79.152	4.4904	
8	0.2913	99.315	0.2292	0.3146	85.289	14.347	0.2884	79.152	4.4904	
9	0.2913	99.315	0.2292	0.3146	85.289	14.347	0.2884	79.152	4.4904	
10	0.2913	99.315	0.2292	0.3146	85.289	14.347	0.2884	79.152	4.4904	
10	0.2855	100.00	0.0000	0.3094	85.369	14.630	0.2816	80.264	4.5640	

The findings show that Non-Shariah compliant stock indexes have a negligible contribution to the variance of the Shariah-compliant stock index in the Dhaka Stock

Exchange. However, the Shariah-compliant stock index explains approximately 85% and (80%) variations in Non-Shariah-compliant stock indexes. This finding suggests that Shariah-compliant stock index volatility contributes more variations in the variance of Non-Shariah-compliant stock indexes.

4.8 Impulse Response Function (IRF) Analysis

The current study employs the ‘impulse response function’ analysis to see how the Shariah and Non-Shariah compliant stock indexes react to the short-run temporary shocks. The analysis derives from the estimation of the VAR model. Fig. 2 represents the impulse response function between the Shariah and Non-Shariah compliant stock indexes in this study. Interestingly, the results of Impulse Response suggest that Shariah stock Index does not respond to the shock produced by the Non-Shariah stock indexes. In other words, an increase of one standard deviation of stock generated by Non-Shariah indexes leads to zero standard deviation in Shariah Index. The results go in line with study findings by Nazlioglut et al. (2015), who found similar results between Dow Jones Islamic stock and SandP 500 indexes. Consequently, this result supports that the Islamic stock index is more stable compared to Non-Shariah indexes if there is any financial crisis takes place in the market. The implication of the findings offers a less risky investment opportunity to the investors.

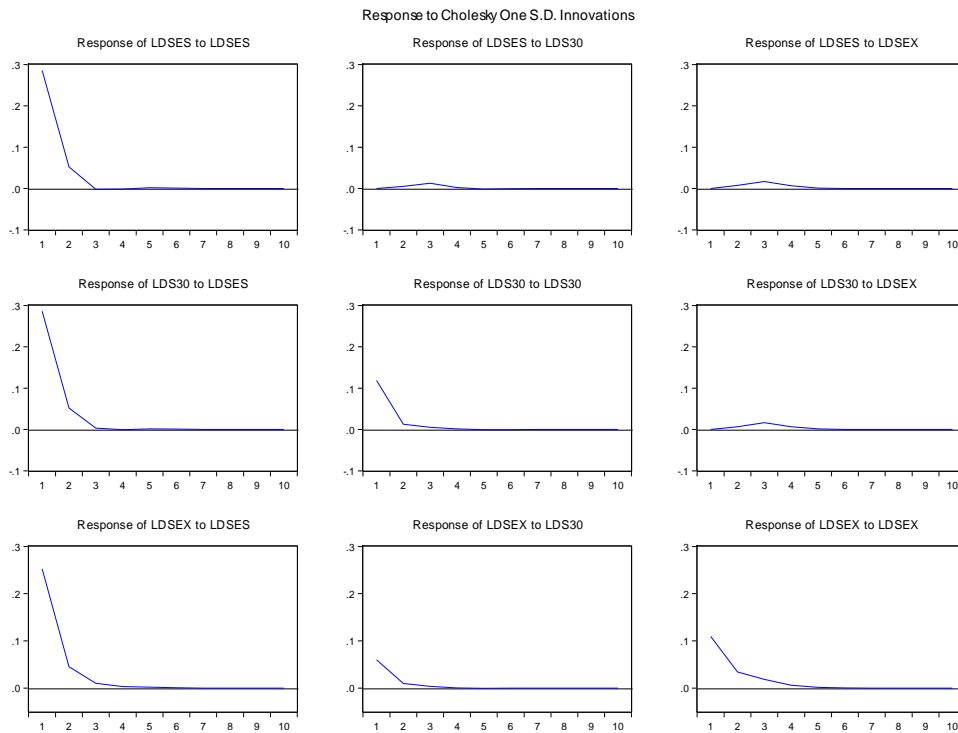


Fig. 2. Impulse response function.

5. Conclusions and Implications

This paper examines the relationship between the Shariah and Non-Shariah compliant indexes of the Dhaka Stock Exchange in Bangladesh during the period 20 January 2014 to 11 February 2018. Co-integration and VAR, two import standard time series econometric techniques have been applied to investigate the main objective in this study. Unit root tests, namely Dickey and Fuller (ADF) and Phillips and Perron (PP) used to test the stationarity among variables. Johansen and Juselius (JJ) co-integration and Granger causality test have been employed respectively for testing the long run and lead-leg relationship. Besides, the Variance Decomposition method (VDC) and Impulse Response Function (IRF) analyses use for checking the robustness among variables. The empirical investigation has disclosed some stimulating results.

First, there is no significant long-run relationship among the variables. Second, a unidirectional causality was evident that runs from the Non-Shariah stock index to the Shariah Stock index. Finally, the impulse response function proved that the Shariah-compliant stock index does not respond to the shock generated by the non-Shariah stock index in the crisis period.

The study findings have extended the literature of the relationship between Shariah-compliant stock and non-Shariah stock indexes, especially in the context of an emerging economy. Besides, the results offer the policymakers insightful understandings of the relationship between these two indexes. Additionally, the findings help investors who are seeking diversification benefits from their investments. To the best of our knowledge, one of the few studies conducted to determine the relationship between Shariah and Non-Shariah stock indexes in the context of developing economies. Therefore, we suggest extending further research to explore the relationship between the indexes in other geographical settings and robust techniques.

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