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Does the foreign exchange rate drive stock market returns? Insights from Bangladesh

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ABSTRACT

Stock market return and foreign exchange rate are two fundamental indicators of a country's economic performance. Decision-making in most firms is influenced by fluctuations in exchange rates. It is presumed that there is an impact of exchange rates on stock market returns. This paper examines whether there is any nexus between the BDT-USD exchange rate and the return of the DSEX index in the Dhaka Stock Exchange. The study uses monthly data for the period ranging from March 2013 to April 2023. The methodology of the study includes simple linear regression, Granger causality tests, and VAR impulse response and variance decomposition tests. The findings reveal that both the exchange rate and stock market return series are stationary at the level, and there is no evidence of a causal relationship between them. Regression results show an insignificant negative relationship, and the VAR analysis supports the absence of any meaningful impact. The variance decomposition results further confirm that shocks in one variable account for only a marginal portion of the variance in the other. The study concludes that stock market index return and exchange rate are independent of one another, and there is no causality between them, at least during the observation period. The study findings imply that the stock markets in Bangladesh are safer for foreign investors, as there is a weak relationship between exchange rate return and stock market return.

Contribution/Originality: This study contributes to the literature by empirically assessing the nexus between exchange rates and stock market returns in Bangladesh using comprehensive time-series models. Its findings provide evidence of market independence, offering valuable insights to foreign investors and policymakers regarding portfolio diversification, exchange rate exposure, and financial market resilience in emerging economies.

1. INTRODUCTION

The exchange rate, fundamentally defined as the price of one currency in terms of another, represents a crucial macroeconomic indicator of a country's external economic performance. In open economies, exchange rate movements have implications not only for international trade and inflation but also for capital markets, especially stock markets. In emerging economies such as Bangladesh, where financial markets are still developing, and the macroeconomic environment is greatly susceptible to internal and external shocks, the nexus between exchange rate movements and stock market performance becomes a relevant subject of empirical investigation.

Bangladesh operates under a managed floating exchange rate system, which allows the market to determine the exchange rate within a band, with central bank interventions to reduce excessive volatility. This policy choice is particularly significant given the country's reliance on imported commodities such as crude oil (Nandi et al., 2024)

and its dependence on large inflows of inward remittances. Historically, exchange rate movements have been considered a major driver of corporate earnings, especially for firms with significant exposure to international trade. Consequently, variations in exchange rates may influence firm valuations, investor sentiment, and ultimately stock prices. In this context, both individual and institutional investors closely monitor exchange rate fluctuations as part of their investment decision-making processes. The dynamic interaction between exchange rate volatility and stock market returns has, therefore, emerged as a critical area of study in financial economics.

Despite numerous empirical studies exploring this relationship, the results remain inconclusive and context-dependent. Some studies find a significant causal relationship between exchange rate volatility and stock market returns, while others report no meaningful association. The ambiguity in existing findings can be attributed to several factors, including differences in methodological approaches, data frequency, country-specific characteristics, and the level of financial integration (Ali et al., 2020; Gulati & Kakhani, 2012; Kollias, Mylonidis, & Paleologou, 2012; Kwofie & Ansah, 2018; Manu & Bhaskar, 2018; Mlambo, Andrew, & Kin, 2013; Salisu & Ndako, 2018; Xie, Chen, & Wu, 2020). Therefore, it is necessary to empirically test the relationship in each context.

This paper examines whether there is any nexus between the BDT-USD exchange rate return and the return of the DSEX index in the Dhaka Stock Exchange using monthly data for the period from March 2013 to April 2023. The analysis begins with data description and concludes with variance decomposition between the variables. Firstly, the stationarity status of the data series of the variables needs to be identified before proving the relationship between exchange rate and the stock market indices. Therefore, the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979) and Phillips-Perron test (Phillips & Perron, 1988) is performed to examine the stationarity status of the data series by determining the unit roots. If the series is non-stationary at the level, then a cointegration test needs to be applied to check the causality and the integration between the variables, and if stationary at the level, then the Granger Causality test (Engle & Granger, 1987) need to be employed to check the causality relations between the two variables (Bilgili, 1998). The VAR model is a suitable model to be used in order to establish a causal relationship between the variables. The VAR model can be useful to simulate shocks to the system and trace the effects of shocks on the endogenous variables, as well as for prediction. Here, the impulse response and variance decomposition are applied to demonstrate causality between the series. The main research question that the study aims to address is: Is the volatility of the foreign exchange rate relevant to stock market return as measured by the DSEX index in the Dhaka Stock Exchange? The rest of the study is divided into the following sections: Section 2 discusses the relevant literature, Section 3 illustrates the data and methodology used in the study, Section 4 explains the empirical results, and Section 5 draws the conclusion.

2. LITERATURE REVIEW

The complex relationship between foreign exchange rates and stock market returns has been a subject of extensive empirical investigation within financial economics literature for several decades. The dynamic interdependence between these two critical markets holds significant implications for investors, policymakers, and international financial analysts, particularly in emerging economies where economic fundamentals such as exchange rates and interest rates exhibit relatively higher volatility. This body of literature presents findings that vary significantly across different economies, time periods, and methodological approaches, reflecting the multifaceted nature of the relationship and the influence of various economic, institutional, and structural factors that shape how these markets interact. One of the earlier studies examining exchange rate-stock market relationships was by Ajayi et al. (1998) who provided evidence of a unidirectional Granger-causal nexus between stock returns and exchange rates in both developed markets, while no causal nexus was observed in developing markets. Their findings suggested that the causality of the relationship is market-specific and influenced by market characteristics, structure, and openness. Hajilee & Al Nasser (2014) advanced understanding by suggesting that the relationship between exchange rate volatility and stock market development operates through the structure and characteristics of economies. Their

comprehensive analysis found significant impacts of exchange rate volatility on stock market development in the majority of emerging economies in both short-term and long-term contexts, with Blau (2018) reaching similar conclusions. These studies established that the association between exchange rates and stock markets is endogenous to market structure and characteristics, setting the stage for more rigorous country-specific analyses.

Kennedy & Nourzad (2016) and Bello (2013) demonstrated positive and significant impacts of exchange rate volatility on stock market return volatility in the United States, suggesting that currency fluctuations translate meaningfully into equity market movements in mature financial systems. Bello's (2013) particularly comprehensive analysis examined how changes in foreign exchange rates of four major U.S. trading partners affect American stock markets, considering bilateral relationships: positive and significant correlations with the euro and pound, negative and significant relationships with the yen, and, surprisingly, a positive but insignificant relationship with the yuan. These findings underscore the complexity of international financial interdependencies and emphasize the importance of considering specific bilateral trade relationships and economic structures when analyzing these interactions.

The Chinese market, as analyzed by Zhao (2010), presents a particularly interesting case study. Despite China's managed float exchange rate system, the study found no long-term equilibrium relationship between the real effective exchange rate and stock prices, nor any mean spillover effects. However, using likelihood ratio statistics, they demonstrated significant bidirectional volatility spillover effects between foreign exchange and stock markets, providing valuable insights for multinational investors operating in Chinese markets. This finding illustrates how the absence of long-term cointegration does not preclude significant short-term interactions and volatility transmissions between markets. Similarly, Kumar (2013) found evidence of spillover effects between foreign exchange and stock markets in India, Brazil, and South Africa, supporting the notion that volatility transmission mechanisms operate across different emerging market contexts. Chkili & Nguyen (2014) employed regime-switching models to explore dynamic relationships in BRICS countries. Their analysis revealed that the effect of stock market returns on exchange rates is regime-dependent and more pronounced during volatile periods. Interestingly, their findings did not show significant effects of exchange rate movements on stock market returns in either stable or volatile regimes, suggesting asymmetric causality relationships that vary with market conditions and highlighting the importance of considering different market states when examining these relationships. Tian & Ma (2010) contributed important insights by employing the Auto-Regressive Distributed Lag (ARDL) approach to investigate the effect of financial openness on the dynamics between stock returns and exchange rates in China. Their findings supported the existence of a positive correlation between exchange rates and stock market returns after China adopted a managed floating exchange rate system, demonstrating how policy regime changes can alter fundamental market relationships.

The comprehensive work by Lim & Sek (2014) further advanced understanding by utilizing GARCH-type models and VAR analysis to examine volatility interdependence between exchange rates and stock returns in four emerging Asian markets. They confirmed bidirectional relationships in volatility while finding no long-term cointegrating relationships, demonstrating the value of examining both mean relationships and volatility interactions, as these may exhibit different patterns and implications for market participants.

Wong (2017) provided evidence of significant adverse relationships between real exchange rate returns and real stock price returns in Korea, Singapore, and Malaysia, while observing insignificant relationships in Japan, the Philippines, and Germany. This geographical and developmental variation suggests that economic structure, trade patterns, and financial market development significantly influence the nature of exchange rate-stock market interactions. Wong (2019) extended this analysis with a focused examination of the Malaysian market, finding significant negative co-movements between real exchange rate returns and real stock price returns, though failing to provide evidence of causality in conditional variance between these variables in the Granger sense.

The South Asian context offers additional perspectives on these relationships, with varying results across different countries. Malaysian market analysis by Ibrahim (2000), initially, no long-term relationship between the exchange rate and stock prices using bivariate cointegration models. However, when incorporating additional

macroeconomic variables, including foreign reserves and M2 money supply, the analysis revealed that short-run combined management of these macro-variables is necessary for stock market stability, emphasizing the importance of considering broader macroeconomic contexts when examining exchange rate-stock market relationships. Indian market studies have provided valuable insights into how financial liberalization affects these relationships. Agrawal et al. (2010) found significant interactions between exchange rate movements and stock market volatility, suggesting that integration into global financial systems amplifies emerging market sensitivity to currency fluctuations. Building on this, Lakshmanasamy (2021) observed positive and significant impacts of Euro/Rupee exchange rates on BSE SENSEX returns, while finding negative but insignificant impacts of US Dollar/Rupee and Pound/Rupee exchange rates, demonstrating how different currency pairs can exhibit varying relationships with domestic equity markets. The study also revealed that BSE SENSEX return volatility is more sensitive to its lagged values than to innovations when using ARCH and GARCH models. Pakistani market evidence, as examined by Suriani et al. (2015), presents contrasting findings. Using Granger causality tests and OLS regression analysis, they found no relationship between exchange rate returns and stock market returns, with both variables appearing to be independent of each other. This finding was confirmed through multiple analytical approaches, suggesting that in some emerging market contexts, these relationships may indeed be absent or negligible. Perera (2016) extended evidence to the Sri Lankan stock exchange, concluding that exchange rate volatility significantly influences stock market return volatility. These findings underscore the importance of exchange rate stability in fostering market confidence and predictability in smaller emerging economies. Turkish market analysis by Ameen et al. (2020) examined the impact of exchange rates on the BIST-100 index, finding one-way causality between the variables using Granger causality tests. Their impulse response analysis revealed that shocks in either variable have negative effects on the other variable for approximately two months, leading to recommendations for negative trading strategies given the interconnected nature of exchange rate and stock index movements. Indonesian market evidence provided by Amado & Choon (2020) demonstrated long-run associations between exchange rates and stock market returns using ARDL methodology, with results that aligned with prior research conducted on the relationship between these variables in Indonesia, suggesting consistency in findings across different time periods and analytical approaches.

African market evidence presents additional perspectives that highlight the diversity of relationships across different developmental contexts. Mlambo et al. (2013) examined South African markets using GARCH (1,1) models with monthly data, reporting very weak impacts of foreign exchange volatility on stock market returns and recommending the South African stock market as relatively safe for foreign investors. This finding suggests that more developed African markets may exhibit different characteristics compared to their less developed counterparts. Conversely, Adaramola (2012) investigated Nigerian markets and found negative long-run effects and positive short-run effects of exchange rate volatility on stock returns, illustrating how relationship patterns can vary significantly even within similar geographical regions. This temporal variation in effects underscores the complexity of these relationships and the importance of considering both short-term and long-term dynamics. Ghanaian market analysis by Kwofie & Ansah (2018) examined the impact of inflation and exchange rate on stock market returns using ARDL-ECM techniques, finding that both variables significantly influenced stock market performance. Their study emphasized the importance of macroeconomic variables in shaping stock market returns in low-income countries, highlighting the interconnected nature of macroeconomic stability and financial market performance.

Subair & Salihu (2010) provided important insights by regressing exchange rate volatility, interest rates, inflation rates, and gross domestic product against stock market capitalization, with exchange rate volatility generated using GARCH models. Their findings revealed that exchange rate volatility contributes to stock market volatility negatively and significantly, while interest rates, inflation rates, and gross domestic product showed no significant impact on stock market volatility.

Bahmani-Oskooee & Saha (2015) conducted perhaps the most comprehensive literature review of the exchange rate-stock market return nexus, observing that the direction and magnitude of relationships vary significantly

depending on country characteristics, time periods examined, and methodological approaches employed. Their extensive review revealed that while most studies discover short-run relationships, few demonstrate significant long-term associations, suggesting that exchange rate-stock market interactions are predominantly characterized by temporary adjustments rather than permanent equilibrium relationships.

El-Diftar (2023) recently analyzed Emerging 7 (E7) economies using GARCH (1,1) models, confirming that exchange rates play a crucial role in determining stock market performance. The research revealed significant positive long-run cointegration between exchange rates and stock market returns, suggesting that currency appreciations are perceived positively by market investors in these emerging economies, providing contemporary evidence that somewhat contradicts the predominance of short-term relationships found in earlier synthetic studies.

This extensive and evolving literature demonstrates conclusively that the exchange rate-stock market relationship is highly context-dependent, influenced by multiple factors including economic development level, financial market structure, trade patterns, monetary policy frameworks, and institutional characteristics. The mixed empirical findings across different countries and time periods underscore the necessity for country-specific analyses that carefully consider unique economic conditions and market dynamics. For emerging economies like Bangladesh, where financial markets are rapidly evolving and integration with global markets continues to deepen, these relationships may exhibit distinct characteristics that differ substantially from both developed market patterns and other emerging market experiences, making dedicated empirical investigation essential for understanding local market dynamics and informing appropriate policy responses.

3. DATA AND METHODOLOGY

The monthly data on DSEX index prices for the period from March 2013 to December 2023 are collected from the CEIC (Global Economic Data, Indicators, Charts, and Forecasts) database, while data on the official exchange rate of the Bangladeshi Taka (BDT) against the US dollar are obtained from the Bangladesh Bank website. The returns of the variables are used to test the causality between them. Monthly Return is calculated using the following formula:

$$R_t = ln\left(\frac{q_t}{q_{t-1}}\right) \times 100$$

Where q_t indicates the monthly exchange rate and monthly DSEX index price at time t, and q_{t-1} indicates the monthly exchange rate and monthly DSEX index price at time $t-1$. The time series plot of stock index returns and exchange rate returns is shown in Figure 1.

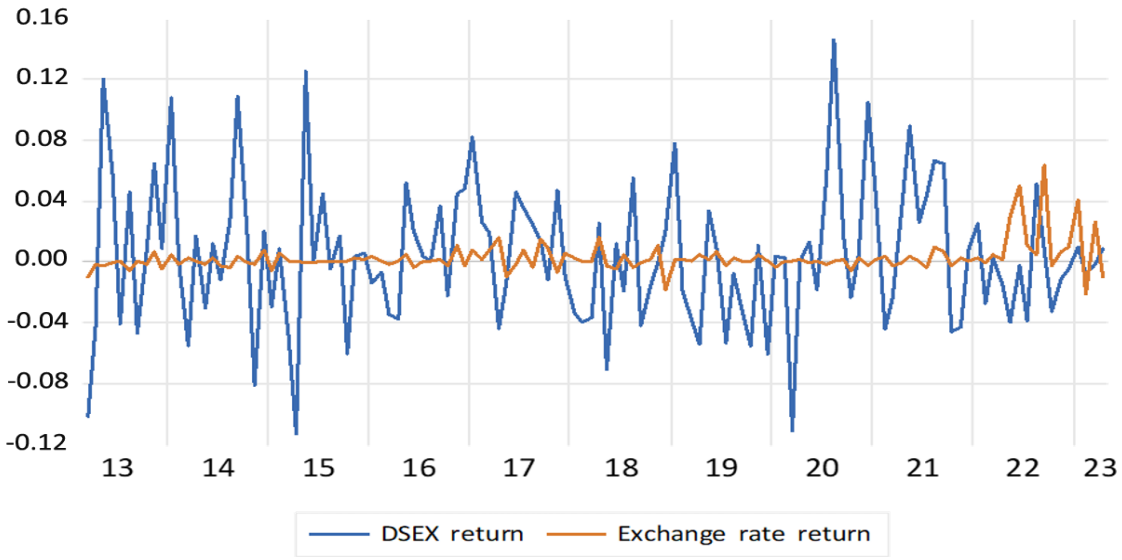

Figure 1. Time series plot of DSEX index return and exchange rate return.

Table 1 presents descriptive statistics for the monthly returns of the DSEX index and the BDT-USD exchange rate over 122 observations from March 2013 to April 2023. The mean monthly returns are 0.373% and 0.2434%, respectively, indicating modest positive stock market performance and gradual currency depreciation. Standard deviations reveal that stock index volatility (4.6945%) is approximately four times higher than exchange rate volatility (1.0136%), reflecting greater equity market risk. The DSEX index shows moderate positive skewness and near-normal distribution, while the exchange rate exhibits extreme positive skewness and strongly rejects normality, indicating frequent small changes punctuated by occasional large depreciation episodes typical of managed floating exchange rate systems.

Table 1. Descriptive statistics.

Statistic	DSEX index return	Exchange rate return
Mean	0.004	0.002
Median	0.003	0.0002
Maximum	0.146	0.063
Minimum	-0.113	-0.021
Standard deviation	0.047	0.0101
Skewness	0.378	3.113
Kurtosis	3.634	17.557
Jarque-Bera	4.944	1274.009
Probability	0.084	0.000
Sum	0.455	0.297
Sum of squares	0.267	0.012
Observations	122	122

The analysis of the study begins with testing for a unit root in the time series data used in the study. The Augmented Dickey-Fuller test is employed for this purpose (Dickey & Fuller, 1979; Fuller, 1976) and the Phillips-Perron test (Phillips & Perron, 1988). Phillips-Perron test differs from the Dickey-Fuller procedure in that it allows for autocorrelated residuals. Table 2 shows the results of unit root tests. The stock market index return series is stationary at the level in both tests at the 1 percent level of significance. However, the exchange rate return is stationary at the 5 percent level of significance with only the intercept and at the 10 percent level of significance with the intercept and trend in the Augmented Dickey-Fuller test. In addition, the Phillips-Perron test shows that both series are stationary at the level with intercept as well as with trend and intercept.

Table 2. Unit root tests.

Augmented Dickey-Fuller test statistics		
	Intercept	**Trend and intercept**
DSEX return	0.01***	0.01***
Exchange rate return	0.05**	0.10*
Phillips-Perron test statistics		
	Intercept	Trend and intercept
DSEX return	0.01***	0.01***
Exchange rate return	0.01***	0.01***

Note: *, **, *** denote P<0.1, 0.05, 0.01.

As both the variables are stationary at the level, the Johansen cointegration test (Johansen, 1988) or the autoregressive distributed lag (ARDL) method (Pesaran & Shin, 1995) is not appropriate for this study. The empirical

test of the relationship between exchange rate return and stock market return begins with a simple regression equation with the following formula.

$$Y_i = a + \beta_1 X_i + \varepsilon_i \quad (1)$$

Where Y is the DSEX return, and X is the exchange rate return. Both returns are expressed in logarithmic form.

The Granger causality test (Engle & Granger, 1987) is applied to identify whether any bidirectional or unidirectional relationship exists between stock market return and exchange rate return series with the following formula.

$$\Delta Y_t = \sum_{i=1}^{n} \theta_i \Delta Y_{t-i} + \sum_{i=1}^{n} b_j \Delta Y_{t-j} + \varepsilon_{1t} \quad (2)$$

$$\Delta X_t = \sum_{i=1}^{n} \delta_i \Delta Y_{t-i} + \sum_{i=1}^{n} \lambda_j \Delta Y_{t-j} + \varepsilon_{2t} \quad (3)$$

Equation 2 and 3 show that the current value of ΔY and ΔX are related to the past values of ΔX and ΔY, respectively, and the past values of themselves. The null hypotheses are $b_j = 0$ and $\lambda_j = 0$. The rejection of the null hypotheses indicates unidirectional or bidirectional causality between the variables.

Vector autoregression models (VARS) have gained popularity in econometrics with the work (Sims, 1980). VARs is a systems regression model where there is more than one response variable (Brooks, 2019). VAR allows for reverse causality among the explained and explanatory variables. It does not require variables to be exogenous. Impulse response and variance decomposition analyses are shown following the VAR analysis. The equations for the simple bivariate VAR used in this study are stated below:

$$Y_{1t} = \theta_{10} + \theta_{11} Y_{1t-1} + \cdots + \theta_{1k} Y_{1t-k} + \sigma_{11} Y_{2t-1} + \cdots + \sigma_{1k} Y_{2t-k} + \varepsilon_{1t} \quad (4)$$

$$Y_{2t} = \theta_{20} + \theta_{21} Y_{2t-1} + \cdots + \theta_{2k} Y_{2t-k} + \sigma_{21} Y_{1t-1} + \cdots + \sigma_{2k} Y_{1t-k} + \varepsilon_{2t} \quad (5)$$

Where ε_{1t} and ε_{2t} are uncorrelated white noise error terms.

4. EMPIRICAL RESULTS

OLS regression analysis for time-series data with a non-stationary property may produce spurious findings. However, the unit root results show that both variables used in this study are stationary at the level. Therefore, a simple linear regression model can be used to determine the relationship between the dependent and independent variables. Table 3 shows the outputs of the simple regression model. The regression results indicate a negative but statistically insignificant relationship between exchange rate return and DSEX returns. The model explains only 0.81% of stock return variation, with the F-statistic (0.97, p = 0.3264) indicating no significant linear relationship between the variables at conventional significance levels.

Table 3. Simple regression model outputs.

Variable	Coefficient	Standard error	t-statistic	Probability
Exchange rate return	-0.680	0.690	-0.990	0.326
Constant	0.006	0.004	1.370	0.173
R-squared	0.008		F-statistic	0.970
Adj R-squared	-0.0002		Prob > F	0.326

Note: DSEX Return is the dependent variable

As data series are stationary at the level, the Granger causality test (Engle & Granger, 1987) is applied to find the direction of causality between the exchange rate and stock index price.

Table 4 shows the results. It is found that there is no causality between the exchange rate and the stock market return in the Granger sense.

However, the Granger causality test cannot distinguish between short-term and long-term relationships between the variables (Mohammed Suliman & Abid, 2020).

Table 4. Granger causality test.

Null hypothesis	Obs.	F-statistic	Prob.
Exchange rate return does not Granger-cause DSEX return.	120	2.007	0.139
DSEX return does not Granger-cause exchange rate return.		0.403	0.637

Figure 2 and 3 show the impulse response functions of the exchange rate return and the DSEX index return. The sign of the response indicates that exchange rate innovation has an insignificant negative impact (-0.008 percent) on the DSEX index return. However, the effect of the innovation diminishes very quickly, within just one month. The impact on exchange rate returns due to DSEX return innovation is very negligible (-0.0008 percent).

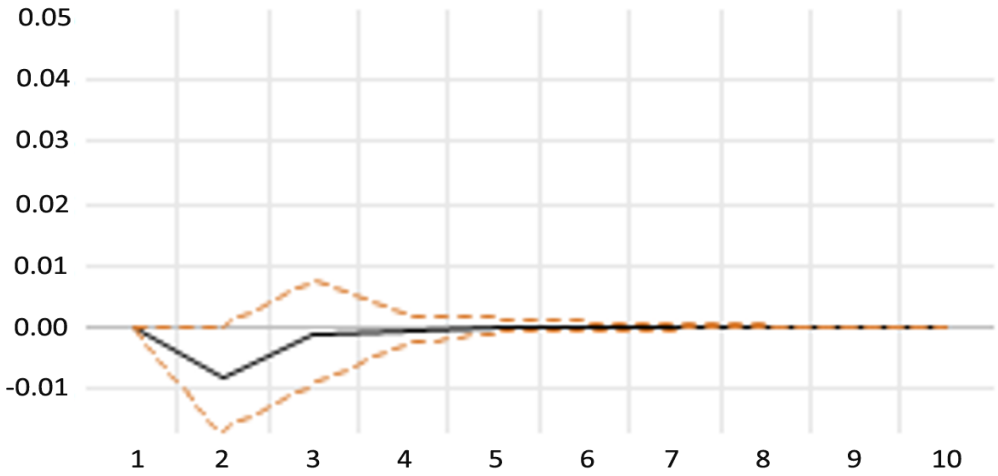

Figure 2. Response of the DSEX index return to the exchange rate return innovation.

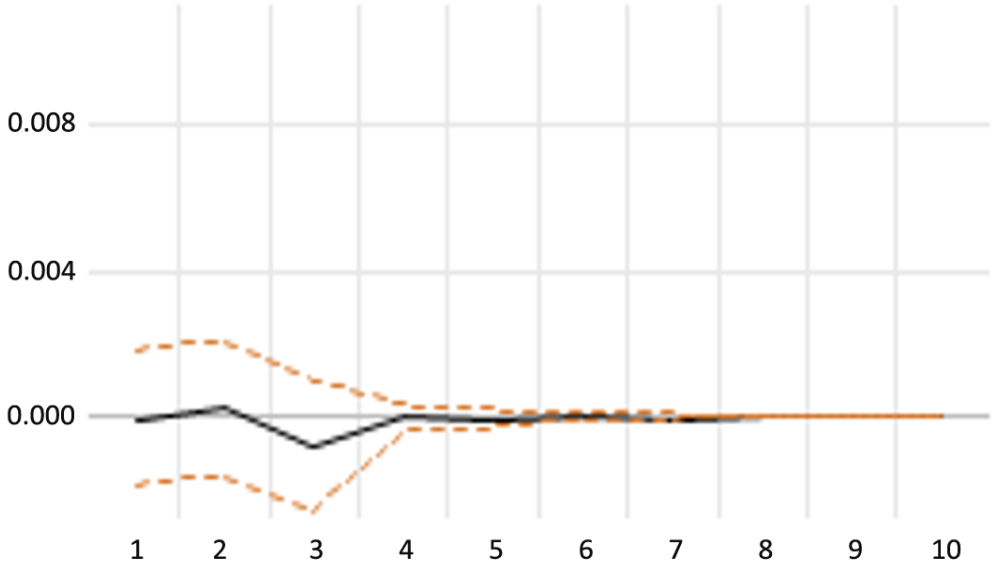

Figure 3. Response of the exchange rate return to the DSEX index return innovation.

Table 5 shows the variance decomposition for the exchange rate return and the DSEX index return. The results indicate that shocks to the exchange rate return account for approximately 3.20 percent of the variations in the DSEX index return, while shocks to the DSEX index return account for only approximately 0.582 percent of the variations in the exchange rate return.

Table 5. Variance decomposition for the exchange rate return and the DSEX index return.

Variance period	DSEX index return		Exchange rate return	
	DSEX index return	Exchange rate return	DSEX index return	Exchange rate return
1	100	0	0.002	99.998
2	96.795	3.205	0.071	99.929
3	96.795	3.205	0.716	99.284
4	96.770	3.230	0.716	99.284
5	96.770	3.230	0.720	99.280
6	96.766	3.234	0.720	99.280
7	96.766	3.234	0.721	99.279
8	96.766	3.234	0.721	99.279
9	96.796	3.234	0.721	99.279
10	96.796	3.234	0.721	99.279

5. CONCLUSION

This study empirically examines the dynamics between the BDT-USD exchange rate and the DSEX index return. The analysis proceeds with the calculation of logarithmic returns of the monthly DSEX index price and the BDT-USD exchange rate. As both series are stationary at the level, the cointegration test is not applied. Rather, the Granger causality test is used to show the causality between the variables. The results of the Granger causality test indicate that the exchange rate and index return do not Granger-cause each other. This finding is reinforced by Vector Autoregression (VAR) models, including impulse response and variance decomposition tests. The impulse response function shows that shocks in the exchange rate return have a very weak negative impact, which diminishes quickly. The response of the exchange rate returns to DSEX index return innovations is even more negligible. The variance decomposition test reveals that approximate0ly 3.2 percent of the variations in the DSEX index return are attributable to exchange rate return shocks, while about 0.58 percent of the variations in the exchange rate return are due to DSEX index return shocks. The results of this study provide valuable insights for individual investors, institutional fund managers, and analysts regarding the nexus between exchange rate and stock market return, thereby aiding in the improvement of their pricing mechanisms.

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Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

REFERENCES

Adaramola, A. O. (2012). Exchange rate volatility and stock market behaviour: The Nigerian experience. *European Journal of business and Management*, *4*(5), 88–96.

Agrawal, G., Srivastav, A. K., & Srivastava, A. (2010). A study of exchange rates movement and stock market volatility. *International Journal of Business and Management*, *5*(12), 62-73. https://doi.org/10.5539/ijbm.v5n12p62

Ajayi, R. A., Friedman, J., & Mehdian, S. M. (1998). On the relationship between stock returns and exchange rates: Tests of granger causality. *Global Finance Journal*, *9*(2), 241-251. https://doi.org/10.1016/S1044-0283(98)90006-0

Ali, R., Mangla, I. U., Rehman, R. U., Xue, W., Naseem, M. A., & Ahmad, M. I. (2020). Exchange rate, gold price, and stock market nexus: A quantile regression approach. *Risks*, *8*(3), 86. https://doi.org/10.3390/risks8030086

Amado, A., & Choon, L. M. (2020). Impact of changes in exchange rate on stock market: An empirical evidence from Indonesia. *International Journal of Applied Economics, Finance and Accounting*, *7*(1), 24-31. https://doi.org/10.33094/8.2017.2020.71.24.31

Ameen, M. H. H., Kamışlı, M., & Temizel, F. (2020). The impact of exchange rate on stock market indices. *Business & Management Studies: An International Journal*, *8*(2), 2044-2062.

Bahmani-Oskooee, M., & Saha, S. (2015). On the relation between stock prices and exchange rates: A review article. *Journal of Economic Studies*, *42*(4), 707-732. https://doi.org/10.1108/JES-03-2015-0043

Bello, Z. (2013). The association between exchange rates and stock returns. *Investment Management and Financial Innovations*, *10*(3), 40-45.

Bilgili, F. (1998). Stationarity and cointegration tests: Comparison of Engle-Granger and Johansen methodologies. *Erciyes Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, (13), 131-141.

Blau, B. M. (2018). Exchange rate volatility and the stability of stock prices. *International Review of Economics & Finance*, *58*, 299-311. https://doi.org/10.1016/j.iref.2018.04.002

Brooks, C. (2019). *Introductory econometrics for finance* (4th ed.). Cambridge, UK: Cambridge University Press.

Chkili, W., & Nguyen, D. K. (2014). Exchange rate movements and stock market returns in a regime-switching environment: Evidence for BRICS countries. *Research in International Business and Finance*, *31*, 46-56. https://doi.org/10.1016/j.ribaf.2013.11.007

Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, *74*(366a), 427-431. https://doi.org/10.1080/01621459.1979.10482531

El-Diftar, D. (2023). The impact of exchange rates on stock market performance of the Emerging 7. *Journal of Capital Markets Studies*, *7*(2), 125-139. https://doi.org/10.1108/JCMS-03-2023-0005

Engle, R. F., & Granger, C. W. J. (1987). Co-integration and error correction: Representation, estimation, and testing. *Econometrica: Journal of the Econometric Society*, *55*(2), 251-276. https://doi.org/10.2307/1913236

Fuller, W. A. (1976). *Introduction to statistical time series*. New York: John Wiley and Sons.

Gulati, D., & Kakhani, M. (2012). Relationship between stock market and foreign exchange market in India: An empirical study. *Pacific Business Review International*, *5*(5), 66-71.

Hajilee, M., & Al Nasser, O. M. (2014). Exchange rate volatility and stock market development in emerging economies. *Journal of Post Keynesian Economics*, *37*(1), 163-180. https://doi.org/10.2753/PKE0160-3477370110

Ibrahim, M. H. (2000). Cointegration and Granger causality tests of stock price and exchange rate interactions in Malaysia. *ASEAN Economic Bulletin*, *17*(1), 36-47.

Johansen, S. (1988). Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, *12*(2-3), 231-254. https://doi.org/10.1016/0165-1889(88)90041-3

Kennedy, K., & Nourzad, F. (2016). Exchange rate volatility and its effect on stock market volatility. *International Journal of Human Capital in Urban Management*, *1*(1), 37-46. https://doi.org/10.7508/ijhcum.2016.01.005

Kollias, C., Mylonidis, N., & Paleologou, S.-M. (2012). The nexus between exchange rates and stock markets: Evidence from the euro-dollar rate and composite European stock indices using rolling analysis. *Journal of Economics and Finance*, *36*(1), 136-147. https://doi.org/10.1007/s12197-010-9129-8

Kumar, M. (2013). Returns and volatility spillover between stock prices and exchange rates: Empirical evidence from IBSA countries. *International Journal of Emerging Markets*, *8*(2), 108-128. https://doi.org/10.1108/17468801311306984

Kwofie, C., & Ansah, R. K. (2018). A study of the effect of inflation and exchange rate on stock market returns in Ghana. *International Journal of Mathematics and Mathematical Sciences*, *2018*(1), 7016792. https://doi.org/10.1155/2018/7016792

Lakshmanasamy, T. (2021). The relationship between exchange rate and stock market volatilities in India: ARCH-GARCH estimation of the causal effects. *International Journal of Finance Research*, *2*(4), 245-259.

Lim, S. Y., & Sek, S. K. (2014). Exploring the inter-relationship between the volatilities of exchange rate and stock return. *Procedia Economics and Finance*, *14*, 367-376. https://doi.org/10.1016/S2212-5671(14)00725-4

Manu, K. S., & Bhaskar, P. (2018). Effect of exchange rates volatility on stock market performance. *Asian Journal of Management, 9*(4), 1337-1341.

Mlambo, C., Andrew, M., & Kin, S. (2013). Effects of exchange rate volatility on the stock market: A case study of South Africa. *Mediterranean Journal of Social Sciences, 4*(14), 561-570. http://doi.org/10.5901/mjss.2013.v4n14p561

Mohammed Suliman, T. H., & Abid, M. (2020). The impacts of oil price on exchange rates: Evidence from Saudi Arabia. *Energy Exploration & Exploitation, 38*(5), 2037-2058. https://doi.org/10.1177/0144598720930424

Nandi, B. K., Kabir, M. H., & Nandi, M. K. (2024). Crude oil price hikes and exchange rate volatility: A lesson from the Bangladesh economy. *Resources Policy, 91*, 104858. https://doi.org/10.1016/j.resourpol.2024.104858

Perera, H. A. P. K. (2016). Effects of exchange rate volatility on stock market return volatility: evidence from an emerging market. *International Journal of Science and Research, 5*(1), 1750-1755.

Pesaran, M. H., & Shin, Y. (1995). An autoregressive distributed lag modelling approach to cointegration analysis. In (Vol. 9514, pp. 371-413). Cambridge, UK: Department of Applied Economics, University of Cambridge.

Phillips, P. C. B., Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika, 75*(2), 335–346. https://doi.org/10.1093/biomet/75.2.335

Salisu, A. A., & Ndako, U. B. (2018). Modelling stock price–exchange rate nexus in OECD countries: A new perspective. *Economic Modelling, 74*, 105-123. https://doi.org/10.1016/j.econmod.2018.05.010

Sims, C. A. (1980). Macroeconomics and reality. *Econometrica: Journal of the Econometric Society, 48*(1), 1-48. https://doi.org/10.2307/1912017

Subair, K., & Salihu, O. M. (2010). *Exchange rate volatility and the stock market: The Nigerian experience*. Paper presented at the Academic and Business Research Institute International Conference.

Suriani, S., Kumar, M. D., Jamil, F., & Muneer, S. (2015). Impact of exchange rate on stock market. *International Journal of Economics and Financial Issues, 5*(1), 385-388.

Tian, G. G., & Ma, S. (2010). The relationship between stock returns and the foreign exchange rate: The ARDL approach. *Journal of the Asia Pacific Economy, 15*(4), 490-508. https://doi.org/10.1080/13547860.2010.516171

Wong, H. T. (2017). Real exchange rate returns and real stock price returns. *International Review of Economics & Finance, 49*, 340-352. https://doi.org/10.1016/j.iref.2017.02.004

Wong, H. T. (2019). Real exchange rate returns and real stock price returns in the stock market of Malaysia. *The Singapore Economic Review, 64*(05), 1319–1349. https://doi.org/10.1142/S0217590816500387

Xie, Z., Chen, S.-W., & Wu, A.-C. (2020). The foreign exchange and stock market nexus: New international evidence. *International Review of Economics & Finance, 67*, 240-266. https://doi.org/10.1016/j.iref.2020.01.001

Zhao, H. (2010). Dynamic relationship between exchange rate and stock price: Evidence from China. *Research in International Business and Finance, 24*(2), 103-112. https://doi.org/10.1016/j.ribaf.2009.09.001