

THE IMPACT OF EXCHANGE RATE MOVEMENTS ON STOCK MARKET VOLATILITY IN SOUTH ASIAN DIVERSE ECONOMIES

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Abstract

The relationship between exchange rate movements and stock markets reveals the interdependence of financial markets. The main aim of this study is to examine the impact of exchange rates on stock market volatility in three major economies in Asia: India, Sri Lanka, and Bangladesh. The study uses daily data from 2014 to 2023 of three major currencies of the three countries Indian Rupee, Sri Lankan rupee and Bangladeshi Taka against US dollar and stock market returns of Bombay Stock Exchange Sensitive Index (BSE SENSEX), All Share Price Index (ASPI), Dhaka Stock Exchange Broad Index (DSEX). Generalised Autoregressive Conditional Heteroskedasticity (GARCH) modelling and causality analysis are employed for the analysis. The findings of GARCH (1,1) model reveal that there is a significant negative impact of USD/INR and USD/LKR volatility on BSE SENSEX and ASPI, respectively, while the effect on DSEX is statistically insignificant. This suggests that equity markets in India and Sri Lanka are more vulnerable to currency fluctuations, potentially due to higher capital market integration and foreign investor exposure. In contrast, Bangladesh's weaker response may be due to less involvement in international markets compared to other two countries. These findings support the importance of accurate exchange rate forecasting and risk management strategies in emerging financial markets.

Keywords: Exchange rate movements, GARCH, granger causality test, South Asia, stock market volatility

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Introduction

Volatility is a common phenomenon in financial markets that can have a significant impact on traders, investors, and the economy. Understanding the causes and implications of stock market volatility is critical for making informed investing decisions, successfully managing risk, and establishing strong financial plans. Market volatility is defined as the rate at which the price of a stock or market indices increases or decreases for a given set of returns (O Norberg, 2024). The more significant and frequent the price changes, the more volatile the market is said to be. Various factors can influence volatility, including economic indicators, geopolitical events, company earnings reports, and investor sentiment. The impact of exchange rate movements on stock market volatility can be significant. A falling currency can improve export competitiveness, boosting export-oriented businesses while increasing expenses for import-dependent firms (Ramanayaka, 2019; K & Kao, 1990). These changes influence investor sentiment and market confidence, leading to increased volatility in stock prices. Overall, these movements lead to uncertainty and risk in the stock market. Understanding these dynamics is critical for making thorough investment decisions and managing risk. The stock market is considered as a key indicator of economic development. Developing markets are known for their high volatility risk due to extreme exchange rate fluctuations, and it can significantly impact economies that heavily rely on foreign currencies for trade and investment.

South Asia is considered as the fastest-growing sub-region globally, and it has reported an average annual growth of 7.0% since 2014 (Song, 2019). It's growth output remains stronger than other emerging markets and developing economies, largely due to India's robust economic expansion. South Asia's growth output is projected to reach 6.0%-6.1% in 2024-25, driven by robust growth in India and recovery from balance-of-payments challenges in Sri Lanka (World Bank, 2024). The region is diverse, with India, Pakistan, and Bangladesh as the dominant economies, and smaller countries like Bhutan, Nepal, and Sri Lanka with their unique development paths (Schwab, 2018). Furthermore, regional integration activities aim to promote economic cooperation, though progress has been limited due to geopolitical tensions. Despite this rapid economic progress, the financial markets of South Asian economies remain highly sensitive to macroeconomic shocks, particularly exchange rate fluctuations. While the relationship between exchange rate fluctuations and stock market volatility has been widely focused on developed markets (Md-Yusuf & Rahman, 2012), it remains under-researched in the context of developing economies, particularly in South Asia. Much of the existing research focuses on developed markets, where financial systems are more mature and market responses differ significantly from those in emerging regions. In contrast, South Asian economies are characterised by less mature financial systems, higher exposure to external shocks, and varying levels of capital controls, all of which can increase the effects of exchange rate volatility (Draz et al., 2019). Furthermore, research on emerging markets has a tendency to generalise results and ignore the diversity of South Asia, a region marked by diverse economic structures and policy environments. As a result, existing studies offer inconclusive and contradictory findings, lacking a region-specific focus that accounts for the diverse nature of South Asian financial markets (Chowdhury, 2024). This study addresses this gap by offering a novel, comparative analysis of how exchange rate movements impact stock market volatility across three major South Asian economies, each of which has a distinct economic structure and plays a significant role in international market participation. With significant inflows of foreign investment and trade in manufacturing and services, India is a significant player in the global economy. Bangladesh, which depends on remittances and worldwide demand, is a major exporter of clothing and is closely linked to global supply networks. Despite being smaller, Sri Lanka maintains close linkages with other countries through trade, remittances, and tourism, which makes all three economies extremely vulnerable to outside financial shocks. By focusing on intra-regional differences, it highlights the asymmetric effects of currency fluctuations on stock market volatility in countries with varying levels of economic development, trade exposure, and financial market maturity. This region-specific and comparative approach provides new insights that are not captured in broader emerging market studies, such as those by Khatri et al. (2017) and Rehan et al. (2019). Addressing this gap can offer novel insights for policymakers, investors, and academics seeking to better understand financial stability and integration in one of the world's most dynamic economic regions.

Accordingly, this study aims to investigate the impact of exchange rate movements on stock market volatility, focusing on three South Asian countries: India, Sri Lanka, and Bangladesh. The selection of these countries is based on geographic proximity, the diversity in market and economic conditions (World Bank, 2023), and the differences in exchange rate regimes (IMF, 2023). India, Bangladesh, and Sri Lanka have diverse economic features, with India having a diverse economy with technology, manufacturing, and agriculture sectors and a flexible exchange rate regime. Bangladesh is experiencing rapid expansion due to the textile and agricultural industries under a stabilised regime. Sri Lanka is heavily dependent on agriculture and tourism and has a floating exchange rate. This variety allows for a comprehensive analysis of how exchange rate movements impact stock market volatility across different economic contexts. (Lian et al., 2021). By evaluating these relationships, the study can provide valuable insights for governments, investors, and businesses to make decisions about currency

risk management and investment strategies. Since exchange rate volatility has a substantial impact on capital flows, trade balances, and overall economic performance, understanding these patterns is important for promoting financial stability and economic growth in the region.

Literature Review

The literature examining the impact of exchange rate movements on stock market volatility within South Asia's diverse economies has a limited regional focus. Given the varying degrees of market maturity, monetary policy frameworks, and exposure to external shocks among countries such as India, Pakistan, Bangladesh, Sri Lanka, and Nepal, a region-specific synthesis is essential. Prior studies have largely concentrated on developed economies or treated developing markets as a similar group, overlooking South Asia's unique vulnerabilities and exchange rate regimes.

Exchange rate movements

An exchange rate is the rate at which one currency can be exchanged for another between nations or economic zones. According to Backman (2006), exchange rate is defined as the price of one currency in terms of another currency. A country's exchange rate usually determined by the supply and demand in the foreign exchange market and is important in determining trade and capital flow dynamics. The rate of exchange is one of the most important macroeconomic variables in developing and developed countries. It affects inflation and causes changes in exports and imports thereby influencing price of commodities traded (Fapetu et al., 2017). The exchange rates movement is important in international finance and managers of multinational firms, international investors, importers and exporters and government officials attach enormous importance to it. Ozturk & Kalyoncu (2009), defined the exchange rate volatility as the risk associated with unexpected movements in the exchange rate. Volatile exchange rates make international trade and investment decisions more difficult because volatility increases exchange rate risk. A few factors, including as variations in inflation rates, interest rate differentials, political and economic stability, and market speculation, all have an impact on exchange rate volatility. The interaction of these variables results in a dynamic and frequently unpredictable currency market. According to Kilicarlan (2018), the rise in domestic investment, money supply and trade openness increase the real effective exchange rate volatility, while the rise in foreign direct investment, output, and government expenditures also reduce the real effective exchange rate volatility.

Stock market volatility

Stock markets have been identified as locations for engaging in economic transactions of buying and selling stocks or shares which are the ownership claims on businesses (Rjumohan, 2019). Through the primary market of stock exchanges, companies can issue shares to the public and get funds for business purposes. The secondary function of the stock exchange is to provide a platform for liquidity for buyers and sellers of the stocks that are listed in the stock market. In the secondary market of stock exchanges, retail and institutional investors buy and sell stocks. The price of a stock is largely determined by supply and demand. If demand is high, the price tends to go up, and if supply is high, the price tends to go down. Market volatility refers to the degree to which the price of a security or the index that it tracks changes over a period. It's important for investors and traders to understand market volatility to make informed decisions about their investments (Shiller, 1990). Investors who prefer to buy and hold a stock, rather than trade, may want to avoid volatile stocks, as volatility makes it harder to maintain the value of the investment. Volatility can either be measured by using the standard deviation or variance between returns from that same security or market index (Bhowmik, 2013).

Relationship between exchange rate movements and stock market volatility

Stock market volatility and exchange rates are closely interconnected, frequently reflecting underlying economic conditions and investor sentiment. The stock market and exchange rate relationship and individually both variables, get importance because they directly affect the economy of any country (Aslam, 2014). When the Exchange rate appreciates, since exporters will lose their competitiveness in the international market, the sales and profits of exporters will decrease, and the stock prices will decline. On the other hand, importers will increase their competitiveness in domestic markets. Unexpected or sudden changes in exchange rates can raise uncertainty and cause investors to reevaluate their risk tolerance and make portfolio adjustments, which in turn can exacerbate stock market volatility (Bamidele, 2024). According to Khan & Nawaz (2010), fluctuating currency rates discourage foreign direct investment because they make business decisions more ambiguous, which encourages producers to boost their long-term investments. The impact of exchange rate movements on stock market volatility has been a topic of interest in financial literature. Studies have explored the relationship between these two variables have found mixed results.

Hajilee and Al Nasser (2014) examined the impact of exchange rate volatility on stock market development across 12 emerging economies from 1980 to 2010. Using a bound testing approach to cointegration, the study estimated both short- and long-run models. Results showed that exchange rate volatility significantly affects stock market development in most countries over both time horizons. However, the magnitude and direction of the effect varied by country, highlighting the role of country-specific economic structures in shaping financial market responses to exchange rate risk. Muigai and Cherono (2019) examined the impact of exchange rate fluctuations on share prices of listed companies in Kenya. Using a longitudinal design and time series regression on daily data from 2008 to 2015, they analysed all 61 listed firms. Their findings revealed a significant negative impact of exchange rate volatility on share prices. The authors recommended policy measures to stabilise the exchange rate and advocated for the development of a derivatives market to help mitigate foreign exchange risk. Nkoro and Uko (2016) explored the relationship between exchange rate and inflation volatility and stock price volatility in Nigeria using quarterly time series data from 1986Q1 to 2012Q4. They employed GARCH(1,1) and extended GARCH-X models to estimate volatility. The study found a negative relationship between stock price volatility and both exchange rate and inflation volatility. Mechri et al. (2018) investigated the impact of exchange rate volatility on stock market fluctuations in two MENA countries. Study used period of 15 years data and incorporated multiple determinants of stock market indices not previously examined together. Using a GARCH model, the study found that exchange rate volatility has a significant effect on stock market movements. The study of Khatri et al. (2017) examined the relationship between exchange rates and stock market returns in four South Asian countries, India, Sri Lanka, Bangladesh, and Pakistan, using monthly data from July 2006 to June 2016. Applying Johansen cointegration, Granger causality, and VECM models, the study found no long-term relationship except for India. In the short run, a significant negative relationship was observed for Sri Lanka and Bangladesh. Aliyu (2010) empirically investigated the impact of exchange rate volatility on Nigeria's export trade using time series data. The study applied econometric models, and the findings indicated that exchange rate volatility had a significant negative impact on export volumes. The study conducted by Jawaid and Ul Haq (2012) examined the impact of exchange rate, interest rate, and their volatilities on stock prices in Pakistan's banking sector. Using cointegration and causality analyses, the study found a significant negative long-run relationship between exchange rate and short-term interest rate with stock prices, while the volatilities of both variables showed a positive and significant effect. Bidirectional causality was found between exchange rate and stock prices, and unidirectional causality from short-term interest rate to stock prices. Research of Rehan et al. (2019) analysed the relationship between exchange rates and stock prices across South Asian countries: Pakistan, India, and Sri Lanka, using data from 2007 to 2016. Employing co-integration and error correction models (ECM), the study found no significant relationship in Pakistan and India, while both short- and long-term linkages were observed in Sri Lanka. The findings suggest that exchange rates can serve as a useful indicator for stock market investment in Sri Lanka, but not in Pakistan and India. Rahman and Uddin (2009) examined the dynamic relationship between stock prices and exchange rates in Bangladesh, India, and Pakistan using monthly data from January 2003 to June 2008. Employing Johansen cointegration and Granger causality tests, the study found no long-term cointegrating relationship and no causal relationship between stock prices and exchange rates in any of the three countries. The findings suggest that these financial variables operate independently in the South Asian context.

Balikai and Mustari (2022) examined the relationship between currency exchange rate volatility and stock market performance in India. Using monthly data from January 2010 to June 2021, the study employed Real Broad Effective Exchange Rate (RBEER) as the independent variable and the S&P BSE Index as the dependent variable. Several econometric tools, including Pearson correlation, ADF and PP unit root tests, Q-Q normality test, and Granger causality test, were applied. The findings revealed a low positive correlation between RBEER and the S&P BSE Index and established a bidirectional Granger causality between the two variables. The study of Kennedy and Nourzad (2016) empirically analysed the impact of U.S. dollar–euro exchange rate volatility on U.S. stock market volatility using weekly data from January 1999 to January 2010. Applying a GARCH(1,1) model and controlling for various macroeconomic factors, they found that exchange rate volatility had a positive and statistically significant effect on stock return volatility. Additionally, Perera (2016) investigated the impact of exchange rate volatility on stock market return volatility in Sri Lanka using daily data from January 2010 to December 2015. The study applied a GARCH model to examine the relationship between exchange rate fluctuations and the All Share Price Index (ASPI) returns of the Colombo Stock Exchange. Results showed that Euro exchange rate volatility had a positive and significant effect on ASPI volatility, while the volatilities of the US Dollar and British Pound were negative and insignificant. The study emphasises that exchange rate volatility should be considered in capital market investment decisions in emerging markets.

Overall, the reviewed literature demonstrates a diverse and often context-specific relationship between exchange rate volatility and stock market behavior across both developed and emerging economies. While several studies (e.g., Muigai & Cherono, 2019; Nkoro & Uko, 2016; Perera, 2016) confirm a significant impact of exchange rate fluctuations on stock market volatility or returns, others (e.g., Rahman & Uddin, 2009; Rehan et al., 2019) report weak or no long-term associations, particularly in South Asian contexts. Methodologies like GARCH models, cointegration analysis, and Granger causality tests are widely used, highlighting both short-run and long-run dynamics. Also findings of emphasize the importance of country-specific economic structures in shaping these relationships, reinforcing the need for localized empirical investigations (Hajilee & Al Nasser, 2014)

Methodology

Data and variables

India, Sri Lanka and Bangladesh is selected as the sample countries of the Study. The selected countries represent a range of economic conditions, including differences in GDP, market capitalization, and the market capitalization of listed domestic companies as a percentage of GDP (Table 1). Additionally, each country has its own exchange rate regime, providing a diverse set of data for research - India with a flexible regime, Bangladesh with a stabilized arrangement and Sri Lanka with a floating system.

Table 1
Countries' Range of Economic Conditions

	GDP (Current US\$ Millions)	Market Capitalization (USD Millions)	Market Capitalization of Listed Domestic Companies (% of GDP)
India	3,549,918.92	3,603,482.44	107.5
Bangladesh	437,415.33	42,894.83	9.3
Sri Lanka	84,356.86	10,598.22	14.3

(Source: Adapted from <https://data.worldbank.org/> (Data for most recent years 2022/2023))

Exchange rates: Indian Rupee, Sri Lankan rupee and Bangladeshi Taka against US dollar are the independent variables and stock market returns of Bombay Stock Exchange Sensitive Index (BSE SENSEX), All Share Price Index (ASPI), Dhaka Stock Exchange Broad Index (DSEX) are considered as the dependent variables. Daily data is collected from January 2014 to December 2023. Standard deviation calculation is used as the volatility measurement.

Model specifications

All analyses were performed after both exchange rate and index data were converted to log returns. This transformation ensures data stationarity and is commonly used in financial time series analysis to increase model dependability and interpretability. To ensure the reliability of time series analysis, stationarity tests were conducted on the data series. This step is essential to verify that the statistical properties of the series such as mean, and variance remain constant over time. The Augmented Dickey-Fuller (ADF) test is employed to detect the presence of unit roots and determine the stationarity of variables. The Granger causality test is conducted to determine the directional relationship between exchange rate volatility and stock market returns. It helps to identify whether one time series can statistically forecast another, thereby providing insights into the lead lag dynamics between the variables.

To analyze the volatility dynamics of exchange rates and stock market returns, the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model proposed by Engle & Bollerslev (1986) is employed. GARCH (1,1) model is used, as it effectively captures the time-varying volatility often observed in financial time series. This model assumes that the current period's variance depends on both the previous period's squared error (ARCH term) and the previous period's variance (GARCH term), making it ideal for modelling volatility clustering. The model is particularly suited for this study as it not only captures volatility but also helps assess how shocks in one variable affect the volatility of another over time.

The model is as follows:

$$R_t = \mu + \epsilon_t \dots \dots \dots (1)$$

$$\sigma_t^2 = \omega + \alpha_1 \epsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \dots \dots \dots (2)$$

Where:

R_t is the stock returns calculated by taking the natural logarithm at time t

μ is the intercept

ϵ_t is the error term

σ_t^2 is the conditional variance at time t .

ω is a constant term.

α_1 is the coefficient for the lagged squared error.

β_1 is the coefficient for the lagged conditional variance.

Findings and Discussion

Descriptive statistics and time plots

The descriptive statistics indicate that all return series, both stock indices and exchange rates have mean values close to zero, reflecting the typical behaviour of financial time series. Standard deviations suggest volatility in all series, particularly in BSE SENSEX and ASPI among the stock indices, and USD/LKR among the exchange rates. The distributions are highly non-normal, and it further confirms by extreme kurtosis and significant skewness. A strong positive skewness is observed in USD/LKR and negative skewness in BSE SENSEX and ASPI. The Jarque-Bera test strongly rejects normality for all variables at the 5% level of significance, confirming the presence of fat tails and asymmetry. These findings highlight the volatile and non-linear nature of the data and support the application of GARCH-family models, which are well-suited for modelling time-varying volatility.

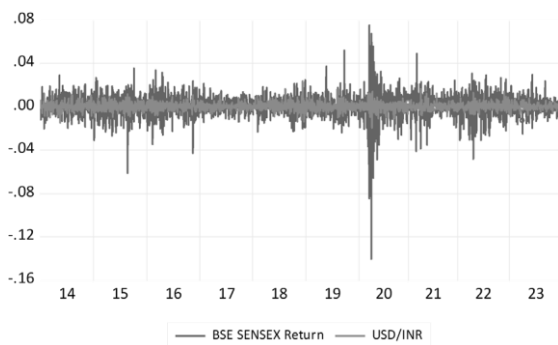
This is further confirmed by the Figures 1,2, and 3. The three plots display the co-movement of stock market returns and corresponding exchange rate returns for India (BSE SENSEX & USD/INR), Bangladesh (DSEX & USD/BDT), and Sri Lanka (ASPI & USD/LKR). Across all three countries, stock market returns show visibly higher volatility and more frequent extreme movements compared to exchange rate returns, which appear more stable and tightly clustered around the zero line. Stock markets of India and Bangladesh exhibit significant negative spikes during certain periods, highlighting abrupt market shocks. In contrast, exchange rate movements in India and Bangladesh are relatively smoother, suggesting managed or more stable currency regimes. However, according to the plot of Sri Lanka, it shows increased volatility in both series, particularly in the latter half of the period.

Table 2
Descriptive statistics

	BSE SENSEX	USD/INR	DSEX	USD/BDT	ASPI	USD/LKR
Mean	0.000448	0.000117	0.000152	0.000136	0.000231	0.000355
Median	0.000585	0.000000	0.000139	0.000000	0.000000	0.000000
Std.Dev.	0.011114	0.003349	0.008872	0.004441	0.010884	0.005883
Skewness	-1.288571	0.289981	-0.513840	1.805439	-0.458810	6.316851
Kurtosis	20.36495	6.104059	32.23665	59.86502	22.52929	144.2576
Jarque-Bera	32770.15	1060.307	91004.11	345229.1	40644.33	2138716.
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

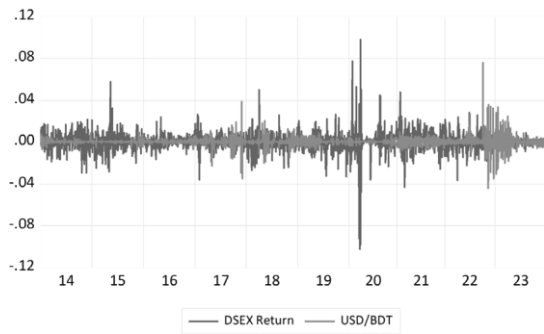
(Source: Authors, based on survey results)

Figure 1
BSE SENSEX and USD/INR



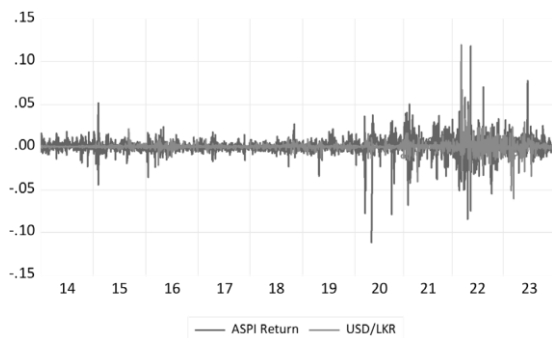
(Source: Author Compilation)

Figure 2
DSEX and USD/BDT



(Source: Author Compilation)

Figure 3
ASPI and USD/LKR



(Source: Author Compilation)

Stationarity test

According to the ADF test results summarised in Table 3, the p-value of all the series are less than the alpha value of 0.05, rejecting the null hypothesis of a unit root, confirming that all return and exchange rate series are stationary at 5% level of significance. Hence, the data do not exhibit a time-dependent trend or evolving variance, making them suitable for time series analysis such as Granger causality and GARCH modelling.

Table 3
Augmented dickey-fuller test results

Variable	t-Statistic	Probability
India Stock Return	-15.65071	0.0000
India Exchange Rate	-25.07979	0.0000
Bangladesh Stock Return	-18.53944	0.0000
Bangladesh Exchange Rate	-9.115256	0.0000
Sri Lanka Stock Return	-13.63197	0.0000
Sri Lanka Exchange Rate	-7.883570	0.0000

(Source: Authors, based on survey results)

Granger causality test

The results of the Granger causality test in Table 4, reveal distinct dynamics between exchange rate movements and stock returns. Accordingly, exchange rates significantly Granger causes stock returns in India by is rejecting the null hypothesis at 5% level of significance but there is no reverse causality was found, as stock returns do not Granger cause exchange rates. There is no significant causal relationship exists in either direction between exchange rate and stock market returns in Bangladesh. In contrast, Sri Lanka exhibits a significant bidirectional causality, with both exchange rate causing stock returns and stock returns causing exchange rate fluctuations. These findings underscore the country-specific nature of exchange rate and stock market interactions.

Table 4
Granger causality test results

Description	F-Statistic	Probability
India: Exchange Rate → Stock Returns	18.9121	7.E-09
India: Stock Returns → Exchange Rate	0.27755	0.7577
Bangladesh: Exchange Rate→Stock Returns	0.64906	0.5226
Bangladesh: Stock Returns→Exchange Rate	1.46491	0.2313
Sri Lanka: Exchange Rate→Stock Returns	6.76720	0.0012
Sri Lanka: Stock Returns→Exchange Rate	9.31020	9.E-05

(Source: Authors, based on survey results)

GARCH (1,1) model results

Table 5 summarizes the results of GARCH (1,1) model for the three countries in the study. As per the results coefficient of USD/INR and BSE SENSEX is significantly negative, implying that the exchange rate volatility has a significant negative impact on stock market volatility in India. Similarly, exchange rate volatility of Sri Lanka also exhibits a significant negative impact on its stock market volatility. However, the coefficient of DSEX and USD/BDT is negative but statistically insignificant. That is exchange rate volatility of Bangladesh impact negatively but insignificantly on its stock market volatility. Furthermore, for all three markets, both the ARCH and GARCH terms are positive and significant, with summation of values are close to 1 (India: $0.102 + 0.870 = 0.972$; Bangladesh: $0.095 + 0.917 = 1.012$; Sri Lanka: $0.116 + 0.896 = 1.012$). This indicates strong volatility persistence, that is past shocks continue to influence current volatility for extended periods. Such high persistence suggests that volatility clusters are prevalent in these markets, meaning periods of high volatility are likely to be followed by more volatility.

Table 5
Results of GARCH (1,1) model

	Exchange Rate	Exchange Rate (Mean)		GARCH (-1)		RESID (-1) ^2	
		Coefficient	Prob.	Coefficient	Prob.	Coefficient	Prob.
BSE SENSEX	USD/INR	-0.722328	0.0000	0.870093	0.0000	0.102119	0.0000
DSEX	USD/BDT	-0.029763	0.2278	0.916724	0.0000	0.094509	0.0000
ASPI	USD/LKR	-0.109487	0.0000	0.895984	0.0000	0.116379	0.0000

(Source: Authors, based on survey results)

Conclusion

Changes in the global financial and business environments have led to increase interest in the impact of exchange rate movements on stock market return volatility. The interconnection of currency fluctuations and stock market performance is especially crucial in emerging countries. This study examined the impact of exchange rate volatility on stock market volatility in three major South Asian economies: India, Bangladesh, and Sri Lanka, using daily data and GARCH (1,1) modelling. According to the results, there is a significant unidirectional causality from exchange rate to stock returns in India which reflects a market where currency movements are primarily driven by broader economic factors, while a significant bidirectional causality is found in Sri Lanka most likely as a result of its more open and smaller financial system, where investor sentiment and capital flows influence exchange rate and stock market movements. However, there is no causal link is found for exchange rate volatility and stock market volatility in Bangladesh. This may be due to strict capital controls, lower financial integration and limited foreign investment, which insulate its stock market from exchange rate volatility. The findings of GARCH (1,1) reveal that there is a statistically significant negative impact of exchange rate volatility on stock market volatility for India and Sri Lanka, indicating that depreciation in local currency adversely affects market performance. In contrast, the impact of exchange rate volatility on stock market volatility for Bangladesh is statistically insignificant, suggesting that the exchange rate plays a limited role in influencing its stock market returns. Moreover, GARCH (1,1) estimations demonstrated strong volatility persistence across all three markets, with the sum of ARCH and GARCH terms approaching one. This suggests that past shocks continue to influence current market volatility, a common characteristic in emerging financial markets. These results confirm that

financial markets in these economies are sensitive to volatility shocks, though the nature and strength of the relationship between exchange rates and stock returns vary by country.

These findings highlight the importance of maintaining currency stability, especially in markets like India and Sri Lanka where stock market performance is sensitive to exchange rate fluctuations. Policymakers in these countries should closely monitor currency movements and help investors manage exchange rate risk. To assist investors in managing risk, policymakers should consider about expanding derivative markets, strengthening exchange rate stability, and encouraging currency hedging tools. For Bangladesh, the weak linkage suggests a relatively insulated market, but continued monitoring is essential considering increasing global financial integration. Although Bangladesh's existing insulation protects the country from outside shocks, authorities should continue to be on the lookout and progressively be ready for further financial openness by strengthening regulatory frameworks and creating risk management mechanisms.

However, this study only focuses on the stock market indices and exchange rates, without accounting for other macroeconomic variables such as interest rates, inflation, or capital flows that may also influence market volatility. Additionally, the analysis is restricted to three countries and a specific time frame, which may limit the generalizability of the results. Future research could extend this analysis by considering the above-mentioned limitations.

References

- Aliyu, S. U. R. (2010). Exchange rate volatility and export trade in Nigeria: An empirical investigation. *Applied Financial Economics*, 20(13), 1071–1084.
- Aslam, W. (2014). Relationship between stock market volatility and exchange rate: A study of KSE. *Journal of Public Administration, Finance and Law*, 5, 62–72.
- Backman, M. (2006). Exchange rate volatility: How the Swedish export is influenced.
- Balikai, K. B., & Mustari, H. N. (2022). An empirical study of the impact of currency exchange rate volatility on Indian stock market fluctuations. *Business Studies*, 43(1–2), 139–148.
- Bamidele, K. (2024). Impact of exchange rate volatility on foreign portfolio investment in Nigeria (1986–2023). SSRN 4954853.
- Bhowmik, D. (2013). Stock market volatility: An evaluation. *International Journal of Scientific and Research Publications*, 3(10), 1–17.
- Chowdhury, E. K. (2024). Role of Stock Exchanges in Regional Economic Progress: A South Asia Perspective.
- Draz, M. U., Ahmad, F., Gupta, B., & Amin, W. (2019). Macroeconomic fundamentals and exchange rates in South Asian economies: Evidence from pooled and panel estimations. *Journal of Chinese Economic and Foreign Trade Studies*, 12(2), 104–119.
- Engle, R. F., & Bollerslev, T. (1986). Modelling the persistence of conditional variances. *Econometric Reviews*, 5(1), 1–50.
- Fapetu, O., Adeyeye, P. O., Seyingbo, O. A., & Owwoeye, S. D. (2017). Exchange rate volatility and stock market performance in Nigeria. *Nigerian Journal of Management Sciences*, 6(1).
- 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.
- International Monetary Fund. (2023). South Asia's path to resilient growth. IMF.
- Jawaid, S. T., & Ul Haq, A. (2012). Effects of interest rate, exchange rate and their volatilities on stock prices: Evidence from banking industry of Pakistan. *Theoretical & Applied Economics*, 19(8).
- Kennedy, K., & Nourzad, F. (2016). Exchange rate volatility and its effect on stock market volatility. *International Journal of Human Capital in Urban Management*.
- Khan, R. E. A., & Nawaz, M. A. (2010). Economic determinants of foreign direct investment in Pakistan. *Journal of Economics*, 1(2), 99–104.

- Khatri, S. N., Kashif, M., & Shaikh, A. S. (2017). The exchange rate as significant predictor of movement in stock market indices in South Asian Countries: An econometric analysis. *Journal of Business Strategies*, 11(2), 107–123.
- Kilicarslan, Z. (2018). Determinants of exchange rate volatility: Empirical evidence for Turkey. *Journal of Economics, Finance and Accounting*, 5(2), 204–213.
- Lian, W., Liu, F., Svirydenka, K., & Zhu, B. (2021). A diversification strategy for South Asia (No. 2021-2202). International Monetary Fund.
- Ma, C. K., & Kao, G. W. (1990). On exchange rate changes and stock price reactions. *Journal of Business Finance and Accounting*, 17(3), 441–449. <https://doi.org/10.1111/j.1468-5957.1990.tb00270.x>
- Md-Yusuf, M., & Rahman, H. A. (2012). Causality effect between equity market and exchange rate volatility in Malaysia. *International Proceedings of Economics Development and Research*, 55(22), 109–114.
- Mechri, N., Ben Hamad, S., de Peretti, C., & Charfi, S. (2018). The impact of exchange rate volatilities on stock market dynamics: Evidence from Tunisia and Turkey. Working paper.
- Muigai, R. G., & Cherono, I. (2019). Effect of foreign exchange rates volatility on share prices of listed firms in Kenya. *European Journal of Economic and Financial Research*.
- Nkoro, E., & Uko, A. K. (2016). Exchange rate and inflation volatility and stock prices volatility: Evidence from Nigeria, 1986–2012. *Journal of Applied Finance and Banking*, 6(6), 57.
- Norberg, O. (2024). *Understanding market volatility*. Cambridge University Press.
- Ozturk, I., & Kalyoncu, H. (2009). Exchange rate volatility and trade: An empirical investigation from cross-country comparison. *African Development Review*, 21(3), 499–513.
- 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.
- Rahman, M. L., & Uddin, J. (2009). Dynamic relationship between stock prices and exchange rates: Evidence from three South Asian countries. *International Business Research*, 2(2), 167–174.
- Rehan, R., Zehra, I., Chhapra, I. U., & Makhija, P. (2019). The relationship between exchange rate and stock prices in South Asian countries. *International Journal of Innovation, Creativity and Change*, 6(9), 113–135.
- Rjumohan, A. (2019). *Stock markets: An overview and a literature review*. MPRA Paper, 101855.
- Ramanayake, S. S. (2019). Impact of currency depreciation on growth, exports & industrialization: Evidence from Sri Lanka. *Rajarata University Journal*.
- Schwab, K. (2018). *The global competitiveness report 2018*. World Economic Forum.
- Shiller, R. J. (1990). Market volatility and investor behavior. *The American Economic Review*, 80(2), 58–62.
- Song, L. L. (2019). How South Asia can continue as the world's fastest-growing subregion. Asian Development Bank. <https://blogs.adb.org/blog/how-south-asia-can-continue-worlds-fastest-growing-subregion>
- World Bank. (2024). *South Asia Development Update: Women, Jobs, and Growth (October 2024)*. <https://doi.org/10.1596/978-1-4648-2170-7>