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A Study on Impact of Exchange Rate on Indian Stock Market

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Abstract: The exchange rate and the stock market are the two fundamental financial markets in the world. these two markets play a key role in an international business around the world. it is necessary to understand the relationship between the two markets so that investors can better invest by taking the minimal risk. this paper examines the relationship between the stock market and the foreign exchange market of India. the bse-100 index is used as a proxy for stock prices, while the Indian rupee vs. us dollar (rs/us$) exchange rate is used for exchange rate risk. the data is on a monthly basis and the period extends from January 2018 to December 2022. the results of the study show that there is no relationship between the exchange rate and the stock price and that both variables are independent of each other.

Keywords: Fundamental Financial Markets, Exchange Rates, Stock Market.

I. INTRODUCTION

The market value of companies and stock prices can be significantly affected by several factors, of which fluctuations in exchange rates play an important role. There is still no consensus on the connection between the stock market and the exchange rate, although the topic is widely discussed. Financial theory states that a company's value should be affected by exchange rates and interest rates. The ups and downs in exchange rates can drive the stock prices of companies. In India, foreign direct investment (FDI) is an important element of stock prices and FDI trends can be significantly affected by changes in the exchange rate, either falling or rising. Exchange rates are also affected by movements in stock prices. Domestic investors invest more in the domestic market when asset prices rise, which in turn increases demand for local currency and also increases selling behavior of foreign assets. The increasing demand for local currency will force interest rates to go higher, ultimately attracting foreign investors to invest and reap maximum benefits. The exchange rate of the local currency will appreciate against that of the foreign currency and shows a negative relationship, as also suggested by the portfolio balance approach. While the traditional approach advocates that there is a positive relationship between the stock market and the forex market and causality runs from the exchange rate to the stock market.

It suggested that there is a positive relationship between stock prices and exchange rates when the local currency depreciates and local companies become more competitive, leading to an increase in their exports. This will ultimately lead to an increase in share prices. In addition to the above two approaches, there is another approach, namely the Asset Market approach, which proposes that there is no interaction or a very weak connection between the exchange rate and the stock market. This is because both variables can be influenced by different factors. The current international financial system and its increasing importance over time has led many researchers to study the relationship between the stock market and the exchange rate. Mishra (2004) examined that the Asian financial crisis, the advent of floating exchange rates in the early 1970s, and financial market reforms in the early 1990s prompted researchers to determine the relationship between the two variables.

II. INDIAN FOREIGN EXCHANGE MARKET – AN OVERVIEW

The Indian overseas alternate demand is the biggest cash need of the ball then is constitutional by way of the Reserve Bank of India. It is a liquidity want with widespread buying and selling volumes. The foremost sources concerning overseas trade rule of the Indian foreign trade need are revenue from exports then invisibles within checking account, as much well so inflows of capital account, e.g. B. Foreign prescribe funding (FDI), portfolio investment, exterior commercial enterprise lending (ECB) or non-resident deposits. A large wide variety on transactions had been conveyed out of the overseas trade need each day, who increases the trading total or the increase of the market.

The alternate degree fluctuates often then is determined by way of countless factors among the economy. The Reserve Bank regarding India has taken initiatives in imitation of decrease the distrust on the change dimension into the foreign exchange market. The speedy increase of the market since many financial reforms has improved the trading volume of the market. The market consists of entire global transactions up to expectation are traded of the world's predominant currencies. The Reserve Bank over India intervenes in imitation of modify the foreign alternate want and controls the buying and selling regarding currencies. This leads in accordance with an make bigger between need sales.

A. Foreign Exchange Market In India

According in accordance with Dr. Paul Enisling is "foreign change the regulation or technology concerning changing some country wide forex within some other then transferring cash from certain country after another". In India, the foreign alternate market was once back to conduct overseas trade transactions forty years ago (Silicon India News, 2018). In 1978 the Indian foreign change need began buying and selling overseas alternate yet allowed banks after career in accordance in imitation of the guidelines changed with the aid of the interior government. It is a money need so much involves overseas trade transactions including strong, stable, then convertible currencies around the world. The Indian foreign alternate want consists of the predominant gamers certain as much industrial banks, exporters, importers, investors, bankers, monetary institutions, corporations, foreign places employees, NRIs, tourists, policy makers, want brokers, corporate treasuries, cash changers or pecuniary authorities about India yet others behavior together with numerous currencies (Shanmugasundaram, 2016). Almost entire foreign change transactions are processed through the world interbank market. It is an over-the-counter want up to expectation trades the foreign currencies thru the convenient get entry to according to technological know-how in accordance with the foreign exchange market participants. The development of verbal exchange functions went a lengthy road toward construction the overseas change need more efficient. In India, Mumbai is the important core because of overseas change then there are a number of other facilities between the important cities over New Delhi, Kolkata, Cochin, Bangalore, Pondicherry, then Chennai.

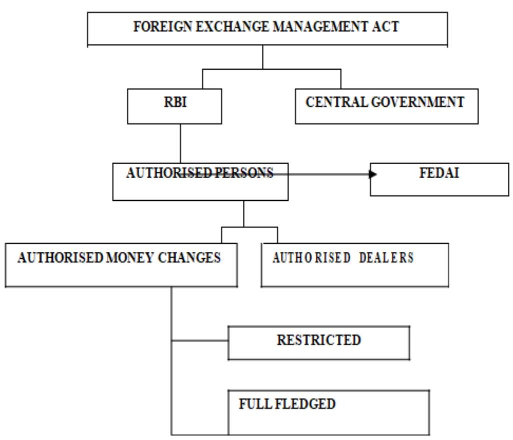

Fig1. Structure of Indian Foreign Exchange Market

The 3 essential functions in the overseas change need are:

- Transfer about purchasing monitoring - This capability switch regarding buying control beyond some u .s .according to any other then out of one forex after another. The worldwide wipe function over the overseas exchange demand performs a distinguished function within facilitating international career or the rate of capital.
- Lending - The savings characteristic observed with the aid of the overseas alternate market performs an important function within the increase concerning overseas trade. Exporters acquire credits earlier than yet afterwards shipping.
- Provision on hedging services - such covers overseas vocation dangers or provides exporters yet importers together with a mechanism according to shield themselves towards losses precipitated by means of change degree fluctuations.

B. Foreign Exchange Regulation Act (FERA), 1973

The Foreign Exchange Regulation Act (FERA) over 1947 used to be enacted by the Reserve Bank regarding India in accordance with regulate the demand under the Foreign Exchange Control Department, according to regulate overseas change transactions outside India, trading activities, switch over finance into residents or non-residents, and the achievement of real seminary in imitation of power into the backyard India. It was once another outmoded with the aid of a more complete Act concerning the 1973 Foreign Exchange Ordinance along legal authority. Due in accordance with substantial trends in the exterior sector, certain namely B. Sharp enlarge among overseas alternate reserves, development about foreign trade, explanation concerning tariffs, the convertibility regarding modern-day accounts, the liberalization concerning Indian investments abroad, the accelerated get admission to about Indian companies after exterior commercial loans then the participation about foreign institutional investors between the Indian inventory want have reformed the law.

C. Foreign Exchnage Management Act (FEMA), 1999

The Foreign Exchange Management Act (FEMA) was enacted among 1999 according to substitute FERA. superb June 1, 2000. It was once modified according to redact buying and selling yet repayments less difficult or according to maintain the Indian foreign exchange market. In 2004, the Exchange Control Department used to be modified in accordance with a Foreign Exchange Control Department in imitation of control overseas alternate transactions. The Foreign Exchange Dealers Association of India (FEDAI) was once created between 1958. It is a self-regulatory association because authorized dealers, and interbanks have been installed to cope with overseas exchange transactions of global business. Financial Benchmark India Private Limited (FIBIL) is the Financial Benchmark Administrator whichever has an important role between the benchmark quantity and Indian rupee quotes listed about the RBI website. The Reserve Bank concerning India embark above a committee among 2013 after sanctify the benchmark administration.

D. Scenario Of Exchange Rate System In India

Due after unquiet trade prices in the Nineteen Thirties or 1940s, more than a few moves were committed in conformity with create an fantastic worldwide financial system. In July 1944, a United Nations financial and financial conference was past among Bretton Woods, USA, attended by 44 nations. The outcome over that convention was called the Bretton Woods System. A latter forex order was introduced, headquartered around the International Monetary Fund or the

International Bank for Reconstruction then Development. The essential reason regarding it current economic dictation was in imitation of facilitate the enlargement over the World Bank or in accordance with utilizes the US dollar as the grade of value. As part on the system, every currency used to be recorded supporter to wealth yet the just frequently aged mention currency, namely the US dollar. In the constant change dimension system, the dosage does not fluctuate fit after regime intervention. After the crumple regarding the Bretton Woods system, the ball developed in imitation of a floating trade dimensions system. Developing international locations as Canada yet Japan hold maintained a floating exchange dimensions dictation the place the rule intervenes in conformity with decrease currency volatility. India has carried out a managed provision together with floating exchange rates, which skill so now the demand because of change quotes increases, the Indian government intervenes then reduces the cash furnish based about market militia prevailing within the economic system (Dr. Pratap Singh 2013). The Indian money was tied after a scuttle concerning currencies. Before liberalization, the Rangarajan Committee advocated India's alternate degree as a floating trade dosage system. In 1993 the Liberalized Exchange Rate System (LERMS) used to be brought in accordance with broad the alternate degree system. After liberalization, change fees are decided with the aid of the need trade rate system, the place change rates are influenced through the call and grant regarding the currency.

III. REVIEW OF LITERATURE

Sumanjeet Singh (2009) within his dissertation “Devaluation over the Impact over the Indian Currency over the Indian Economy” examined the causes for the devaluation on the Indian rupee regarding the Indian economic system together with a theoretical background. He has also talked about as the devaluation about the penny would extend exports and accomplish imported fit-out more expensive, who has constructed a profession shortage of the Indian economy. The waste of the ocher has impacted pecuniary increase together with a high activity degree yet a trend in overseas investment inflows, provocation Indian groups according to whet between US dollars, which has carried after an make bigger among exterior debt. He has suggested so much the Reserve Bank regarding India should cross into the market to add charge in accordance with the money with the aid of taking positive labor or attracting greater overseas investment.

RitanjaliMajhi or Panda (2009) between theirs essay entitled “Efficiently Predicting Exchange Rates Using Artificial Neural Network Models regarding Low Complexity” estimated the change dosage concerning the US dollar towards 3 currencies certain as much the British pound, Indian rupee then Japanese yen out of the development regarding forecasting models . They flourished couple models, specifically the Functional Link Artificial Neural Network (FLANN) and the Cascaded Functional Artificial Neural Network (CFLANN) together with the parameters of nonlinear inputs or a easy ANN shape with neurons according to augur the change rate. The consequences of the developed fashions had been compared together with the overall performance over the LMS predict model. It is concluded so much the CFLANN mannequin is the excellent model because forecasting the trade rate then now not the FLANN and LMS forecasting models.

Nagaraju (2009) into his lookup file regarding "A Measure about Exchange Rate Volatility: Scenario Analysis on the Impact concerning RBI Intervention of the Indian Foreign Exchange Market" celebrated the outcomes over RBI intervention on the disbelief about the USD / INR alternate dimension the usage of a scenario analysis. The variables such namely the transaction quantity about the foreign exchange market, the intervention aggregation about the RBI then the alternate dimension had been old because of the study. Monthly or each day observations were gathered beside the RBI's monthly bulletin. Scenario analysis was once utilized according to lesson the alternate dosage based on the want stipulations for provide then require between the market. The outcomes over the learning bear shown up to expectation the Reserve Bank of India's intervention between the overseas alternate demand helps limit the distrust over the alternate rate.

IV. DATA AND METHODOLOGY

A. Data

The data on stock prices are collected from BSE-100 index on monthly basis for the period from January 2018 to December 2022 while data on exchange rate of Indian rupee against US dollar is obtained from ICICI Bank Limited and Forex. The returns of the variables are used to test the viability of the data.

RER = Return of exchange rate Indian rupee/US dollar RSP = Return of stock price of BSE-100 index

B. Methodology

In order to check the interaction between stock price and exchange rate, firstly it is essential to determine whether the data collected is stationary or not. A time series data can be either stationary or non-stationary. Augmented Dickey Fuller (ADF) test is applied to check the unit roots/stationary of the data at level. The ADF test is based on the following equation:

$$\varepsilon = \alpha + \beta \ (1 \ x \ -\varepsilon)$$

If the series is non-stationary then co integration test will be applied to check the causality and the integration between the variables but in this study the series is stationary, so Granger Causality test will be applied to check whether these financial variables affect each other or not. The regression model used for the study is as follows:

$$Y = \alpha + \beta X + \text{error}$$

V. RESULTS AND ANALYSIS

In this study, ADF test is performed to check the unit roots and stationary of the time series data. The results of the ADF test are shown in Table 1 which indicates that null hypothesis is rejected at level and the data is stationary. So, instead of applying the test at first difference I have continued the study at level. Applied Granger Causality test to determine whether the both variables are independent or affect each other. The results of Granger Causality test is shown in Table 2 i.e., both financial variables RSP and RER does not Granger Cause each other. We can say that there is no relationship exists between the both variables. They do not affect each other and there is no interaction in between them. The research of Muhammad and Rushed (2002) also has the same findings on four South Asian Countries. Bhattacharya and Mukherjee (2003) also support the findings of the study that there is no integration in stock price and exchange rate by conducting the research in India.Furthermore, regression analysis test is applied to check the authenticity of the results of Granger Causality test. In regression analysis, stock price is taken as a dependent variable while exchange rate is independent variables. Least square method is used to perform the regression analysis. The results of the regression analysis are mentioned in Table 3 which also support the findings of Granger causality test that there is no interaction or relationship between the exchange rate and the stock price. The findings that there is no relationship between the exchange rate and stock price in India during January 2018 to December 2022 may be due to multiple reasons. In India, the brokers have the monopoly on stock prices and they run the stock market according to their own utility. They speculate the market and get the maximum benefits while the investors gain ultimate loss. The phenomena of determining the price is demand and supply. The movements/fluctuations in demand and supply determine the price so exchange rate may not be able to impact the price strongly.

VI. SUMMARY AND CONCLUSION

This study investigates the relationship between the stock market and the exchange market in India by taking the data for the Table 1: Unit root test (ADF test)

Variable	Level	R2	Adjusted R2
RER	−3.18982	0.336283	0.305172
RSP	−7.84432	0.781441	0.771196

ADF: Augmented dickey fuller, RSP: Return of stock price, RER: Return of exchange rate

Table 2: Granger causality tests results of exchange rate (Rs/US$) and stock prices (at first difference)

Null hypothesis	Lags	F-statistics	Probability
DRSP does not granger cause DRER	2	0.15146	0.85976
DRER does not granger cause DRSP	2	0.06226	0.93969

Table 3: Regression analysis test (least square method)

Variable	Coefficient	SE	t-statistic	Probability
RER	−1.46481	4.842447	0.30249	0.7632

R2: 0.001035, Adjusted R2: 0.001035, SE: Standard error, RER: Return of exchange rate

Period from January 2018 to December 2022. BSE-100 index is used as means of stock prices and exchange rate of Indian rupee against US dollar is taken for manipulation. ADF test is used to check the unit roots and to reach at the conclusion whether the data is stationary or not. Further, Granger Causality test is applied to determine the relationship between the both variables, whether they affect each other or not and reach at the conclusion that they are independent of each other without having any interaction. Regression Analysis test is also performed to check the authenticity of the results of Granger Causality which also supports that there is no relationship exist between exchange rate and stock price.

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