
Effect of Foreign Exchange Volatility on Returns from Stock Market: A Systematic Review

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Abstract: In the context of economic globalization, particularly in the aftermath of the financial crisis, the stock market has witnessed unprecedented fluctuations. The study sought to examine the magnitude and direction of the effect of foreign exchange volatility on stock market returns. The study reviewed diverse range of journal articles by searching many databases, like Emerald Insight, Google scholar, ScienceDirect and from several publications. The keywords used to search the articles were “Foreign exchange volatility” and “Stock market” or “Stock market performance”. The researcher used these keywords, the databases hit the results of 558,464 (Emerald – 4,417, ScienceDirect – 15,047 and Google Scholar–539,000). Phase involved filtered searcher filtered the search results by selecting articles, journals, full text, scholarly (peer-reviewed) journals, after which it resulted in 25,279 articles (Emerald – 3282, ScienceDirect – 797 and google scholar – 21,200). The researcher conducted the database search between 28th November 2023 and 30th November 2023. To make sure that the articles selected were relevant to the study, the researcher prepared inclusion and exclusion criteria. Using this criterion, the researcher carefully examined the 25,279 articles where 25,004 articles were excluded after applying exclusion and inclusion criteria. After excluding, researcher found 275 articles eligible for inclusion. The researcher thoroughly studied these papers based on title, abstract, keywords, availability of full pdf text to identify their suitability. Further, duplicated papers were excluded leading to 21 papers being selected for review. The study established that country-wise relationship foreign exchange rate volatility and stock market was positive for some studies and inverse for other studies. Foreign exchange rate volatility tended to have positive impact on stock market returns for the majority of developed countries. In addition, the researcher noted that the majority of developing and emerging countries showed positive effect of foreign exchange volatility on stock market returns.

Keywords: Foreign exchange Rate, Foreign Exchange Volatility, Stock Market, Stock Market Returns, Systematic Review, Stock Market Performance.

1. Introduction

In the context of economic globalization, particularly in the aftermath of the financial crisis, the stock market has witnessed unprecedented fluctuations. These fluctuations have contributed to increased uncertainty and risk in the stock market (Ciao, 2023). To mitigate this uncertainty, it is crucial to accurately measure the volatility of stock index returns. Moreover, given the stock market's pivotal role in the global economy, there is a need to focus on promoting the beneficial development of the stock market (Olkhov, 2023). Consequently, understanding the theoretical and literature significance of volatility is essential for measuring stock index return volatility. Volatility is a prominent subject in economic and financial research, representing one of the most crucial characteristics of financial markets. It directly correlates with market uncertainty and influences the investment behavior of both enterprises and individuals. Examining the volatility of financial asset returns is a central concern in modern financial research, often quantified by the variance of the rate of return (Liu et al., 2019). The stock market, an electronic marketplace for trading stocks, bonds, and commodity derivatives such as futures and options, is widely regarded as

an indicator of a country's economic growth (Hatem, 2017). The decision to invest in the stock market is influenced by its performance, which, in turn, is impacted by various macroeconomic factors (Md & Khan, (2020). Therefore, it is crucial for both investors and industries to analyze the impact of these factors as it can affect their viability and directly influence stock prices. The growth of an economy, as measured by the pace of gross domestic product (GDP), fiscal status, inflation rate, debt position, exchange rate, and money supply circulation, all play significant roles (Tabash et al, 2023). The relationship between macroeconomic variables and stock returns has been a widely researched topic among academics and researchers. There exists a vast body of literature on this subject, with numerous macroeconomic variables being identified in global studies.

Stock market returns can be described by time-series of random market trade values and volumes (Cao, 2023). The statistical moments of these trade values and volumes determine the statistical moments of stock returns. The market-based probability of stock returns reveals a direct dependence on market trade randomness and economic uncertainty. Therefore, any reasonable forecasting of stock returns should be based on well-grounded predictions of market trades and the economic environment (Olkhov, 2023). Multiple factors exert an influence on the fluctuations in prices in the stock market. Prominent factors encompass the foreign exchange rate, the rate of interest, oil prices, and macroeconomic policies, among others (Sukmayana & Ikhsan, 2022). The scope of the present investigation will be confined to examining the impact of foreign exchange volatility on the returns of the stock market. The nexus between foreign exchange volatility and stock market returns has tended to be mixed with some revealing positive relationship and other showing negative relationship. Consequently, research on the volatility of financial markets has consistently remained a focal point for financial economists and financial practitioners. This article adopts the systematic review approach due to its objective of identifying all empirical evidence that satisfies the predetermined criteria for inclusion or serves as a suitable response to the research inquiry. Researcher observed keenly all the selected literature to answer the following research question: what is the magnitude and direction of the effect of foreign exchange volatility on stock market returns?

1.2 Research Questions

The study seeks to answer the question; what is the magnitude and direction of the effect of foreign exchange volatility on stock market returns?

1.3 Research Objectives

By reviewing a diverse range of articles from relevant sources, the following are the research objectives of this paper:

1. To identify the effect of foreign exchange volatility on stock market performance.
2. To study the relationship between foreign exchange volatility and stock market returns across developing and developed countries to see whether there is a difference in the outcomes.

1.4 Overview of the Review

The review has been planned in the following manner. Chapter one presents the introduction, Chapter two explains the methodology; Chapter three presents the findings, chapter four presents the discussion of findings and chapter five presents the conclusion and recommendations.

2. Methodology

2.1 Scope of the Research

This paper serves as a comprehensive evaluation of the correlation between fluctuations in foreign currency exchange rates and the returns of stock markets. The existing body of literature encompasses a multitude of research papers that analyse the impact of foreign exchange on stock market returns. During the examination of these articles, the researcher identified discrepancies in the findings, prompting a thorough review of a diverse array of papers in this domain. To synthesize the relationship between foreign exchange volatility and stock market performance across different countries, the researcher conducted an extensive analysis of papers originating from various sources. This study focuses on identifying gaps and exploring the practical implications of the findings, which were derived from a comprehensive review of papers encompassing diverse stock exchanges worldwide. The research process was facilitated through the utilization of Microsoft Excel.

2.2 Search Strategy

2.2.1 Unfiltered and Filtered General Search

The study reviewed diverse range of journal articles by searching many databases, like Emerald Insight, Google scholar, ScienceDirect and from several publications. The keywords used to search the articles were “Foreign exchange volatility” and “Stock market” or “Stock market performance”. In figure 1, when the researcher used these keywords, the databases hit the

results of 558,464 (Emerald – 4,417, ScienceDirect – 15,047 and Google Scholar–539,000) Phase involved filtered searcher filtered the search results by selecting articles, journals, full text, scholarly (peer-reviewed) journals, after which it resulted in 25,279 articles (Emerald – 3282, ScienceDirect – 797 and google scholar – 21,200). The researcher conducted the database search between 28th November 2023 and 30th November 2023. In Table 1, database search protocol is highlighted.

Table 1: Data Search Protocol

Data Base	Scope	Date of search	Number of items
Google Scholar	Title, Keyword	28 th Nov 2023	21,200
Emerald	Title, Keyword, Abstract	29 th Nov 2023	3282
Science Direct	Title, Keyword, Abstract	30 th Nov 2023	797
Total			25,279

2.2.2 Inclusion and Exclusion Criteria

To make sure that the articles selected were relevant to the study, the researcher prepared inclusion and exclusion criteria, which is presented in Table 2.

Table 2: Inclusion and Exclusion Criteria

Inclusion	Exclusion
Dates between 2018 - 2023	Dates before 2018
Open access	full paper not available
Journal/Research article	Case studies, books and conferences, encyclopaedia, reports, short communication
Title contains foreign exchange volatility and stock market returns/indices/performance	Title does not contain key words foreign exchange volatility and stock market returns
English language	Languages other than English

Using this criterion, the researcher carefully examined the 25,279 articles where 25,004 articles were excluded after applying exclusion and inclusion criteria given in Table 2 and Figure 1.

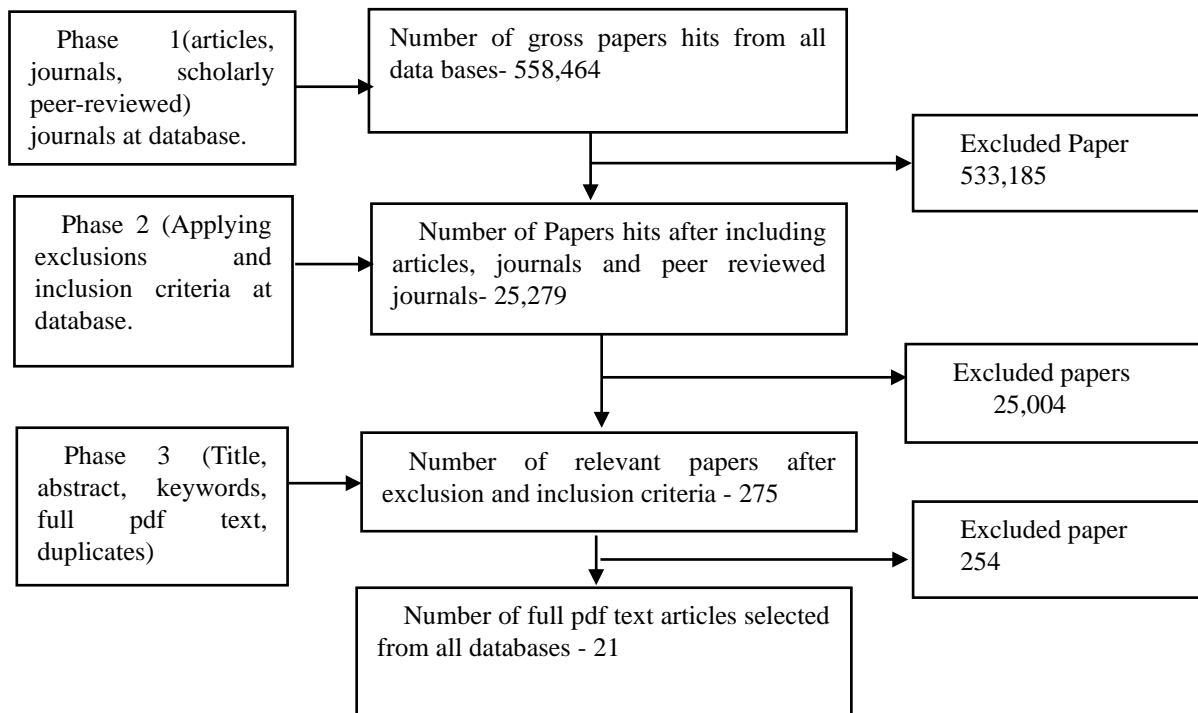


Figure 1: Search Process

After excluding, researcher found 275 articles eligible for inclusion. The researcher thoroughly studied these papers based on

title, abstract, keywords, availability of full pdf text to identify their suitability. Further, duplicated papers were excluded leading to 21 papers being selected for review as presented in Table 3 under findings chapter.

2.3 Research Tools and Techniques

Researchers have employed data derived from secondary sources like Datastream, the International Monetary Fund (IMF), the International Financial Statistics (IFS), the Organisation for Economic Co-operation and Development (OECD), the World Development Indicators (WDI), the World Bank, NYSE Euronext, the Center for Research in Security Prices (CRSP), the Central Bank, and the Stock Exchange. In the investigations, daily, monthly, quarterly, and annual data have been utilized for observation. The majority of the studies have employed monthly data for analysis. Descriptive statistics techniques, such as mean, standard deviation, range, minimum, and maximum, have been employed to ascertain the nature and characteristics of variables. Subsequently, inferential statistics have been utilized for a comprehensive examination of the data. Correlation has been widely employed to determine the direction and coefficient of the relationship. Johansen cointegration and the Vector Error Correction Model (VECM) have been employed to establish a long-term association between foreign exchange volatility, other variables, and stock market returns. For testing the stationarity of time series, the augmented Dickey-Fuller test (ADF) has been predominantly used. In order to ascertain the impact of foreign exchange volatility on stock market returns, regression analysis, multiple regression analysis, Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models, and Autoregressive Distributed Lag (ARDL) models have been employed.

3. Results

The review investigated different papers in order to determine the relationship between foreign exchange volatility and stock market returns. Table 3 contains a list of studies with variables along with their effects. In Table 3, the researcher has included all the articles from the selected database to provide a summary of the impact of foreign exchange volatility for different countries. In order to generalize the effect, researcher has classified assessment as developed and emerging economies as presented in Table 4.

Table 3: Findings from Selected Papers

Author/Year	Focus	Methodology	Country	Results	Knowledge gaps
Sreenu (2023)	Impact of exchange rate on stock market returns volatility in India	Autoregressive distributed lag (ARDL) GARCH (Generalized Autoregressive Conditional Heteroskedasticity)	India	Significant long-term relationship between market returns and exchange rate. Negative short-term effect forex volatility on stock Market	One country study hence may not be generalised to other countries
Bouazizi., Mrad, Hamida and Nafti (2022).	Relationship between oil price volatility, foreign exchange market returns and stock market returns.	ARMA-GARCH conditional variance equations	Germany, Japan and the United States.	Impact of foreign exchange on stock market for Germany, Japan and the United States was positive	Study limited to developed nations
Bhargava and Konku (2023).	Impact of exchange rate fluctuations on US stock market returns.	Unit root test using Phillip-Perron method Johansen cointegration model VAR/VECM and GARCH modelling	USA	volatility in certain currencies can affect market returns positively	Study limited to USA
Manu and Bhaskar (2018)	Effect of exchange rate volatility on stock market performance	GARCH model to four exchange rates and three stock indices.	India	Fluctuation of exchange rate impacts stock indices positively	Does not show the magnitude of effect of forex volatility on stock market indices.
Mechri, Hamad and Peretti. (2019)	impact of exchange rate volatility on stock market returns in Tunisia and Turkey.	- GARCH model used to measure volatility - Multiple regression model used to determine impact	Turkey and Tunisia	Exchange rate volatility has a significant negative effect on stock market fluctuations in Tunisia and Turkey.	Multiple regression model may be misleading as it does not capture country specific effect
Sreenu, Rao, and Naik (2022).	the impact of currency exchange rate and rate of inflation on volatility in Indian share market returns.	The market returns were computed from January 2000 to June 2020 ARDL model	India	long-term relationship between NSE returns and the currency rate of exchange. For the short-run the	One country study hence findings have limited application

		GARCH and Error Correction Model (ECM)		variable is examined showed the negative effects on the stock market returns.	
Dewanti, Rusmita., and Samad (2022).	Impact of exchange rate volatility on the return of MSCI Islamic stocks in Asia emerging countries.	Daily time series data is from January 2015 to June 2020. time series regression The EGARCH method is used	India, China, Korea, Indonesia, Malaysia, Thailand, and the Philippines.	Mixed findings on effect pf forex volatility on stock market returns. Exchange rate volatility has a statistically significant positive effect in China, Korea,	mixed findings hence inconclusive.
Odiche (2022).	interplay of oil price volatility, exchange rate and stock market return in Nigeria	5-days daily data covering 1985 to 2021. Descriptive statistics and VECM GARCH model in our estimation.	Nigeria	exchange rate and oil price volatility positively and significantly influence the shocks to stock market return in Nigeria.	One country study hence not generalizable to other countries.
Ilu (2020).	impact of exchange rate volatility on stock prices in Nigeria	GARCH models	Nigeria	bad news exerts more shocks on the stock returns volatility than good news of the same magnitude.	Limited generalization of findings to other countries.
Ali., Mangla, Rehman., Xue, Naseem and Ahmad (2020)	Relationship between stock market volatility with the exchange rate and gold prices of an emerging market, Pakistan	Employed daily and monthly data from 2008 2018. quantile regression approach	Pakistan	Negative impact of the exchange rate and gold price volatility on the stock market performance	Limited generalization to other countries.
Mlambo Maredza and Sibanda (2013)	effects of currency volatility on the Johannesburg Stock Exchange.	GARCH model was used The study employed monthly South African data for the period 2000 – 2010.	South Africa	A very weak and positive relationship between currency volatility and the stock market was confirmed.	Limited generalization to other countries.
Wasiaturrahma, Putri and Ajija. (2020).	effect of asymmetric exchange volatility on the volatility of stock returns	SD from 1997 to 2017. Augmented Markov Switching EGARCH approach	Indonesia	The good and bad news give different impact on stock return volatility	Does not show magnitude of effect of forex volatility on stock returns
Mariam, Alenezi., Ahmad, Alqatan., Obby, Phiri. (2020).	The sensitivity of stock returns to exchange rate, interest rate and oil price volatility in the Gulf Cooperation Council (GCC)	Multivariate ordinary least square (OLS) regression and the exponential generalized autoregressive conditional heteroscedastic in mean (EGARCH-M) models data collected from January 2007 to June 2012.	Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates)	overall, exchange rate risk showed a positive and significant relationship with firms' value.	Dependent variable was firms value
Kuhe., Aarga and Ayigege (2019).	Investigated volatility behavior of exchange rates returns of Naira against CFA, Euro, Great British Pounds, US Dollar, West African Unit of Account (WAUA) and Japanese Yen in Nigeria	GARCH models The study utilizes daily quotations of these exchange rates from 12/11/2001 to 04/13/2018	Nigeria	foreign exchange rates return was significantly related	One country study with limited generalization to other countries
Fransiskus, X, Lara, Aba. (2018).	effect of exchange rates and inflation on volatility and stock returns on the Indonesia Stock Exchange.	The stock sector to be studied is the trade, services and investment sector in the 2015-2017 period	Indonesia	The volatility of all shares in the 2015-2017 period tends to be negative to exchange rate	One country study hence limited generalization.
Jaroenwiriyakul (2019).	trilateral relationship among foreign exchange rates, oil prices, and stock market returns in Thailand	weekly data starts from 2 January 2008 to 22 May 2018 totally 543 observations. Generalised Autoregressive Conditional Heteroscedasticity (GARCH)	Thailand	foreign exchange rate is the only factor with a significant negative impact on stock market returns and oil prices.	One country study hence limited generalization

		Dynamic conditional correlation (DCC)			
Hung (2022)	Volatility spillover effects between the stock market and foreign exchange market in Hungary, Poland, the Czech Republic, Romania and Croatia.	Exponential Generalised Autoregressive Conditional Heteroskedasticity (EGARCH). The whole of the study period covers from 1st April 2000 to 29th September 2017.	Hungary, Poland, the Czech Republic, Romania and Croatia.	Bidirectional, unidirectional and no volatility spillover between stock and foreign exchange market of Hungary, Croatia and Czech Republic respectively Further, Croatia, Romamia, Czech, Hungary showed positive spillover	Mixed findings hence not conclusive
Guler, D. (2020).	Impact of the Turkish Lira to U.S. Dollar (TRY/USD) exchange rate volatility on the Borsa Istanbul 100 Index return.	A simple Ordinary Least Squares (OLS) model Bivariate Asymmetric Quadratic GARCH model employed. daily data during the period over July 2005 - April 2020.	Turkey	A positive impact of the exchange rate volatility on the return volatility.	One country hence limited generalization to other countries
Keshtgar, Nafiseh; Pahlavani, Mosayeb; Mirjalili, Seyed Hossein (2020)	Impact of exchange rate volatility as a determinant of banks' performance.	2007-2017 for 14 Iranian banks. GARCH Panel data method	Iran	Random exchange rate volatility has a negative and statistically significant effect on banks' capital return ratio.	Dependent variable was not Stock market index
Mishra (2019)	Impact of stock exchange, foreign exchange as well as crude oil in Japanese and Indian financial market	generalised autoregressive conditional heteroskedasticity dynamic conditional correlation (GARCH-DCC). Daily trading data of ten years from 2007 to 2017.	Japanese and India	Forex volatility significantly and positively explained stock market returns	
He, Gokmenoglu, Kirikkaleli and Rizvi (2023)	causal relationship between the Turkish stock market returns and foreign exchange rates.	wavelet coherence approach. period from April 2000 to March 2019	Turkey	negative correlation between the Turkish stock market and foreign exchange rates	A unidirectional causality runs from the Turkish stock market to foreign exchange rates.

Table 4: Country-wise effect of foreign exchange volatility on stock market Returns

Effect	Developed Nations	Developing and Emerging Nations
Negative	Turkey	India, Tunisia, Pakistan, Indonesia, Thailand, Iran
Positive	China, Korea, Germany, Japan and the United States.	Nigeria, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates, South Africa, Croatia, Romamia, Czech, Hungary

4. Discussion

4.1 Effect of Foreign Exchange Volatility on Stock Market Returns

The first objective sought to establish the effect of foreign exchange volatility on stock market returns. The findings presented in Table 3 showed that the effect of foreign exchange rate on stock market returns was mixed with some studies revealing positive effect while others revealing inverse relationship. Studies of Sreenu (2023); Mechri, Hamad and Peretti (2019); Sreenu, Rao and Naik (2022); Ali., Mangla, Rehman., Xue, Naseem and Ahmad (2020); He, Gokmenoglu, Kirikkaleli and Rizvi (2023) showed negative effect of foreign exchange volatility on stock market returns. Consequently, Odiche (2022); Alenezi., Alqatan and Phiri (2020); Guler (2020); Mishra (2019) showed a positive effect of foreign exchange volatility on stock exchange returns. Further, the researcher established that the results for India were contradictory, with both positive (Mishra, 2019) and negative (Sreenu, 2023; Sreenu, Rao & Naik, 2022) outcomes. On looking further, researcher observed that the 2008 financial crisis had an effect on the exchange rate, which contributed in conflicting findings for India.

4.2 Difference in effect between Developing and Developed Countries

The second objective sought to examine the relationship between foreign exchange volatility and stock market returns across developing and developed countries to see whether there is a difference in the outcomes. Except for Turkey, foreign exchange

rate volatility had a positive impact on stock market returns for the majority of developed countries. This may be attributed to the fact that when forex markets experience higher volatility, it often indicates increased uncertainty and risk in the global economic environment. Investors may seek alternative assets that are perceived as safer during times of high uncertainty, such as stocks in developed economies or those denominated in stable currencies. This can lead to increased demand for stocks and higher returns. Further, the researcher noted that the majority of developing countries have a positive effect. The explanation for this may be that forex volatility can be an indicator of increased global economic uncertainty and risk. During periods of high volatility, investors may seek higher returns in riskier assets, such as stocks in developing countries, as they perceive them to have the potential for greater returns. In addition, higher volatility in forex markets may be associated with fluctuations in commodity prices, presenting opportunities for investors to capitalize on potential stock market gains.

5. Conclusions and Recommendations

5.2 Conclusion

This review paper examined the effect of foreign exchange volatility on stock market returns using literature from across world from. The study established that country-wise relationship foreign exchange rate volatility and stock market was positive for some studies and inverse for other studies. Foreign exchange rate volatility tended to have positive impact on stock market returns for the majority of developed countries. The study thus concludes in period of high volatile foreign exchange rate, investors may seek alternative assets that are perceived as safer during times of high uncertainty, such as stocks in developed economies or those denominated in stable currencies. In addition, the researcher noted that the majority of developing and emerging countries showed positive effect of foreign exchange volatility on stock market returns. The study concludes that a higher volatility in forex markets may be associated with fluctuations in commodity prices, presenting opportunities for investors to capitalize on potential stock market gains in developing countries.

5.3 Recommendation

5.3.1 Recommendation for Practice

This study would raise investor understanding of the effect of foreign exchange on the stock market, as well as analysts and educators in the field of economics and finance. Since foreign exchange rate volatility tended to have positive effect in stock market in developed nations, investors looking to safer and more stable returns should invest in stable stocks in developed nations. This investigation would provide valuable assistance to a wide range of investors in their process of making investment choices in both the domestic and foreign markets. Additionally, it would offer support in the management of funds and the selection of stock portfolios by pension fund and mutual fund companies. Moreover, it is essential for the government to develop effective strategies to reduce the negative impacts of fluctuations in foreign exchange rates on the returns of the stock market. This can be achieved by implementing measures such as strengthening the domestic currency to safeguard it against adverse volatility.

5.3.2 Recommendations for Future Research

A study may be carried out on other factors such as macroeconomic variables and crude oil prices to see how they affect stock market returns. Furthermore, the effect of macroeconomic factors specific to sectoral indices may aid in portfolio diversification strategy across multiple sectors. Since it incorporates a variety of macroeconomic variables and their relationship with the stock market. Emerging economies, such Kenya have a greater opportunity to investigate the effect on thematic indices under the stock market to establish whether volatility in foreign exchange rate affects different indices differently.

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