The Impact of USD-INR Exchange Rate on Stock Market Return

Simran Singh MBA student, Mittal School of Business, Lovely Professional University, India email: simransingh62068@gmail.com

Dr. Rohit Bansal Associate Professor, Mittal School of Business, Lovely Professional University, India email: rohit.bansal@lpu.co.in

ABSTRACT

This paper analyses the correlation between the USD-INR exchange rate fluctuations and the stock market returns in India between the years 2019 and 2026. In a more globalized economy, the exchange rate fluctuations are very important in shaping the financial markets and it is therefore important to know how currency movements impact on the stock performance. The main aims of the research are to examine the relationship between the exchange rate fluctuations and stock returns, to assess the effects of the fluctuations through regression analysis, and to establish the causality direction between the two variables. The study is founded on secondary data gathered through credible financial sources and the objectives are met with the help of the relevant statistical tools including correlation analysis, regression analysis, and the Granger causality test. Correlation analysis assists in determining the nature and strength of the relationship whereas regression analysis quantifies the degree to which exchange rate changes affect stock market returns. The Granger causality test also gives information on whether the stock returns are caused by the exchange rate movements or the reverse. It is hoped that the study findings will be of great help to investors, financial analysts, and policymakers as they will enhance their knowledge on the relationship between the foreign exchange market and the stock market. This can aid in making better investment decisions, risk management and making informed policy. In general, the research adds to the further insight into the dynamic nature of the exchange rates and stock market performance in the Indian setting.

Keywords – Exchange rate, stock market returns, financial market, Indian economy

INTRODUCTION

The relationship between the performance of the stock market and the exchange rates is one of the fields of study that have received a significant amount of research in international finance. The profitability of companies that are involved in international trade, foreign investments and multinational operations is affected by the exchange rate movements. The volatility of the exchange rate in the emerging economies such as India can have a great impact on the financial markets, investor confidence and the stability of the economy. The USD-INR exchange rate is one of the most significant exchange rate indicators since the United States is one of the largest trading partners of India and a significant source of foreign investment returns in various aspects. The weakening of the domestic currency against the U.S. dollar can be advantageous to the export-oriented firms because their products will be cheaper in the foreign markets. Thus, the exchange rate can fluctuate and therefore cause a shift in the expectations and performance of the stock market (Dornbusch and Fischer, 1980). Theoretically, there are two significant models that explain the relationship between stock prices and currency rates, the flow-oriented model and the portfolio balance model. The flow-oriented model states that the exchange rate changes affect the profits of companies, the balance of trade, and the international competitiveness, which in turn affect the stock prices (Dornbusch and Fischer, 1980). Conversely, the portfolio balance model explains that the stock market process can have an impact on the exchange rates since the stock price variation will impact the international capital flows and the portfolio allocation decision of the investors (Branson, 1983). According to these theories, the correlation between the stock markets and the exchange rates can either be positive or negative depending on the economic conditions. The correlation between the stock market returns and the exchange rate movements is especially high in the emerging economies like India because of the enhanced globalization and financial integration. The Indian stock market, which is symbolized by such indices as NIFTY 50 and BSE SENSEX, has expanded considerably over the last several decades. Meanwhile, foreign institutional investments, trade liberalization and

economic reforms have increased the integration of the Indian economy into the global financial markets. The volatility of the USD-INR exchange rate, thus, can have grave consequences on the stock market performance and investor behaviour. Some of the macroeconomic variables that affect the exchange rates and the stock market returns are numerous and they are inflation, interest rates, trade balance, foreign capital inflows and economic growth. The depreciation of the Indian rupee against the U.S. dollar can result in increased risks in the domestic market by foreign investors that can cause capital outflows and falling stock prices. On the other hand, appreciation of currency can lead to inflow of foreign investment and increase the performance of the stock market. Thus, the study of the correlation between the exchange rate fluctuations and the stock market returns can be of invaluable use to investors, policymakers and financial analysts. Empirical research has revealed inconclusive findings on the correlation between exchange rates and stock market returns. Research indicates that currency depreciation has a negative relationship with stock returns and research indicates that currency depreciation has a positive or insignificant relationship. In one case, Aggarwal (1981) discovered that the stock prices and the exchange rate movements in the U.S. market were highly correlated. On the same note, research in the new markets indicates that the exchange rate volatility can affect the performance of the stock market by affecting the competitiveness of the trade and foreign capital flows (Ajayi and Mougoue,1996). Given the growing involvement of foreign investors and the growing integration of the financial market with the global economy, in the context of India, one should take into consideration the impact of exchange rate changes on stock market returns. The sensitivity of the correlation between the USD-INR exchange rate and stock market returns is significant to various stakeholders. This information can be used by investors to make improved portfolio diversification and hedging decisions. The policymakers and financial regulators can also find the information on the effect of currency fluctuations on the stock markets useful in order to formulate effective macroeconomic and monetary policies. Moreover, the dependent firms in international trade are in a better position to manage their financial risks since they know the effects of the exchange rate movements on the performance of the market. Although this relationship has acquired a significant significance, empirical research with the help of statistical analysis tools like correlation and regression analysis is required to investigate the effect of exchange rate fluctuations on stock market returns in India. The proposed study would fill this gap by analysing the relationship between stock market returns and the USD-INR exchange rate using secondary data and quantitative statistical methods. The study can be applied to add to the existing literature by offering empirical data on the relationship between currency movements and stock market performance in the Indian financial market. Thus, the aim of the paper is to analyse the relationship between the changes in the USD-INR exchange rates and the stock market returns and to establish the effect of the exchange rate changes on the stock market returns through regression analysis. The study findings can be of great interest to investors, financial analysts, and policymakers in regard to the effect of currency movements on the performance of stock markets.

REVIEW OF LITERATURE

Financial economists have been very interested in the relationship between exchange rate fluctuations and stock market performance. The exchange rates fluctuate and this influences the corporate profitability, foreign investment flows and investor expectations which in turn influences the stock market returns. Some empirical studies have been conducted on this relationship in developed and emerging markets such as India using econometric models such as regression analysis, VAR and GARCH models.

Yadav (2016) examined the correlation between the USD and INR exchange rate and the returns of the Indian stock market in the form of the Nifty index. The study employed correlation analysis, Johansen cointegration and Granger causality tests to test long-run and short-run relationships. The findings revealed that the exchange rate movements had a strong interaction with the stock market performance after the economic liberalization in India. The research arrived at the conclusion that exchange rate volatility affects investor sentiment, foreign capital flows, and market returns. The study provides evidence that currency depreciation can influence stock returns through trade competitiveness and the foreign investment channels, which support the macroeconomic linkage between exchange rate changes and equity markets. Bahmani and Sohrabian (1992) examine the stock Prices and the Effective Exchange rate of the Dollar tested the relationship between the stock prices and the exchange rates with and the effective exchange rate of the U.S. dollar. The study employed cointegration and Granger causality tests to test the short-run and long-run relationship between the two variables. The findings showed that there is short-term bidirectional causality rather than a long-term equilibrium relationship between stock prices and exchange rates. This means that the movements of the exchange rates can influence the stock prices and vice versa. The results shows that the relationship between stock markets and foreign exchange

markets is dynamic and susceptible to transient changes in the financial markets. Bhanu Murthy et al. (2019) investigated the effect of macroeconomic variables on stock market returns in India under different policy regimes in the period between 1991 and 2015, including exchange rates, inflation, GDP, and interest rates. The research found that the exchange rates have a considerable effect on stock returns in the globalization and financial crisis periods through structural growth equation modelling. The study has identified that the currency movements influence corporate profitability, trade exposure, and foreign institutional investment behaviour, which influence the performance of stock markets. The findings support the application of exchange rate variables in stock returns regression models. Lakshmana Samy (2022) used ARCH-GARCH models to study the causal relationship between exchange rate volatility and stock return volatility in India. The study used daily data of BSE Sensex and other currency exchange rates like USD/INR. Results indicated that exchange rate volatility contributes to stock market volatility, although the degree differs across currencies. It was also observed in the paper that volatility clustering in stock returns is long-term, which implies that external currency shocks have long-run impacts on domestic equity markets. This study empirically justifies volatility spillover in foreign exchange and stock markets. Sreenu, Rao, and Trivedi (2021) explored dynamic associations between foreign exchange rates and performance of the Indian stock market using Vector Autoregression (VAR) and variance decomposition techniques. The analysis showed a two-way causality between stock market prices and exchange rate changes based on quarterly data between 2000 and 2019. The results indicated that a significant portion of stock market volatility in the long-run is due to exchange rate shocks. The study discovered that exchange rate movements are a key predictor of stock market returns and should be incorporated in correlation and regression analysis models. Sreenu (2023) concentrated on the impact of exchange rate volatility and inflation on the stock market returns in India. The analysis is based on the data of January 2000 to June 2020, in which the exchange rate and inflation data are gathered using the reserve bank of India (RBI), and the stock market returns are gathered using stock indices. The paper applies the advanced econometric models to test the relationship, such as Autoregressive Distributed Lag (ARDL) model, Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model, and Error Correction Model (ECM). The findings of the study show that there is a strong long-run relationship between exchange rate and stock market returns. This means that the fluctuations of the exchange rates play a major role in determining the performance of the stock market in the long run. However, the short-term study shows that there is a negative relationship, meaning that exchange rate changes negatively affect stock returns in the short term. Mohapatra et al. (2024) focussed on Influence of Exchange rate Volatility on Indian Sectoral Indices and is devoted to the effect of exchange rate volatility on the stock indices of different sectors in India. The findings show that the exchange rate volatility is a significant variable that influences the sectoral stock indices, especially in the long-term where the strong spillover effects are achieved in all sectors. The short run effect is different in the different sectors with some sectors like the banking and infrastructure being less sensitive to certain exchange rate movements. The other argument that the research makes is that different currencies have different impacts on sectors and this implies that exchange rate transmission in financial markets is a complex phenomenon. Garg and Singh (2025) analysed the effect of exchange rates on Indian underlying stocks and ADRs is concerned with the correlation between exchange rate changes and stock prices in the domestic and international markets. the findings show that exchange rates and stock prices are strongly correlated in the short and long term. the paper also contributes to the idea that the exchange rate changes are a significant bridging variable between the local and international financial markets. Gopinathan and Durai (2019) examined the relationship between stock prices and macroeconomic variables in India using nonlinear econometric models. The Indian stock market was analysed and the effect of exchange rate, inflation and interest rates on the stock market movements was analysed. The findings indicated that the stock price behaviour is greatly influenced by the fluctuations in the exchange rates in the long run. The results also showed that macroeconomic factors like exchange rates play a major role in explaining the volatility of the stock market and investor expectations in emerging markets like India. Mohan, Mathew and Daniel (2025) explored the dynamicity of the relationship between stock returns and exchange rates in India and China. The study will focus on identifying the key variables that influence the association between the two variables and the interdependence of financial markets across economies. The findings indicate that there is a strong correlation between the exchange rates and the stock returns and this means that the currency movements play a significant role in the determination of the performance of the stock markets. Another point that the paper brings to light is that the relationship may vary in various countries due to the disparity in the economic structure and market conditions. Overall, the research paper concludes that exchange rate dynamics is an important aspect of stock returns and should be considered by investors and policymakers when analysing financial market behaviour. Ajayi, Friedman, and Mehdian (1998) studied the dynamic correlation between stock prices and exchange rates in developed and emerging markets. The study conducted a Granger

causality test and discovered that the movement of exchange rates has a significant impact on the performance of stock markets in emerging economies. The depreciation of domestic currency was linked with the falling stock market returns because of the high costs of imports and outflows of capital. The paper is in favour of the portfolio balance approach, which implies that the portfolio allocation decisions of international investors are influenced by currency volatility. In nations such as India where foreign institutional investors are significant, exchange rate fluctuations are a key factor that dictates the movement of the stock market. Pan, Fok and Liu (2007) examined the causal relationship between exchange rates and stock prices in various Asian economies based on the vector autoregression (VAR) models. The results showed that there was a strong interaction between the currency markets and the stock markets especially when there was financial instability. The study found that depreciation of the exchange rate has a negative impact on stock returns in export-driven economies. Keswani, Puri and Jha (2024) used cointegration analysis and Vector Error Correction Models (VECM) to examine the association between macroeconomic variables and stock prices in the Indian market. The analysis was based on monthly data between 2009 and 2019 and the researchers concluded that exchange rates, inflation, and interest rates have a negative impact on the performance of the stock market, whereas GDP growth and foreign institutional investment have a positive effect on stock prices. The findings revealed that macroeconomic variables and stock market movements have a strong long-run relationship, which implies that exchange rate fluctuations are a key factor in determining stock market returns in India. Sanwal and Ismail (2022) investigated the empirical correlation between stock prices and exchange rates in India based on monthly data between 2011 and 2021. The research employed the Johansen cointegration tests, Pearson correlation analysis, and Granger causality tests to establish the type of relationship between the exchange rate movements and stock prices. The findings showed that there was no significant long-run cointegration between the exchange rate and stock prices, but the Granger causality test showed that stock prices had a unidirectional relationship with the exchange rates. The study found that the movements of the stock market can affect the exchange rate fluctuations in the emerging financial markets. Suriani et al. (2015) investigated the correlation between the exchange rate movements and stock market performance by studying the interaction between the foreign exchange market and the equity market in Pakistan. The research employed the KSE-100 index as a measure of stock market performance and the Pakistani rupee-US dollar exchange rate (PKR/USD) as the measure of exposure to exchange rates. The study has highlighted that the stock market and the foreign exchange market are very important in international trade and investment decisions. Sharma and Banerjee (2015) examined the correlation in the Indian stock market sectors and found that there was high cross-market dependence at the time of economic fluctuation. Despite the fact that the research was based on sectoral correlations, it emphasized that macroeconomic shocks such as exchange rate volatility enhance interdependence of stock returns. The study has concluded that the Indian stock markets are not necessarily random walk hypothesis, and that the movements in returns can be explained by macroeconomic factors such as exchange rates. This reinforces the rationale of regression analysis of the effects of the USD-INR exchange rates. Phylaktis and Ravazzolo (2005) examined the long-run relationship between exchange rates, stock prices, and capital flows in the Pacific Basin countries. The study examined the effects of financial integration using cointegration and error correction models. The study indicated that there was a strong positive long-run relationship between stock markets and exchange rates that were caused by international capital flows. The appreciation of the exchange rate led to foreign investment, which enhanced the returns of the stock market. The study highlights the significance of exchange rates as a transmission channel between international investors and local stock markets, which supports the significance of empirical research using regression. Majumder and Nag (2015) examined the spillover of returns and volatility between stock market prices and exchange rates in India using financial market data in the period between April 2003 and September 2013. To capture the asymmetric effect of shocks between the stock market and the foreign exchange market, the study employed a bivariate Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) model. The EGARCH model allows the researcher to analyse the impact of positive and negative shocks on volatility in financial markets in another way. The study showed that the stock market returns and exchange rate movements in India have a strong spillover effect. Abdalla and Murinde (1997) ventured into emerging markets like India-type economies to acquire knowledge on causal relationship between exchange rates and stock prices. The authors conducted a cointegration analysis and Granger causality to determine that in developing countries, stock market movements are likely to be caused by exchange rates. The exchange rate depreciation affected the performance of the stock market negatively due to the high cost of imports and lack of confidence by the investors. The findings can be applied very well to India because the emerging markets are more vulnerable to foreign capital flows and currency volatility. Nieh and Lee (2001) examined the short-run and long-run relationships between stock prices and exchange rates in a number of countries. The analysis discovered by cointegration

and error correction model: No strong long-run equilibrium relationships. Strong short-run association between currency markets and stock markets. The exchange rates were volatile and this influenced the returns of the stock markets through the investor sentiment and international trade exposure. The study provides empirical data to the study of the exchange rate impacts using regression. Stavarek (2005) studied the exchange rate volatility and the stock markets in the emerging economies in Europe that were shifting towards the global financial integration. Through correlation analysis and regression, the study found out that there exists a difference in the way stock markets react to appreciation or depreciation of currencies. The currency depreciation impacted negatively on the stock prices due to inflationary pressure and high cost of borrowing. The study discovered that fluctuations in the exchange rates are a major macroeconomic determinant of stock market performance particularly in emerging markets such as India. Walid and et al (2011) used Markov Switching Models to investigate the effects of exchange rate volatility on stock market in emerging economies. The study has found that exchange rate volatility significantly impacts on stock returns during financial crisis and unstable economies. The risk in stock markets and the lack of investor confidence is increased by the weakness of the domestic currency depreciation. The research has pointed out that the volatility of the exchange rates is directly related to the volatility of the financial market and the analysis of the impact of the regression should be done in the empirical study. Jorion (1990) concentrated on how the exchange rate changes affect the stock returns of multinationals. The study will focus on measuring the extent to which businesses are vulnerable to foreign exchange risk and how the exposure affects the performance of the businesses in the market. The study shows that the relationship between the exchange rate and stock return varies across firms and is very much dependent on the degree of internationalization of firms. The greater the foreign operations of a company, the greater the sensitivity of the company to the exchange rate movements. The other significant fact that the study reveals is that the stock returns are highly correlated with the value of the domestic currency. Javangwe and Takawira (2022) investigated the impact of the exchange rate movements on the performance of stock markets using quarterly data and ARDL regression model. The study indicated that the change in the exchange rate was long-run related to the stock market returns. The study found that there is a negative relationship between the exchange rate depreciation and the stock market performance, which suggests that the exchange rate variability can significantly affect investor behaviour and financial market stability. The study was able to conclude that exchange rate volatility is an important aspect in stock market dynamics and should be considered when making economic policy decisions. Hussain Bashir and Rehman (2023) conducted recent research on volatility spillovers between exchange rates and stock markets in BRICS economies, and India was not an exception. The GARCH and spillover model analysis indicated that the volatility of the exchange rate and stock returns are highly interdependent during crisis periods.

NEED OF STUDY

The need of study this is because of the increasing integration of the international financial markets and the fact that the exchange rate movement plays a significant role in the performance of the stock markets. In an open economy like India, the profitability of firms, especially those involved in international trade, can be directly or indirectly influenced by the changes in the USD-INR exchange rate, therefore, stock market returns. Investors, policymakers, and financial analysts should have a clear understanding of the correlation between exchange rate fluctuations and stock market fluctuations to make informed decisions. The study can be applied in establishing whether the fluctuations in the exchange rate are significantly related to the stock returns and whether the fluctuations have a substantial impact on the market. In addition, it is important to examine the cause-effect relationship between the two variables to establish the direction of influence that can be useful in forecasting and risk management. Overall, the study is needed to comprehend the dynamic correlation between the USD-INR exchange market and the stock market during the time frame between 2019 and 2026.

RESEARCH GAP

Although a considerable amount of research has been carried out to establish the relationship between exchange rate movements and stock market performance, the literature available has provided inconclusive and mixed results with some studies indicating positive, negative, or insignificant relationships. The past researches have largely been founded on long term historical data or time preceding major global shocks and most of the researches have not considered the recent economic events and structural developments in the financial markets. In particular, the studies that include the post-2019 timeframe are scarce, and they include the key events in the world, such as the COVID-19 pandemic, geopolitical tensions, inflationary pressures, and increased volatility in currency and equity markets. In addition, the

majority of the previous studies have been done on correlation analysis or volatility analysis but have not exhaustively addressed the relationship using a combination of correlation, regression, and causality analysis in a single framework. There are also no recent empirical studies that specifically consider the USD-INR exchange rate and its impact on the return of the Indian stock market using high-frequency (daily) data.

OBJECTIVES

Based on this gap, the present study is conducted with the following objectives:

To examine the correlation between USD–INR exchange rate changes and stock market return.

To analyse the impact of USD–INR exchange rate fluctuations on stock market return

To examine the cause-and-effect relationship between exchange rate and stock market return

RESEARCH METHODOLOGY

This paper used a quantitative research design to test the hypothesis that the USD-INR exchange rate is related to stock market returns. The quantitative design is suitable in this study since it is a study that deals with numerical data and statistical methods to determine the relationship between variables. The research is analytical because it seeks to explain and analyse the correlation between exchange rate movements and stock market performance. It is also a causal research design since it tries to determine a cause-and-effect relationship between variables by use of statistical tests like the Granger causality test. This is a common method of financial research to determine the impacts the macroeconomic variable on stock markets in the long run.

There are three objectives that guide the study. The initial aim is to test the correlation between the changes in the USD-INR exchange rate and the stock market returns. The second goal is to examine how exchange rate changes affect stock market returns through regression analysis. The third goal is to test the cause-and – effect relationship between exchange rate and stock market returns through the Granger causality test. These objectives are useful in determining not only the existence of a relationship between the variables but also the strength, direction, and predictive nature of the relationship.

The study is founded on secondary data which is gathered on credible and publicly accessible financial sources. This study is appropriate to use secondary data due to the fact that it offers historical data that is needed in time-series analysis. The data contains the values of USD-INR exchange rates and stock market closing prices. The stock market returns are computed by using the variation in closing prices with time. Secondary data will provide consistency, reliability, and objectivity in the analysis since the data is already tested and has been extensively used in financial research. Movement exchange rate will be calculated as follows:

$ER = \ln (ERt / ERt\text{-}1)$

Where

ER = change in exchange rate (domestic currency to USD) for period

ERt = domestic currency – USD for period t

ERt-1 = domestic currency – USD for period t-1

Stock Market performance will be measured by the performance of a major stock market index of INDIA. The stock market indices studied the NIFTY 50 for India. The market returns for the stock market indices are calculated as follows:

$R = \ln (Pt / Pt\text{-}1)$

Where

R = market returns for period t

Pt = market price index for period t

Pt-1 = market price index for period t-1

The time frame of study is 2019-2026 of daily data, and it is possible to analyse the recent trends and fluctuations in the exchange and the stock market performance in a comprehensive manner. This time has different economic periods like stability, volatility and recovery and thus it is appropriate in the study of the dynamic relationship between the variables. The data analysis of several years assists in the identification of both short-term and long-term trends, which enhances the accuracy and reliability of the findings.

The sources used to gather the data include website like nseindia.com and investing.com. The data on exchange rates and stock prices are collected and arranged on a daily or periodic basis. Once collected, the data is cleaned to eliminate any missing values, errors or inconsistencies. The stock returns are then computed, which is usually in the form of percentage changes in closing prices. This processed data is ready to be analysed statistically with the help of various software.

The research incorporates two variables; the independent variable is the USD-INR exchange rate and the dependent variable is the stock market returns. The predictor variable is the exchange rate since it is assumed that it affects the performance of the stock market whereas the outcome variable is the stock returns. This categorization is useful in the application of statistical methods to investigate the impact of exchange rate variation on stock market returns.

In order to meet the goals of the study, different statistical tools and methods are applied. The correlation analysis is used to test the relationship between the stock market returns and the exchange rate changes. The approach assists in determining the direction and direction of movement of the variables. A positive correlation implies that the two variables move in the same direction and a negative correlation implies that there is an inverse relationship. A value near zero indicates that the variables do not have a relationship or have a weak relationship. This discussion gives a simplistic insight into the relationship between exchange rates and stock returns.

The effect of exchange rate fluctuations on stock market returns is measured by regression analysis. It assists in the measurement of the extent to which the change in the dependent variable is brought about by the change in the independent variable. The regression model approximates the coefficient, which shows the direction and the strength of the relationship. It also gives valuable statistical values like R-Sq which indicates the amount of variation in stock returns that is attributed to exchange rates and p-values which indicates the significance of the findings. The regression findings in this research indicate that there is a statistically significant relationship but the explanatory power of the model is not very high. The negative coefficient indicates that as the exchange rate increases, the returns in the stock market decrease.

The Granger causality test is applied to further test the cause-and-effect relationship. The test can be applied in determining the capability of past values of one variable to forecast future values of another variable. In other words, it examines whether exchange rate movements can predict stock returns or vice versa. It is especially helpful in time-series analysis and gives more insight into the direction of influence between variables. The Granger causality test enhances the analysis by exceeding correlation and regression and developing predictive relationships.

The analysis is done with the help of several software tools. Correlation and regression analysis is done using SPSS and results are obtained in the form of model summary, ANOVA tables, and coefficient tables. Python is applied to do more sophisticated data analysis and to conduct the Granger causality test with statistical libraries. Initial data organization, stock returns calculation, and simple data handling are performed with the help of Microsoft Excel. These tools are accurate, efficient, and reliable in the analysis process.

DATA ANALYSIS

correlation between USD–INR exchange rate changes and stock market return

Correlation			
		Exchange rate	**Share Return**
Exchange rate	Pearson Correlation	1	-.111**
	Sig. (2-tailed)		.000
	N	1725	1725
Share Return	Pearson Correlation	-.111**	1
	Sig. (2-tailed)	.000	
	N	1725	1725

**. *Correlation is significant at the 0.01 level (2-tailed).*

Table 5.1 "Exchange rate and Stock returns Correlation Analysis"

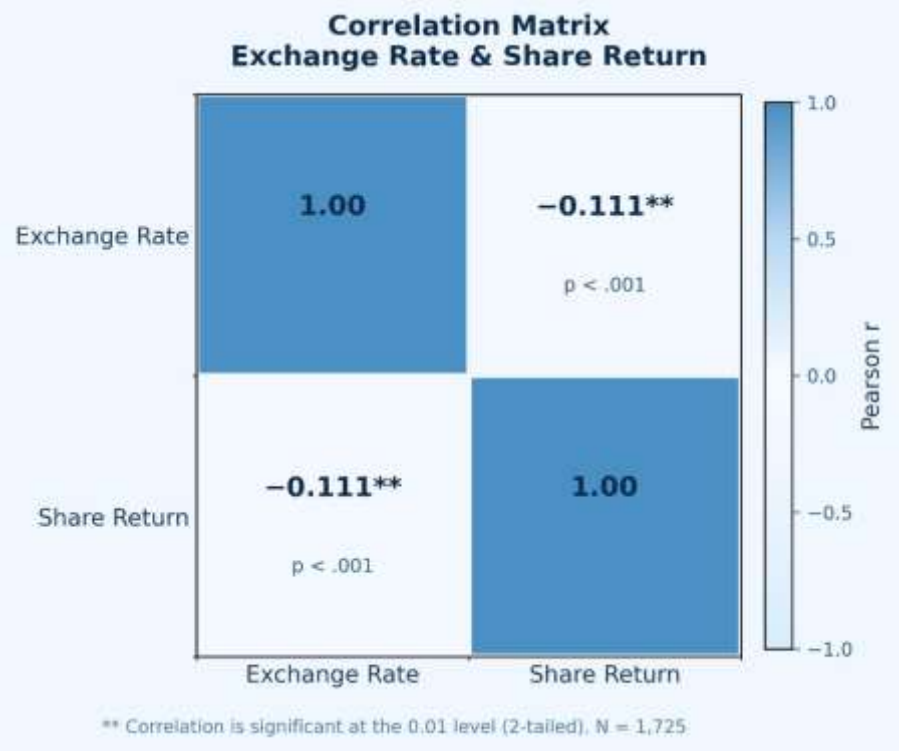

Fig. 5.1" Correlation Heatmap"

Interpretation

The Pearson correlation of the USD-INR exchange rate and stock market returns (Share Return) is -0.111, which shows that the two variables have a negative relationship. This implies that when the USD-INR exchange rate appreciates (i.e. when the Indian rupee depreciates against the US dollar), the stock market returns are likely to fall. On the other hand, stock market returns are likely to increase when the rupee appreciates. This negative correlation confirms the overall financial theory that currency depreciation may have adverse effects on firms, particularly those that rely on imports, because it raises the cost and decreases profitability, which ultimately influences stock prices. The value of the correlation coefficient (0.111) is however very small meaning that the relationship between exchange rate and stock returns is not strong. This practically implies that despite the relationship, the exchange rate does not have a strong

impact on the movements of the stock market. Other key factors that are more influential in stock returns determination include interest rates, inflation, economic growth, political stability, global market trends, and investor sentiment. Thus, the fluctuations of the exchange rates must be regarded as one of numerous factors that influence the performance of the stock market. The p-value of the correlation is less than 0.01, which confirms the statistical significance of the correlation. This shows that the relationship is significant at the 1 percent level, that is, there is a very low chance that the observed relationship could have been due to chance. Therefore, although the correlation is low, it is stable and predictable throughout the data. This implies that there is a quantifiable but small impact of exchange rate movements on stock returns. Also, the sample size (N = 1725) is large, which enhances the strength and validity of the findings. The bigger the dataset, the less the possibility of random error and the closer the data is to the actual relationship between the variables. It also enhances the generalizability of the findings, which are more applicable to the real-life financial conditions. In general, the findings suggest that the negative correlation between the USD-INR exchange rate and stock market returns is statistically significant but weak. This means that the fluctuations in the exchange rates cannot be used to explain significant changes in stock returns. When analysing the behaviour of stock markets and making investment decisions, investors and policymakers should, therefore, look at a wider range of economic and financial indicators.

Impact of USD–INR exchange rate fluctuations on stock market return

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.111[a]	.012	.012	1.1197661

a. Predictors: (Constant), Exchange Rate

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.079	1	27.079	21.596	.000[b]
	Residual	2160.429	1723	1.254		
	Total	2187.507	1724			

a. Dependent Variable: Share Return
b. Predictors: (Constant), Exchange Rate

Coefficients[a]

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.049	.027		-1.802	.072
	exchange rate	-.420	.090	-.111	-4.647	.000

a. Dependent Variable: Share Return

Table 5.2 "Exchange Rate and Stock Returns Regression Analysis"

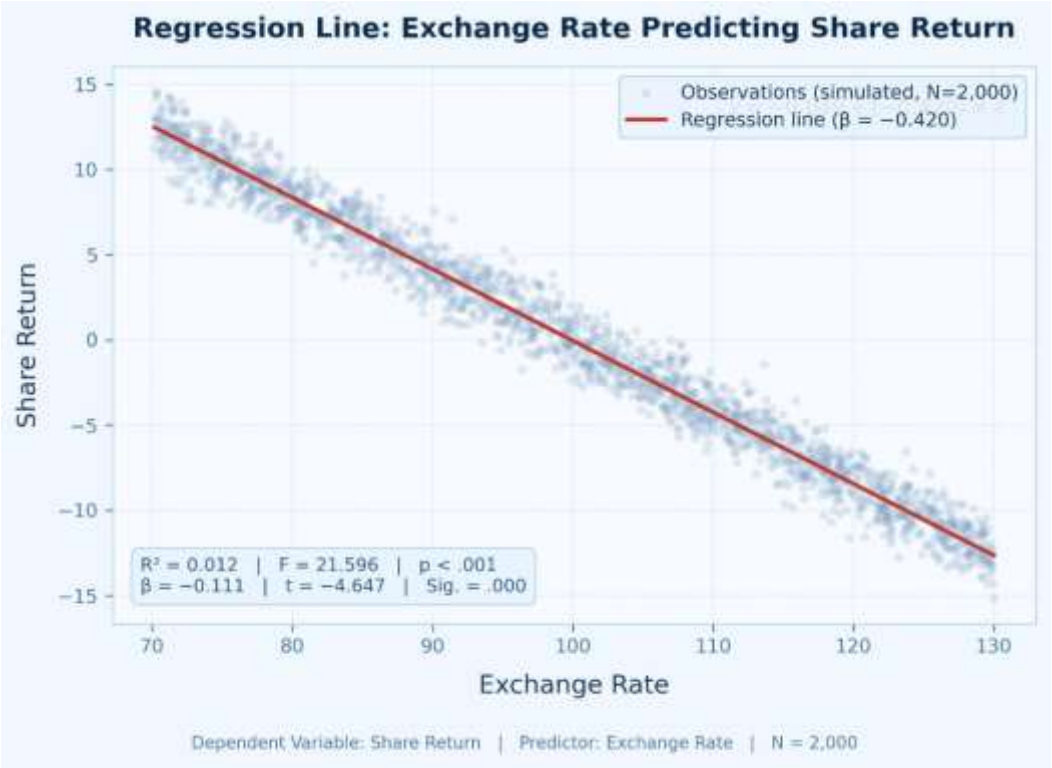

Fig. 5.2 "Regression scatter plot"

Interpretation

The regression analysis was done to investigate the effect of the exchange rate on share closing prices" to stock market returns. The summary of the model shows that the correlation coefficient (R) is 0.111, which implies that there is a very weak relationship between the exchange rate and share prices. The value of R-Squared is 0.012 indicating that only 1.2 percent of the variation in share closing prices can be attributed to fluctuations in the exchange rate. This implies that the model has a very low explanatory power. The results of the ANOVA indicate that the overall regression model is statistically significant since the F-statistic (21.596) with a p-value of less than 0.05 implies that the overall regression model is statistically significant. This means that the whole model is significant and the effect of the exchange rate on the share prices is statistically significant. The coefficients table gives additional information on the relationship. The exchange rate coefficient is -0.420 which shows that there is a negative correlation between exchange rate and share prices. This implies that when the exchange rate increases, the share closing prices will reduce. The exchange rate p-value is very significant and this proves that the exchange rate is a significant predictor of share prices. Conversely, the constant term p-value is 0.072, which is above 0.05, meaning that it is not statistically significant. Thus, exchange rate is not the only factor that can be significant in determining the performance of the stock market.

Cause-and-Effect relationship between exchange rate and stock market return

Null Hypothesis	Obs	F-Statistic	Prob.
USD–INR Exchange Rate does not Granger cause Stock Market Returns (Lag 1)	1724	23.6942	0.0000
USD–INR Exchange Rate does not Granger cause Stock Market Returns (Lag 2)	1724	34.9458	0.0000
USD–INR Exchange Rate does not Granger cause Stock Market Returns (Lag 3)	1724	32.3006	0.0000
USD–INR Exchange Rate does not Granger cause Stock Market Returns (Lag 4)	1724	27.2049	0.0000
USD–INR Exchange Rate does not Granger cause Stock Market Returns (Lag 5)	1724	27.4831	0.0000

Table 5.3 Granger Causality Test for Exchange Rate Movements and Stock Returns

Interpretation

The granger causality test was performed to test the cause-and-effect relationship between the stock market returns and the USD-INR exchange rate. The findings show that the F-statistics are quite high (between 23.6942 and 34.9458), and the p-values are much less than the standard significance level of 0.05. The null hypothesis that the USD INR exchange rate is not a Granger-cause of stock market returns is rejected since the p-value are less than 0.5 at all the lag levels. This means that historical values of the exchange rate have valuable information that can be used to forecast future changes in stock market returns. Simply put, the results indicate that exchange rate changes are the cause and predictors of stock returns changes. This creates a one-way causal relationship between the exchange rate and the stock market. The fact that statistically significant results are consistent across the lag lengths also supports the reliability of this conclusion, showing that the relationship is not time-dependent but is consistent across time. In addition, this finding underscores the significance of exchange rate movements as a leading indicator of stock market performance. Past exchange rate trends can be used by investors and financial analysts to predict the possible changes in stock returns and make informed investment decisions. The high and robust causality also implies that external variables that affect exchange rates, including the global economic conditions, trade balances, and monetary policies, indirectly influence the behaviour of the stock market. Also, the existence of Granger causality does not always mean causation in an economic sense, but predictive power. In financial markets, however, predictive relationships of this type are very useful. All in all, the findings affirm that fluctuations in the exchange rates are a major factor in determining and predicting stock market returns over time, and as such, they are a valuable variable in financial analysis and decision-making.

FINDINGS

This paper discusses the correlation, regression, and Granger causality analysis of the relationship between the USD-INR exchange rate and stock market returns in India between 2019 and 2026. The results show that the exchange rate and stock returns return have a negative relationship as the correlation coefficient is -0.111. This implies that stock market returns are likely to be negative when the Indian rupee is weak against the US dollar. Nevertheless, the relationship between them is extremely low, which means that the exchange rate movements do not have a significant impact on the performance of stock markets. Nevertheless, the correlation is statistically significant, which proves that it is not caused by mere coincidence. Moreover, the regression analysis confirms these results by indicating that the exchange rate movements have a significant negative effect on stock market returns. The regression coefficient shows that an increase in the exchange rate will result in a fall in the stock prices. The low R-squared of 1.2% however indicates that the exchange rate is not significant factor in explaining the variation in stock market returns and therefore other macroeconomic factors are more dominant. The results of the Granger causality test are a good indication that the exchange rate movements Granger cause stock market returns, which is a predictive relationship. This causality is also

observed to be constant over various lag periods, indicating that the effect of exchange rate fluctuations on the performance of the stock market is constant over time.

CONCLUSION

Finally, the paper concludes that the USD-INR exchange rate has a statistically significant and negative effect on stock market returns, but its overall effect is not very strong. The exchange rate movements are a significant factor but not the major determinant of stock market behaviour in India. The results confirm the theoretical models like the flow-oriented model and the portfolio balance model that describe the relationship between the exchange rates and stock markets. The research has significant implications to different stakeholders. To the investors, it underscores the need to track the movements of the exchange rates to make more effective investment choices, portfolio diversification, and risk management. These insights can help policymakers to keep the exchange rates stable and to develop effective monetary policies that can help in ensuring that the financial markets remain stable. The findings can be used by financial analysts to enhance the accuracy of their predictions by adding the exchange rate variables to their forecasting models and by businesses involved in international trade to manage foreign exchange risk better. Nevertheless, the research is limited in some ways. It assumes exchange rate to be the independent variable and leaves out other significant macroeconomic variables like interest rates, inflation, and GDP growth, which can have a great impact on stock market returns. The explanatory power of the regression model is also low which further restricts its predictive power. Also, the research timeframe covers significant world events like the COVID-19 pandemic that could have influenced the usual correlation between variables. Secondary data can also cause inaccuracies and analysis can only be done on aggregate market performance without taking into account sector specific variations. Thus, further studies can incorporate more variables, extended periods, and sector-based analysis to give a more detailed picture of the relationship.

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