

“A Study On Relationship Between Exchange Rates (USD/INR) And Nifty Sectoral Indices”

Shanmugananda¹, Sarah Merlyn²

¹MBA Student, Department of Management Studies, Dayananda Sagar College of Arts, Science and Commerce, Bangalore.

²Assistant Professor, Department of Management Studies, Dayananda Sagar College of Arts, Science and Commerce, Bangalore.

Abstract:

The Exchange rates are economic indicator of individual country's performance and one of its representations is country's currency value against various other foreign currencies. Post 1991 the liberalization policy has increased capital flow by the investment made by MNCs in India and has given wide opportunities for Indian sectors as well for rapid growth. Many home and foreign countries companies started listing in NSE and BSE after complying the regulations of SEBI. .

The study primarily examines the relationship study between the exchange rates and selected Nifty sectoral indices. The data are taken from the year 2012 to 2015, For the analysis we have used various statistical techniques and packages like correlation, regression, hypothesis test, p-value etc. R-programming software was used to analysis.

The study shows that sectors have positive correlation between the Nifty sectoral indices and Exchange rates, except **Realty index, PSU bank index and Metal index**. The study is statistically proven and significant that there is an association between the Exchange rates and various Nifty sectoral indices. This could be better suggested that investors should be more concerned about the changes in exchange rates (USD/INR) while investing for graphically represented good return.

Key words: Exchange rates, Performance, Sectoral indices, Nifty, Correlation.

INTRODUCTION

Financial system is essential for significant understanding of the financial topics and the system should be evident to provide better financial decision by investors and financial managers. In order to understand financial system, the entity of financial decision makers must know the financial components in financial system. The financial components in financial system is pointed as Financial Institutions, Financial Markets, Suppliers of Funds and Demanders of Funds. In our context understanding all the four components of financial concepts are essential and among the four Financial Markets plays very important in this study.

Financial Market is a mechanism to exchange financial instruments where two parties are involved like buyer and seller. The transaction can be held by any individuals or institutions (Corporates, Governments, Foreign Institutions, Trusts, HUF etc.) Financial market create returns according to the need of investors, the important types of financial market are Capital market and Money market.

Capital market is the market for the instruments which has growth potential and usually the markets are created for long term basis. The Long-term instruments are kept on hold for many years to generate more returns because there is more volatility in the market when it is considered for long term. Unlike Capital market, money market is a market where instruments are bought and sold for short term and it highly liquid, the maturity of short-term instruments may not exceed one year and it is also called as debt securities.

Capital market is classified as new market and existing market. In secondary market, the funds raised are liquidated through buying and selling of securities.

Stock market Index (NIFTY and SENSEX) are the benchmark for movements of stock market. The Sectoral indices enables investors to benchmark the stocks related to specific sector. It helps investors to select the shares appropriately, and listed companies to track their progress in relation of other peer groups.

The retail investors are ready to take risks in stock market because it has the study growth of annual income, but most of investors might forget to evaluate the most effecting factors in the market and won't understand the impact of international factorson stock market. The aim of

this study is to find the relationship study between the Exchange rates (USD/INR) and Nifty sectoral indices. The data is collected from secondary data source. The sample size of 5 years data of Exchange rates (USD/INR) and Nifty sectoral indices. The data is analyzed by using correlation, Regression and Hypothesis test tools and results are obtained from R-tool. The results found that there is negative relationship between PSU index and Realty Index.

REVIEW OF LITERATURE:

Santosh Kumar, Raju, Tanveer Shahab. (2012) found that the currency exposure will impact the demand and supply of currency and also stock market. Author is focused on impact of changes in exchange rates on returns of indices with its co-efficient and lead-lag effect between two variables. Author has considered market indices as dependent variable and returns on Dollar, Euro as independent variables in the entire article. Author is focused on impact of changes in exchange rates on returns of indices with its co-efficient and lead-lag effect between two variables. The authors have proved in their study that the demand and supply of currency, which is bought through current and capital accounts, have influencing factor on Indian sectoral indices, industries or firms performance level.

Pankaj Sinha, Deepti Kohli (2013) has found that whether the stock market will influence exchange rates or vice versa. The data of monthly returns and exchange rates of five has taken for the study. Author has tested the assumption of stationarity and co-integration using the Granger- Causality approach, after the test it showed that BSE IT is causing the movement in the Indian rupee and not the vice-versa.

K.M. Bhadhani, Rajani Chhimwal, JankiSuyal, (2009) This study examines the relationship study between the returns of BSE Index, BSE large-cap, BSE Mid-cap, BSE small-cap, stocks of specific industries of specific market capitalization, and its exposure towards exchange rates of India rupee against dollar. The study explains exchange rates exposure on different stocks, of different market capitalization. The results were found that there is a positive relation between indices and exchange rates but IT sector was only sector to show negative relation. Author has used Augmented-Dickey Fuller (ADF) and Phillip Parcon (PP) unit root test to analyze the data.

Rakesh Shahani, Udit Sharma, Moulik Wadhwa (2015) Author, on an overview, has discovered whether stock market will influence the Indian rupee or vice-versa. Though many author and scholars has proved that stock market will influence exchange rates but the author in this paper has been proved that Indian rupee will influence the stock market.

The study is limited to find the relationship between IT sector and Exchange rates. The data of monthly returns of five years and five years exchange rates are taken for the study. Author has tested the assumption of stationarity and co-integration using the Granger- Causality approach, the test showed that BSE IT is causing the movement in an Indian rupee and not the vice-versa

ArunaPolisetty, Dr. D.Prasanna Kumar, Mrs.Jikku Susan KurianThe authors has found the relationship between the exchange rates and stock indices (NSE NIFTY and BSE SENSEX). They have collected data of 10 years price movements and market changes. Author has used statistical technique like correlation for data interpretation and used R-tool for data visualization. The result has found that these is true relation between the variables, however the degree of association is low.

OBJECTIVES:

- To analyze the relationship between exchange rate and NIFTY sectoral indices.
- To determine the nature and strength of exchange rates on NIFTY sectoral indices.

HYPOTHESIS:

The hypothesis is framed on the basis of variables identified from the objectives:

- Null Hypothesis: There is a relationship between Exchange rates and Nifty sectoral Indices.
- Alternative Hypothesis: There is no relationship between Exchange rates and Nifty sectoral indices.

RESEARCH METHODOLOGY:

The type of study is conducted based on causal research. Under this study only secondary data are used for the study. The Sample data is calculated for Five years from NSE India.com

and investing.com. Secondary data was collected from NSE and investors.com online websites. The sample size was five years data of daily exchange rates and closing price of selected indices of all the sectors. The collected data are classified using various statistical tools/techniques like correlation, regression and Hypothesis test were used to analyze.

DRAWBACKS OF THE STUDY:

- This study is restricted to find casual effect of exchange rate on NIFTY sectoral indices.
- The study is limited to Exchange rates (USD/INR).
- This study is restricted to only five years.

FORMULAS:

Usually, while calculating the correlation and regression the following statistical formulas are used

- Correlation:

$$\rho_{xy} = \frac{\text{Cov}(r_x, r_y)}{\sigma_x \sigma_y}$$

- Regression:

Regression equation: $Y=a+bX$

- Hypothesis test for correlation co-efficient:

$$t = r \sqrt{\frac{n-2}{1-r^2}}$$

DATA ANALYSIS:

Table showing coefficients of Regression of Exchange rates

sectors name	Parameters	Estimate Std.	Standard Error	R-squared Value:	t-value	p-value	CORRELATION
Auto	(Intercept)	-17311.3	1023.1	0.34	-16.9	< 2.2e-16	0.579
	Xchange	399.9	16.0		24.9	< 2.2e-16	
Bank Nifty	(Intercept)	-22396.0	2431.5	0.18	-9.2	< 2.2e-17	0.425
	Xchange	627.7	38.1		16.5	< 2.2e-18	
FMCG	(Intercept)	-7460.6	1654.9	0.19	-4.5	< 2.2e-19	0.436
	Xchange	441.8	25.9		17.0	< 2.2e-20	
Media	(Intercept)	-4156.2	264.6	0.33	-15.7	< 2.2e-21	0.578
	Xchange	103.0	4.1		24.8	< 2.2e-22	
Metal	(Intercept)	-13857.3	877.8	0.37	-15.8	< 2.2e-23	-0.05
	Xchange	374.0	13.8		27.2	< 2.2e-24	
Pharma	(Intercept)	-13862.4	877.7	0.37	-15.8	< 2.2e-25	0.612
	Xchange	374.0	13.8		27.2	< 2.2e-26	
PSU Banks	(Intercept)	5339.5	324.9	0.04	16.4	< 2.2e-27	-0.189
	Xchange	-34.6	5.1		-6.8	< 2.2e-28	
Realty	(Intercept)	413.1	29.3	0.04	14.1	< 2.2e-29	-0.192
	Xchange	-3.2	0.5		-6.9	< 2.2e-30	
Finance Services	(Intercept)	-10002.1	549.9	0.39	-18.2	< 2.2e-31	0.622
	Xchange	269.9	8.8		30.6	< 2.2e-32	
Private Banks	(Intercept)	-16792.8	689.0	0.50	-24.4	< 2.2e-33	0.704
	Xchange	406.0	11.1		36.6	< 2.2e-34	
IT	(Intercept)	-6506.2	712.3	0.31	-9.1	< 2.2e-35	0.561
	Xchange	265.3	11.2		23.8	< 2.2e-36	

Interpretation:

All the sectoral indices and exchange rates are positively correlated except PSU banks, Realty and Metal sectors which are negatively correlated.

Findings on Hypothesis test on correlation co-efficient

SECTORS	SECTORS CRITICAL VALUE	SIGNIFICANCE LEVEL	ACCEPT / REJECT
Auto	1.96	0.05	ACCEPT
Bank Nifty	1.96	0.05	ACCEPT
FMCG	1.96	0.05	ACCEPT
Media	1.96	0.05	ACCEPT
Metal	1.96	0.05	ACCEPT
Pharma	1.96	0.05	ACCEPT
PSU Banks	1.96	0.05	ACCEPT
Realty	1.96	0.05	ACCEPT
Finance Services	1.96	0.05	ACCEPT
Private Banks	1.96	0.05	ACCEPT
IT	1.96	0.05	ACCEPT

Significance is confidence level of parametric test. If the critical value is greater than confidence limit then we should reject the null hypothesis.

SECTORS	P-VALUE
Auto	$< 2.2e-23$
Bank Nifty	$< 2.2e-24$
FMCG	$< 2.2e-25$
Media	$< 2.2e-26$
Metal	$< 2.2e-27$
Pharma	$< 2.2e-28$
PSU Banks	$< 2.2e-29$
Realty	$< 2.2e-30$
Finance Services	$< 2.2e-31$
Private Banks	$< 2.2e-32$
IT	$< 2.2e-33$

The p-value below the critical value which means to say that there is relationship between the variables

FINDINGS:

The findings of the studies drawn using parametric test like correlation, regression, averages, standard deviation etc. The finding concludes that there is positive correlation between exchange rates and all the nifty indices of all the sectors except PSU banks index, Metal index and Realty index sectors. The hypothesis test for correlation and regression analysis falls in accepted region, which means we must accept the null hypothesis the test.

1. **Auto Sector:** 0.579 Fairly correlated
2. **FMCG Sector:** 0.425 Fairly correlated
3. **IT Sector:** 0.561 Fairly Correlated
4. **Pharma Sector:** 0.612 Good correlation
5. **PSU Bank Sector:** -0.189 Negatively correlated
6. **Realty Sector:** -0.192 Negatively correlated
7. **Metal Sector:** -0.05 Negatively correlated
8. **Media Sector:** 0.578 Fairly Correlated
9. **Banking Sector:** 0.436 Fairly Correlated
10. **Private Bank:** 0.704 Highly correlated
11. **Financial Service:** 0.622 Good correlation

The sectors which are positively but fairly correlated are Auto, FMCG, IT, Pharma, Media, Banking, Private and Financial sectors' stock index. However, negatively correlated sectors are PSU Banks, Realty and Metal sectors' stock index.

Stocks like Financial Services, Private banks and Pharma sectors are highly and it is highly reliable, investors are advised to go for these sectors stocks during depreciation of exchange rates. Stocks like PSU banks, Realty and Metal sectors have negative correlation and investors are advised to avoid the stocks of these sectors.

All the positive correlated sectors, which means value of currency depreciates and stock prices of respective sectors will increase. So, the buyers of positively correlated sectors incur huge cost of buying and seller would make good returns when he sells the stocks and vice-versa.

From the analysis we got to know there is significant relationship but the degree of relationship is low to all the sectors except three sectors which has negative relationship.

The low degree of relationship is because of influence of various other factors to sectoral indices like interest rates, company fundamental performance, supply volume etc.

High volatility in exchange rate may not give exact effect of it and Indian stocks are influenced by sentimental factors, so if the qualitative factors in study are included as variable, it may give us the effective results.

SUGGESTIONS:

Indian indices market movements are influenced on macro-sensitive factors like qualitative factors, literacy rate, poverty rate and other basic economic factors. So, the investors are suggested to consider other factors like FII, DII to find the exposure of foreign market with various sectoral indices.

CONCLUSIONS:

By using five years data (2012-2017) the study has examined the relationship between the exchange rates and Nifty sectoral indices. The above study was more concerned whether these links were affected by existence of investor's sentiment, seasonal effect, management and board decision or expansion plans, legal and regulatory framework. From the analysis we can conclude there is correlation between the variables but the level of association is not high. So, the volatile market is influenced by various factors as mentioned earlier. Hence, investors need to be cautious while investing. Sectoral Indices helps to compare the performance of

sectors in terms of PE ratio, growth aspects etc. Investors can analyze through the comparative study between the various sectors and invest wisely to reach their investment goals.

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