IMPACT OF CURRENCY FLUCTUATION ON THE INDIAN STOCK MARKET AND RELATED INVESTMENT OPPORTUNITIES

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ABSTRACT

This paper assesses the impact of currency fluctuation on the Indian Stock Market and relative investment opportunities for an investor during the period 2013-2018. For this purpose, a descriptive as well as causal research is conducted where we have tested the hypothesis to come out with the major findings, conclusions, limitations and recommendations of this study. In order to achieve the main objectives of our study that is how currency fluctuation and several other factors impact the Indian Stock Market, how investors design their portfolio by investing in particular sectors to take advantage of currency fluctuation to gain maximum returns and finally to establish a relationship between exchange rates and Nifty sectors we have used statistical techniques of data analysis like correlation, regression and ANOVA. Data is collected through primary as well as secondary sources. We established that Nifty50 and currencies like USD, Yen, Euro and GBP have a negative correlation and that USD is the most influential currency that affects Nifty50. Also, the auto index, power sector, oil and gas sector show negative correlation and IT index and healthcare show no significant correlation with USD. This paper recommends investors to sell their shares of the power, oil and gas sector when the Indian Rupee depreciates to reduce losses or go on a short position. Similarly, investors can go on a long position if the Indian Rupee appreciates. Also, Investors can either hold their existing positions or exit the market when it comes to IT and pharmaceutical sector as they can move in any direction due to currency fluctuation. All in all, to obtain maximum returns investors can look at inflation or interest rates to predict the currency movements, and thereby design their portfolio in the respective Nifty50 sectors.

KEYWORDS:*Currency Fluctuation, Interest Rates, Inflation, Investor Sentiments, Fii, Investment Opportunities.*

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INTRODUCTION

The currency rate is an important financial variable that has an impact on the decisions made by foreign exchange investors, exporters, importers, bankers, businesses, financial bodies, policy builders and tourists in the developed as well as developing world. Currency rate fluctuations affect the worth of foreign investment portfolios, competition from exports and imports, foreign reserves worthiness and currency value of debt settlements. Movements in exchange rates thus have significant insinuation for the economy's business cycle, trade and cash flows and are therefore critical for understanding financial growth and changes in industry policy. Therefore, to assess the effect of changes in exchange rate on Indian stock markets is necessary.

A currency has value, in comparison to other foreign currencies, and those values change persistently. If demand for a currency is high because investors want to invest in that country's stock exchange or buy exports, the value of its currency will go up. Just the contrary will occur if that country goes through an economic downfall, or investors lose confidence in its markets. While some currencies fluctuate independently against one another, such as the Yen, American Dollars, others are pegged or linked. They may be pegged to the value of another foreign currency, such as the American Dollar or the Euro, or to a basket, or weighted average.

Most of the speculation in the Indian stock market takes place on its two stock exchanges: BSE NSE. Both of these follow similar trading mechanism, trading timings, settlement process etc. The two significant indexes are Sensex and Nifty. Sensex is the oldest market index for equities; it consists of shares of 30 companies listed on the BSE, which represent about 45% of the index's free-float market capitalization. Another index is Nifty it includes 50 shares listed on the NSE, which constitute about 62% of its free-float market capitalization. FIIs can infuse money directly into any of the companies listed on any of the stock exchanges. Most portfolio investments comprise of investment in stocks in the primary and secondary markets, including shares, and debentures of firms listed or to be listed on an established stock exchange in India.

As an investor in shares and bonds, movements in exchange rate are less distinct than you might predict. The basis behind that is that principally with stock markets, a movement in currency can be offset by a move in the stock exchange.

For share investments, currency moves aren't an easy pass-through. They can affect the underlying profitability and asset worth of firms in ways that can further more offset or make a currency move worse. For bond investments, currency moves are normally more direct, but

second-order impacts can still occur. Also, even this examination is uncomplicated, forces such as taxation, tariffs, currency hedging plans by businesses and competitive dynamics additionally make things more complex. Hedging currency exposure, such as a hedged ETF, doesn't always reduce currency risks. Due to the existence of second-order impacts, it just modifies them. So when predicting currency moves on investments, take into account that second-order impacts can be just as relevant as the currency move itself and that hedging doesn't necessarily reduce risk, but changes the return profile of the investments.

Problem Statement

An investor is exposed to several risks due to the volatility of the stock market, one of the major reasons being currency fluctuation which in turn is caused by several other factors. To take advantage of these currency fluctuations how should an investor design his portfolio that is which sector should he invest his money in, in order to get maximum returns.

Objectives of the Study

Primary Research Objective:

- Analyzing the impact of currency fluctuation on the Indian Stock Market.
- To identify the correlation between currency and Nifty sectors.

Secondary Research Objective:

- How investors design their portfolio by investing in particular sectors to take advantage of currency fluctuation to gain maximum returns?

Review of Literature

Khatri, Yogita (2017), the author states that the rupee and stock market are related both directly and indirectly through a number of factors. The main reason for this primary correlation between the rupee and stock market is foreign institutional investors (FII's). FII's pour in and the market thus rises. The same can happen in a negative manner as well. When there are FII outflows then the market and currency both suffer. **[1]**

Chowdhary Piyali, A Anuradha (2018) ,the research paper states that Stock markets have a number of variables that cause its volatility, exchange rate fluctuations being very important. Thus, the article aims to know the relationship of exchange rate and Sensex from the period 2010-2016 by using correlation analysis. The study recommends to the Indian stock financial specialists to put resources into Indian securities exchange for long periods to get higher returns and stay away from the transient variance in the share trading system. **[2]**

Team FinancePost (2018), the article states that there seems to be a 0.5 positive correlation between the stock market and dollar/rupee. The first being common economic factors like global markets, government policies, trade deficits, etc. The second is FII's. Third being global cues like oil prices, sentiments towards Asian markets, etc. affect both. India imports 80% of their oil. So, to pay for this the rupee is converted into foreign currency and which weakens the economy. IT Stocks and rupee are negatively correlated. This is due to them largely relying on exports thus weakening the rupee and helping the markets. **[3]**

Singh Ayush, Mishra Vinaytosh, B.Singh Akhilendra (2016), the paper aims to understand the impact of currency fluctuations on the economy. Also, study the real implications of the depreciation of the rupee on the Indian economy and also different stringent measures by Indian government to make rupee stronger. A country's currency needs to be strong in order to attract investment from abroad, which will help the economy. Depreciation of rupee reduces the inflow of foreign capital, rise in the external debt pressure, and also grow India's oil and fertilizer subsidy bills. Government can create a stable, political and economic environment to help overcome challenges. **[4]**

Jędrzej Białkowski, Katrin Gottschalk and Tomasz Piotr Wisniewski (2008) conducted a study to find whether national elections lead to higher volatility in the stock market. The research found the impact of elections on the second moment of return distribution with the help of a volatility event-study approach. It included data from 27 OCED countries. Also the MSCI World Index, an index measuring the performance of all the developed equity markets, was used as proxy for the global portfolio. The analysis was done after isolating the country-specific component of variance within a GARCH (1, 1) framework. The main conclusion from the research was that volatility during the week of elections almost doubles. They also found five factors that influence the level of volatility, closely contested elections, and change in political orientation, a hung parliament, compulsory voting laws and trading time duration. **[5]**

C. Ionnidis and R.S. Thompson (1986) conducted a study to find out the impact of opinion polls on the stock market volatility and whether investors can use the opportunity to make abnormal profits. The opinion poll factor was included in the methodology keeping in mind that the primary guide to the election result is the level of lead of the favorable party, the change in level of lead of the party, and the closeness of the election. The Dow Jones index was taken as the world index, and bank rate was taken to account for other internal changes. Bank rate data and the stock market returns of London and New York were taken from London Business School database. Monthly observations were taken from a period of March 1960 to December 1979. The major finding of the research proved that there wasn't any major change in the stock market, as the result is already priced in due to opinion polls. **[6]**

Dhanorkar Sanket (2014) talks about strategies to tackle the market volatility due to elections. The main suggestions included, looking at the individual company instead of the market as a whole. The valuation of the company is something that should be considered, as overvalued companies tend to be more volatile. Also investors should avoid companies that are over leveraged, as due to increased uncertainty in the industry, the ability of the company to pay debts is somewhat compromised, leading to more risk, and hence more volatility in the stock. As a general strategy, the article advised the investors to invest across multiple sectors and industries to reduce the amount of individual exposure to the risk of each industry. **[7]**

Maddahl Roxana (2017) talks about the link between elections and stock market volatility. The main idea propagated in the article is the fact that even though there are many forces at play in the volatility of the stock market, the same increases with uncertainty in the market, and elections bring uncertainty. Thus when there is more speculation about the winner, their margin of victory the uncertainty increases. This particularly happens because different governments bring in different policies, and outlook into play, which results in uncertainty in the industry regarding the kind of policies being passed. **[8]**

Shah Nilesh (2018) talks about factors affecting the FPI inflows in the stock market, which directly affects the performance of the market, particularly the Indian market as a major portion of our markets are supported by FPIs. According to the article, the major factor that affects the confidence of FPIs is the political scenario in the country. The main concern is the continuity of economic policies, particularly with a change in government. Thus, if the incumbent government or all the opposition parties in the political scenario are able to convince the FPIs that there is less likely to be a policy change, we can retain their investments, prevent outflows and thus reduce the volatility that comes with elections. **[9]**

Cioffi Andrew (2018) in this article helps us to understand how currency fluctuation has several impacts on the Indian Economy. The first being, currency fluctuation changes the market competitiveness. When the currency becomes powerful for an extended time span, the economy can encounter inner pressure. This can cause dormancy and reduced competitiveness. It also affects inflation. Depending on the general trading patterns of an economy, currency fluctuation can lead to either minimal amount of inflation or excessive levels of inflation. Most countries that have excessive levels of local manufacturing and consumption are generally not affected by inflation a lot when the currency fluctuates. **[10]**

Mishra Mayank (2018)in this paper talks about certain factors that have a vital influence on the stock prices. One of the most important being market sentiments. Indians have a mentality of following the herd, if the price is falling down there will be massive selling from nearly all of the speculators/traders. Similar happens when prices are rising. A sentiment (either bullish or bearish) if inserted into the market is followed majorly by traders and speculators. **[11]**

Daley Michael (2016) helps us understand that when the U.S. dollar appreciates against a currency like the euro, investments denominated in euro lose value for a dollar-based investor. This influences the investment returns of a portfolio of European securities, since the U.S. investor would have to convert into dollars any revenue or sales proceeds from the European securities. Since the euro has lost value, the investment proceeds would purchase lesser U.S. dollars, which eventually would lead to a decline in the gross return of the European investment for a U.S. investor. Certain investors therefore decide to lessen or entirely remove currency risk by hedging the portfolio or entering into financial contracts that safeguard against unsought movements in currencies. **[12]**

Chand Smriti (2016) in this article states the main causes of fluctuations in the exchange rate. There are various elements which affect the demand for and supply of foreign currency (or mutual demand for each other's currencies) which are eventually responsible for the short-term alterations in the exchange rate. The most prominent among them being trade movements, any change in imports or exports will surely cause a change in the rate of exchange. If imports exceed exports, the demand for foreign currency increases; hence the rate of exchange moves against the country. Capital movements also plays a major role in this, any export or import of capital from one country to another will lead to a change in the rate of exchange. **[13]**

Research Design

To come up with a solution to our research questions and objectives an applied research needs to be conducted. Under applied research, to provide a more comprehensive and detailed analysis of the problem, in turn a descriptive research has to be carried out. Since our sample which consists

of only investors who keep on entering and existing the market, nor cross sectional nor longitudinal research can be conducted.

Furthermore, to establish a cause and effect relationship between the independent and dependent variable, a causal research is conduced. Since the area of our research mainly is the impact of currency fluctuation on the stock market, Currency fluctuation is the independent variable and Stock Market is the dependent variable. Fluctuation in currency leads to certain events which in turn impact the stock market, making all of those factors the intervening variables. Also, apart from currency fluctuation there are several other factors that lead to an impact on the stock prices, making them the moderator variables in our research study.

Data Collection:Data has been collected by Primary and Secondary sources. Primary data has been collected through a formalized and concealed questionnaire.

Sampling Design: Sample size is 150 respondents and random sampling has been carried out. The period for the study has been taken for five years (from 2013-2018) using monthly data of Nifty50

Hypothesis Statements:

For Currency Fluctuation Analysis

H_0 = There is no significant relation between Nifty50 and different currencies.

H_1 = There is significant relation between Nifty50 and USD.

H_2 = There is significant relation between Nifty50 and Euro.

H_3 = There is significant relation between Nifty50 and GBP.

H_4 = There is significant relation between Nifty50 and Yen.

For Nifty50 Sectorial Analysis

H_0 = There is no significant relation between Sectors and USD.

$H_{1=}$ There is significant relation between Auto index and USD.

H_2 = There is significant relation between Healthcare index and USD.

H_3 = There is significant relation between IT index and USD.

H_4 = There is significant relation between Power sector and USD.

H_5= There is significant relation between Oil and Gas sector and USD.

Data Analysis

Foreign Institutional Investors (FIIs)

These are the investors on investment funds that are registered in a country other than the one they are investing in. The Indian economy and markets have been greatly impacted because of FIIs. They have cumulatively invested around Rs 12.51 trillion in the Indian markets from the financial year 2002 to 2018.

The Securities and Exchange Board of India (SEBI) regulates the FII activity in the country whereas the RBI maintains the ceiling on FII investments in the country.

The different methods through which FIIs can invest in India are enlisted bellow –

- Hedge Funds
- Foreign Mutual Funds
- Sovereign Wealth Funds
- Pension Funds
- Trusts
- Asset management Companies
- Endowments, University Funds, etc.

Year	Net FII(Cr.)	AVERAGE CLOSING VALUE(SENSEX)
1996	10,803.60	3388.7
1997	6,207.30	3801.587
1998	-1,479.90	3568.71
1999	6,697.30	3753.86
2000	6,510.90	4167.02
2001	12,494.80	4605.91
2002	3,677.90	3486.99
2003	35,153.80	3872.96
2004	42,049.10	5563.08
2005	41,663.50	7392.89
2006	40,589.20	11440.04
2007	80,914.80	15563.59
2008	-41,215.50	14492.67
2009	87,987.60	13700.82
2010	1,79,674.6	18206.91
2011	35,392.80	17777.76

2012	1,63,350.1	17617.03
2013	62,287.90	19722.42
2014	2,56,211.85	24638.95
2015	63,662.21	27352.17

Source: The Economic Times (Secondary Data)

The capital flows through FIIs can have a major impact on how the Indian Stock Markets function. Inflows bring in new money and forex and are greatly beneficial for market growth and expansion. Outflows retract the money and dampen growth and expansion opportunities.

It was found that the correlation between FIIs and BSE Sensex is 0.659[10]indicating that they are positively correlated. There is a strong correlation between the Sensex and FII flows. Whenever the FII flows change an impact in the same direction can be seen in Sensex.

Investor Sentiments

The most important factor responsible for movement in the stock market is the investor sentiments. Investor sentiment means what is the attitude of investors about a particular security or the whole market. It simply means that if the prices of stock in the market is going up it signals a bullish sentiment and if prices are going down it is the bearish sentiment. One of the major examples of what investor sentiment can do can be seen in the year 2008. On February 6, 2008 Sensex closed at 18139 points, the next 2 days Sensex saw a downfall and closed at 17464 points. On Monday February 11, 2008 Sensex fell by 800 points around 4.37%. The major reason behind this was that the investors were worried about global economic slowdown. This reason also affected the IPO of Reliance Power Ltd. The issue price of the share was Rs 450, it was listed at a premium of 21% at Rs 547. When IPO was floated many investors took loan in order to invest in this share. The IPO was 14.4 times oversubscribed. QIB invested a heavy amount of Rs 5, 00,000 Crore. This was the largest IPO of the country and everyone felt that the share price of the company will increase very much in future. These things happened in mid-January. Market was showing a positive trend in January as well in the starting of February. But due to the global worries in the month of February this share fell by 17% in a single day (February 11, 2018). India was the biggest loser in the Asian market, on the same day, Hong Kong's Hang Seng Index fell by 3.64% similarly South Korea's market also fell by 3.29%. These all things happened majorly because of investors who were predicting that the world is going to witness economic slowdown.

06-02-2008	07-02-2008	08-02-2008	09-02-2008	10-02-2008	11-02-2008	12-02-2008
18,139.49	17,526.93	17464.89	NIL	NIL	16630.91	16,608.01

Source: BSE.com (Secondary Data)

Government Debt

Government debt is how much a country owes to others. This can include individuals, businesses as well as other governments. Thus, if the Indian government owes a large amount to such individuals, businesses and other governments, payments on these amounts have to be made as well. Many a time debt can be funded form foreign governments which tends to increase the external debt pressure on the government as well. This excessive debt pressure can have multiple negative outcomes with the two most prominent being rise in inflation as well as a default on their payments. The greater the debt undertake the higher becomes the risk of default. This higher risk of default makes investors vary. Due to this uncertainty, in order to protect themselves from risks of defaulting investors lay down higher terms of interest on their debt. This causes inflation in the country. A fear of these two prominent factors influences foreign investors majorly. Upon seeing huge amounts of debt, they chose to withdraw their investments from countries. This causes a loss of foreign currency which inadvertently affects the currency and exchange rates.

Year	Government Debt (in USD Billions)	USD-INR Rate
2012	973.4	54.741
2013	1090.48	61.81
2014	1197.29	63.035
2015	1363.69	66.208
2016	1501.64	67.955
2017	1690.64	63.84
2018	1851.26	69.57

Source: Statista.com & Investing.com

From 2012 to 2018 the government debt of India has gone up by 90.18%. At the same time from 2012 to 2018 the USD-INR Rate has gone up by 27.09%. This shows how the Indian government debt has an inverse relationship with the Indian rupee value. As the debt has gone up the value of the INR has depreciated while the USD-INR rate has thus gone up.

Currency Fluctuation

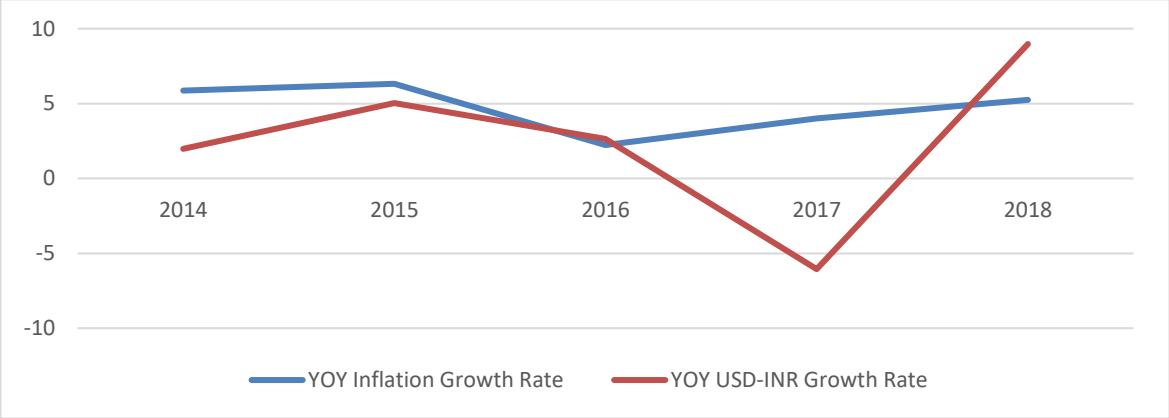
Exchange rates constantly fluctuates, every day some currency appreciates while some depreciates. This exchange rate fluctuation is caused due to one major factor, demand and supply of currency. If the supply of a particular currency, for example Rupee falls down or its demand increases, it causes the value of Rupee to appreciate. If supply increases or demand decreases, value of Rupee will depreciate. Supply and demand of a currency is affected due to a lot of factors like monetary policy, inflation, political conditions of the country, and many more factors.

Monetary Policy

In simple words it is defined as how the country controls the money supply in the country. Money supply is the amount of currency in the economy. Government or Central Banks of the country controls the supply of money with the help of interest rates. If supply increases Government reduces the interest rates so that people and businesses can borrow more money and economy can be developed. On the other hand, interest rates are increased if money supply decreases.

Inflation

It is defined as a general increase in prices and the fall in the purchasing power of money. The definition itself shows us that inflation and the currency of a country are inversely related. Inflation generally occurs when demand exceeds supply causing an inflationary gap in the economy. This excess demand causes a rise in prices leading to inflation. Where the rupee comes into picture is that whenever the supply is not enough to meet the demand the demand must be satisfied by importing goods and services from other countries. The means to pay for this is in the foreign currency, thus causing the foreign currency's value to appreciate in comparison to the domestic currency. On the other hand, if inflation rates are low and supply is exceeding the demand, then there is an excess of goods and services in the country. These can be exported and these earnings help appreciate the domestic currency in comparison to the foreign currency.



Source: Investing.com & Inflation.eu (Secondary Data)

The above graph shows how inflation and the USD-INR rates are related. As and when the Year over Year (YOY) inflation rate has fallen, the value of the rupee has become stronger and thus the Y-O-Y USD-INR growth rate falls. However, when the inflation rate rises, the rupee loses its value and thus the USD-INR growth rate rises. This shows how inflation and the value of the rupee are inversely related.

Interest Rates

The interest rates in a country can have a major effect on the currency value of a country. The change in interest rates can have multiple effects that cause this. If the interest rates are hiked it tends to attract foreign investment into the country and thereby strengthens the domestic currency. On the other hand, if the interest rates fall, it becomes unattractive of foreign investment causing the domestic currency to weaken. The Reserve Bank of India (RBI) is the

apex financial institution in India. It has control over the repo or repurchase rate in India. The repo rate is the rate at which the RBI lends money to the other commercial banks operating in the country. A change in the repo rate impacts the interest rate and the yield on fixed rate financial instruments. If the repo rate is increased by the RBI, the interest rate and yield on bonds and debentures increases as well. This is attractive for foreign investors as they will earn more on their investment in the Indian market than what they could have earned by investing in other markets. Thereby and inflow of foreign currency takes place which in turn strengthens the Indian Rupee. On the other hand, if the repo rate is decreased by the RBI, the interest rate and yield on bonds and debentures falls causing disinterest and withdrawal of money from Indian markets as their money may earn higher returns elsewhere. This weakens the value of the Indian Rupee.

	USD-INR	**Repo Rate**
31st March 2014	60.015	8.00%
31st March 2015	62.291	7.50%
31st March 2016	66.255	6.75%
31st March 2017	64.86	6.25%
31st March 2018	65.115	6.00%

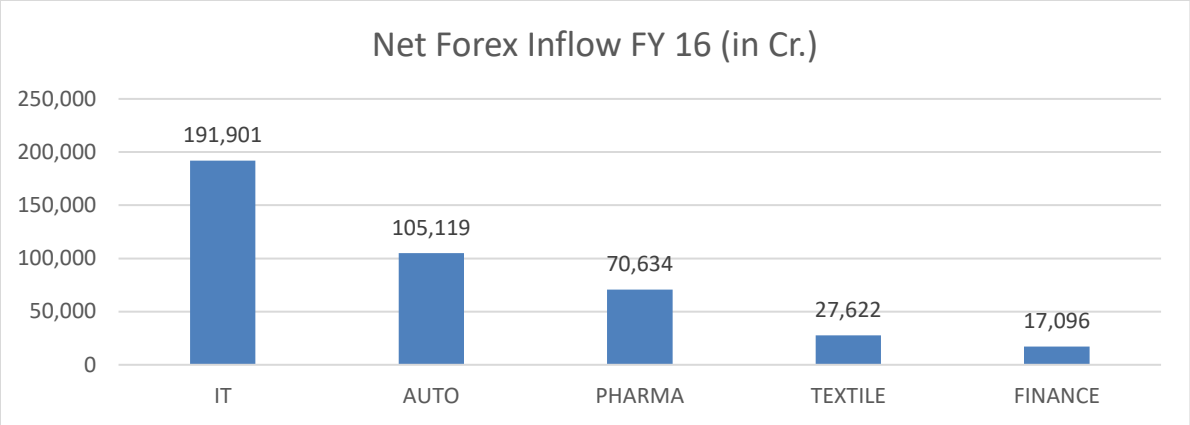
Source: Investing.com & Myloancare.in

As shown in the table above, as and when the interest rates in the country have fallen the value of the rupee has correspondingly decreased. The only exception to this is the financial year 2016-17, wherein the rupee was more or less stable at 66 rupees to 1 dollar before falling to 64 in March 2017.

Sectors affected due to currency fluctuation:

Rupee appreciating is not a good sign for most of the corporates. Companies whose major income comes from exports are impacted as their earnings reduces, if Rupee appreciates. But for the economy Rupee appreciation can be beneficial mainly because of two reasons. First one is that the foreign fund inflows will increase as USD weakens. Second one is that as India is a net importer, so the cost of importing things decreases, especially crude oil.

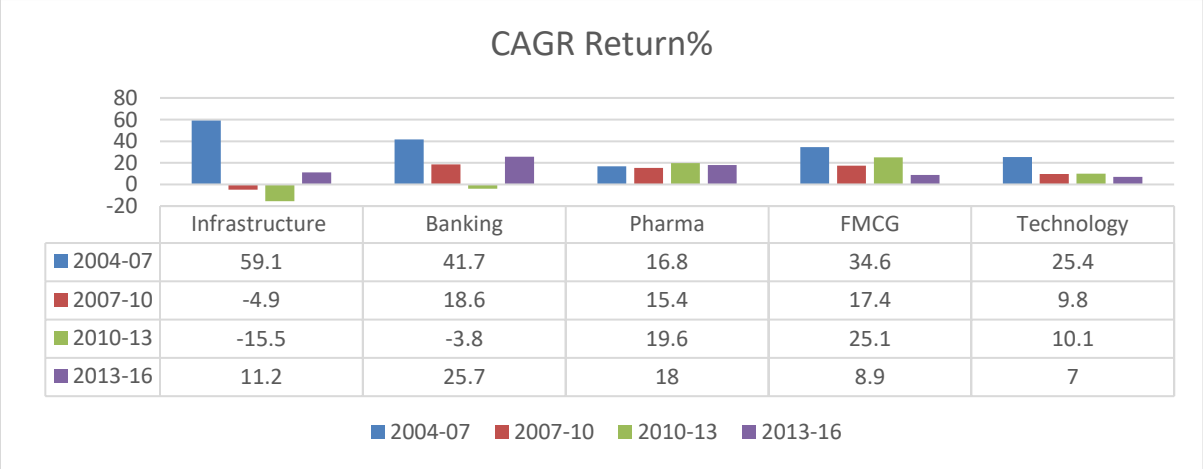
According to UBS Securities India Pvt. Ltd, every 1% appreciation in Rupee can cut 0.6% of the Nifty earnings. Some of the sectors whose major part of income come from exports are IT, Pharma, Auto, Textile and Finance.



Source: livemint.com (Secondary data)

This graph clearly shows that IT and Auto sector will be heavily impacted due to Rupee appreciation. On the positive side if rupee depreciates these sectors revenue increases by a lot. On the other hand, some sectors like Power, Telecommunication, Oil and Gas sector are heavily dependent on imports, so if Rupee depreciates these sectors will be adversely affected. For investing in currencies investors need to keep a check on exchange rates as they are highly volatile in nature.

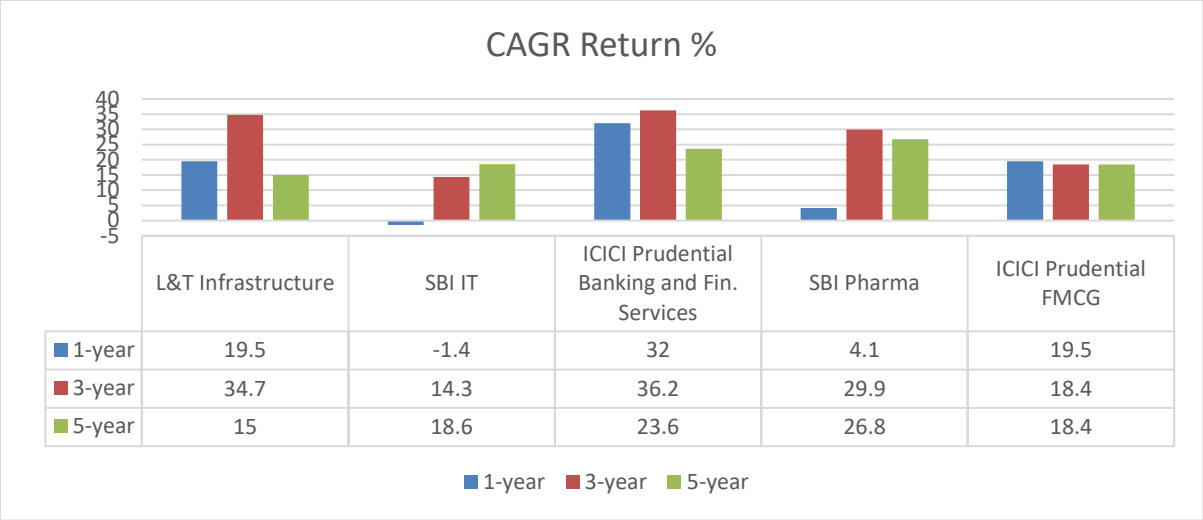
Investors who want to invest on a long-term basis can invest in sectorial mutual funds.



	Infrastructure	Banking	Pharma	FMCG	Technology
2004-07	59.1	41.7	16.8	34.6	25.4
2007-10	-4.9	18.6	15.4	17.4	9.8
2010-13	-15.5	-3.8	19.6	25.1	10.1
2013-16	11.2	25.7	18	8.9	7

Source: The Economic Times Wealth (Secondary Data)

The above chart shows the CAGR returns of different sectors from 2004-2016. (CAGR is calculated on a 3-year basis). Investors who seek stable returns can invest in Pharma sector mutual funds, as over the last 12 years its returns are constant, they are not fluctuating by a big margin. Although, banking and infrastructure funds are highly volatile but investors who can afford to do risky investments can invest in these sectoral funds, as there is a chance of high CAGR growth. FMCG and IT funds are volatile but they have managed to maintain a positive CAGR over 12 years. These sectoral mutual funds provide a great investment opportunity, with proper knowledge about these funds, investors can make a lot of profit.



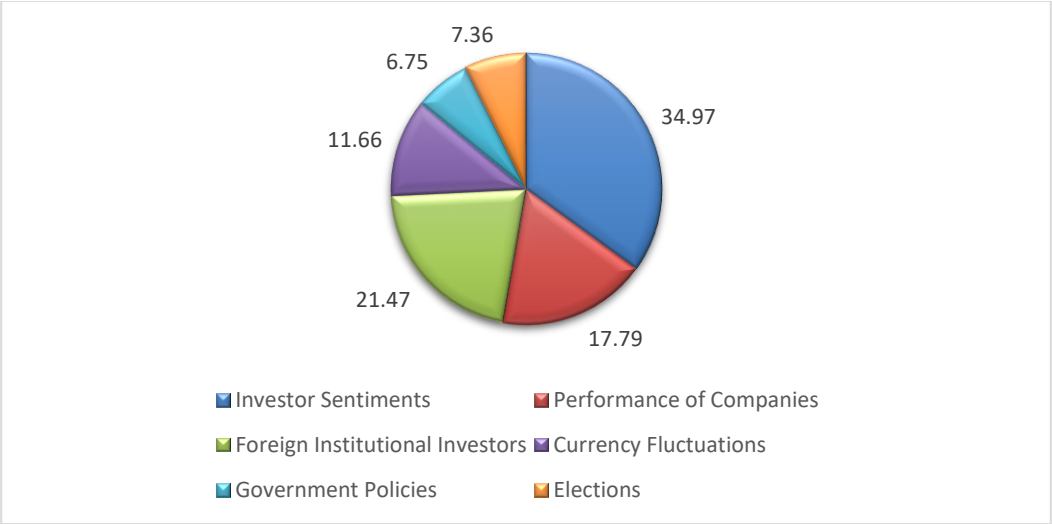
	L&T Infrastructure	SBI IT	ICICI Prudential Banking and Fin. Services	SBI Pharma	ICICI Prudential FMCG
1-year	19.5	-1.4	32	4.1	19.5
3-year	34.7	14.3	36.2	29.9	18.4
5-year	15	18.6	23.6	26.8	18.4

Source: The Economic Times Wealth (Secondary Data)

Chart shows the different CAGR return (1, 3 and 5-year) of some of the best sectoral mutual funds. Every sectoral fund shows a good CAGR return for a period of 3 years. From the graph it can be observed that these sectoral mutual funds are not a good investment option for a period of 1-year and 5-year.

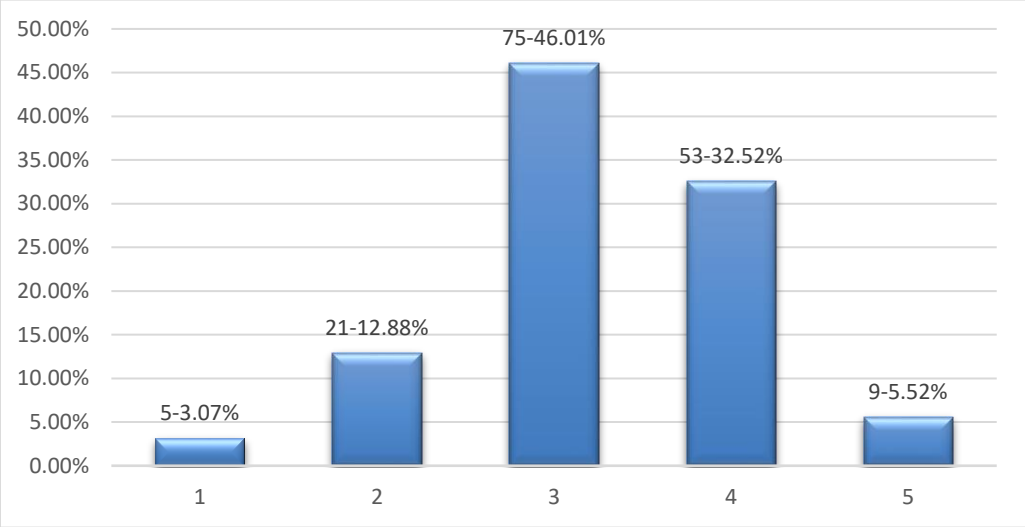
A survey conducted through means of a questionnaire among various investors from different backgrounds, ages and walks of life found the following information -

Which factor influences the stock market the most?



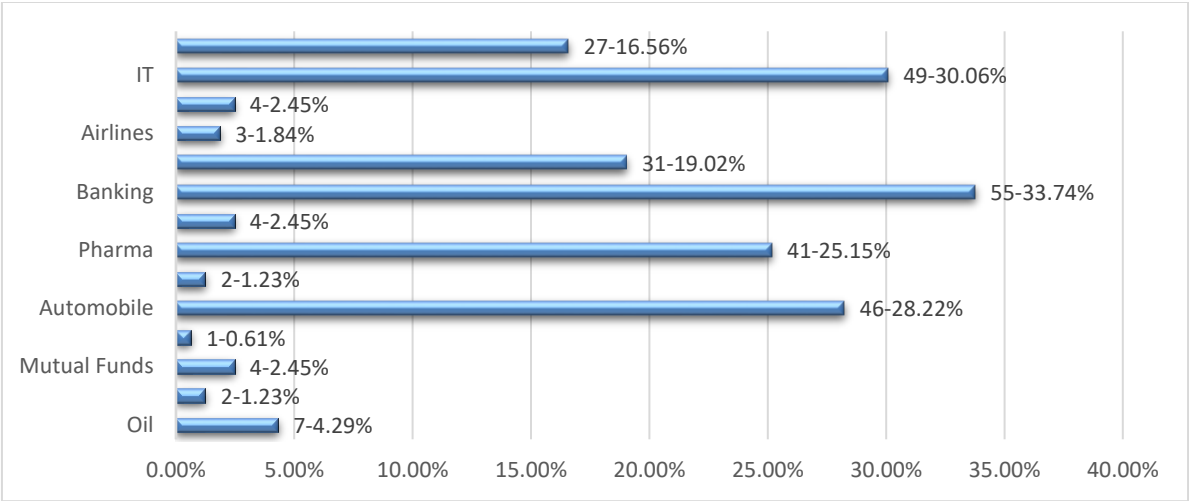
When asked which factor influences the stock market the most it was found that people majorly tend to believe that the stock market is majorly influenced by speculation with 34.97% people having such a viewpoint. This is widely because speculation tends to make stock prices fluctuate far before actual facts are revealed to the public and can help gain profits for investors. FIIs too were believed to play an important role in the stock market changes

In your opinion how much is the impact of currency fluctuation on stock market?

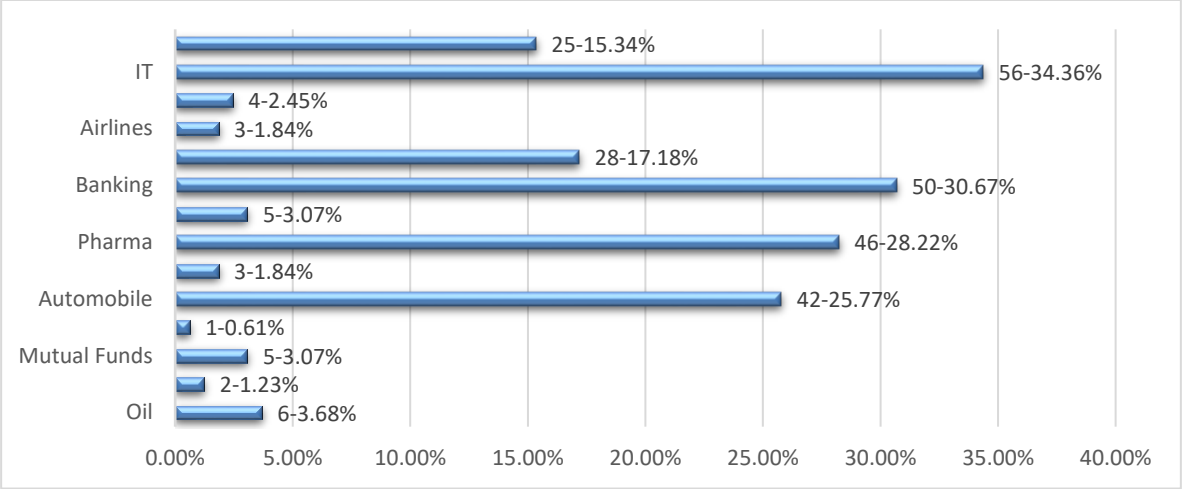


People generally did not believe that currency fluctuation played a very significant role in the stock market volatility. However, it wasn't completely overlooked by them. The majority believed that currency fluctuations have a moderate effect on the stock market. It also showed that the investors weren't completely aware that currency fluctuations play a major role in the stock market as very few believed that its influence is very strong, only around 5.52%.

In which sectors do you generally invest in?



If you think currency fluctuation impacts stock market, then in which sectors will you invest your money?



Investors were asked what their general investment avenues are and then if they believe that currency fluctuations would affect stock markets what would be their investment avenues. It was found that major down trends were found in the banking and automobile sectors. Banking fell from 33.74% to 30.67% and Automobile fell from 28.22% to 25.77%. Major uptrends were seen in the IT and Pharmaceutical sectors. IT rose from 30.06% to 34.36% and Pharmaceuticals rose from 25.15% to 28.22%. This shows that if people were of the belief that stock markets are affected by currency fluctuations then a greater amount of their investments would go towards more stable sectors like IT and Pharma.

To test the relation between the independent variable (Currency) and dependent variable (Stock Market), regression analysis is used to test whether there is a correlation between Nifty50 and various currencies (USD, Euro, GBP, Yen).

Hypothesis for the study: -

H_0 = There is no significant relation between Nifty50 and different currencies.

H_1 = There is significant relation between Nifty50 and USD.

H_2 = There is significant relation between Nifty50 and Euro.

H_3 = There is significant relation between Nifty50 and GBP.

H_4 = There is significant relation between Nifty50 and Yen.

Calculation of Regression between Nifty50 and USD: -

Regression Statistics	
Multiple R	0.6229
R Square	0.3880
Adjusted R Square	0.3773
Standard Error	0.0314
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0355	0.0355	36.1374	0.0000001378
Residual	57	0.0561	0.0010		
Total	58	0.0916			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0140	0.0041	3.3782	0.0013	0.0057	0.0223
USD	-1.1841	0.1970	-6.0114	0.0000001378	-1.5786	-0.7897

Calculation of Regression between Nifty50 and Euro: -

Regression Statistics	
Multiple R	0.3714
R Square	0.1380
Adjusted R Square	0.1228
Standard Error	0.0372
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0126	0.0126	9.1224	0.0038
Residual	57	0.0790	0.0014		
Total	58	0.0916			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0112	0.0049	2.3040	0.0249	0.0015	0.0210
Euro	-0.5387	0.1784	-3.0203	0.0038	-0.8958	-0.1815

Calculation of Regression between Nifty50 and GBP: -

Regression Statistics

Multiple R	0.3124
R Square	0.0976
Adjusted R Square	0.0818
Standard Error	0.0381
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0089	0.0089	6.1664	0.0160
Residual	57	0.0827	0.0015		
Total	58	0.0916			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0107	0.0050	2.1478	0.0360	0.0007	0.0206
GBP	-0.4134	0.1665	-2.4832	0.0160	-0.7467	-0.0800

Calculation of Regression between Nifty50 and Yen: -

Regression Statistics	
Multiple R	0.4519
R Square	0.2042
Adjusted R Square	0.1903
Standard Error	0.0358
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0187	0.0187	14.6273	0.0003
Residual	57	0.0729	0.0013		
Total	58	0.0916			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0111	0.0047	2.3838	0.0205	0.0018	0.0205
Yen	-0.5532	0.1447	-3.8246	0.0003	-0.8429	-0.2636

From the above 4 regressions, it has been observed that the null hypothesis can be rejected as Significance F value or the P-value is less than 5%, indicating that there is significant relation between IV (Independent Variable) and DV (Dependent Variable). All the 4 currencies impact the Nifty50 and the correlation which is shown by the value of Multiple R is also high. R Square shows how much of the deviation in DV is caused due to IV. Adjusted R Square also shows the same thing but it is a more conservatism approach.

$Y = C + mX$

In this equation Y is the DV (Nifty50) and X is the IV (Currencies). C is the intercept value and m is the slope value which is shown as the coefficient of IV in the regression analysis. Coefficient value in all the 4 regressions is negative indicating that there is a negative correlation between IV and DV.

Regression analysis shows that out of the 4 currencies USD is the most influential currency. Correlation between USD and Nifty50 is very high, it is 62.29% also, the coefficient is high, it is -1.1841.

To analyze various investment opportunities arising from the currency fluctuation, regression analysis has been done on various sectors (Auto, Healthcare, IT, Power, Oil and Gas) and USD. Sectors are considered as dependent variable and USD as the independent variable, USD has been chosen here as it has the most impact on Nifty50 as compared to other currencies.

Hypothesis for the study: -

H_0 = There is no significant relation between Sectors and USD.

$H_{1=}$ There is significant relation between Auto index and USD.

H_2 = There is significant relation between Healthcare index and USD.

H_3 = There is significant relation between IT index and USD.

H_4 = There is significant relation between Power sector and USD.

H_5= There is significant relation between Oil and Gas sector and USD

Calculation of Regression between Nifty Auto Index and USD: -

Regression Statistics	
Multiple R	0.5250
R Square	0.2757
Adjusted R Square	0.2630
Standard Error	0.0175
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0067	0.0067	21.6921	1.96E-05
Residual	57	0.0175	0.0003		
Total	58	0.0242			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.0057	0.0024	-2.4264	0.0184	-0.0104	-0.0010
USD	-0.2194	0.0471	-4.6575	0.0000	-0.3138	-0.1251

Calculation of Regression between Nifty Pharma Index and USD: -

Regression Statistics	
Multiple R	0.0400
R Square	0.0016
Adjusted R Square	-0.016
Standard Error	0.0206
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	4E-05	4E-05	9E-02	0.7638
Residual	57	2E-02	4E-04		
Total	58	2E-02			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.0032	0.0027	-1.1702	0.2468	-0.0086	0.0022
USD	-0.0169	0.0558	-0.3019	0.7638	-0.1287	0.0950

Calculation of Regression between Nifty IT Index and USD: -

Regression Statistics	
Multiple R	0.1305
R Square	0.0170

Adjusted R Square	0.000
Standard Error	0.0204
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0004	0.0004	0.9874	0.3246
Residual	57	0.0237	0.0004		
Total	58	0.0242			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-0.0025	0.0027	-0.9274	0.3576	-0.0079	0.0029
	0.0486	0.0490	0.9937	0.3246	-0.0494	0.1467

Calculation of Regression between Power Sector and USD: -

Regression Statistics	
Multiple R	0.5216
R Square	0.2721
Adjusted R Square	0.2593
Standard Error	0.0626
Observations	59

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.0836	0.0836	21.3087	2.27E-05
Residual	57	0.2236	0.0039		
Total	58	0.3072			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0108	0.0083	1.3119	0.1948	-0.0057	0.0274
USD	-1.8160	0.3934	-4.6161	2.27E-05	-2.6038	-1.0282

Calculation of Regression between Oil and Gas Sector and USD: -

Regression Statistics	
Multiple R	0.3783
R Square	0.1431
Adjusted R Square	0.1281
Standard Error	0.0514
Observations	59

ANOVA

	Df	SS	MS	F	Significance F
Regression	1	0.0251	0.0251	9.5190	0.0031
Residual	57	0.1505	0.0026		
Total	58	0.1757			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	0.0158	0.0068	2.3281	0.0235	0.0022	0.0294
USD	-0.9958	0.3228	-3.0853	0.0031	-1.6421	-0.3495

Regression analysis of Auto index shows that there is a negative correlation between USD and Auto index. P-value is less than 5%, therefore alternate hypothesis H_1 is accepted. IT and Pharma index both show very low correlation. Also, the P-value is much higher than 5% which indicates that no significant correlation can be established between USD and these 2 sectors. Hence, null hypothesis is accepted in these 2 sectors. For Power and Oil sector top 5 companies based on market capitalization was taken for the study. Both these sectors show significant correlation of 52.16% (Power) and 37.83% (Oil and Gas). Null hypothesis is rejected in both these sectors due to P-value being lesser than 5%. Coefficients in these sectors are negative, indicating a negative correlation of USD and these sectors (when taken individually).

Major Findings

- Nifty50 and Currency (USD, Euro, GBP, and Yen) shows a negative correlation.
- USD is the most influential currency that affects Nifty50.
- Auto Index, Power Sector, Oil and Gas Sector shows negative correlation with USD.
- IT Index and Healthcare Index does not show any significant correlation with USD.

CONCLUSION

USD is considered as the most influential currency due to a number of factors like dollar is used as the benchmark index for most of the commodities which are global assets. Gold, silver, energy

including oil prices all these things uses dollar. Also, the US Federal Reserve rates increase very frequently where European rates have remained constant for several years. These interest rate movements have always been in favor of USD, as a result USD outperforms several global currencies. If USD becomes stronger it affects the Indian economy, as Rupee weakens. Although, exports in automobile sector is increasing but still the value of imports is much higher than exports. Companies like Maruti Suzuki imports 20% of its components from Japan as well as USA. Also, Tata Motors has taken foreign currency loans about Rs 3000- Rs 4000 Crores. Auto Index has shown negative correlation mainly due to these factors only. Similarly, Power and Oil sectors show negative correlation due to large dependence on imports. IT and Pharma sector major source of revenue is from exports only but still n relation can be obtained as there are multiple extraneous variables which offset the effect of currency fluctuation. Hence, no correlation can be established between USD and these 2 sectors.

RECOMMENDATION

Investors can obtain benefits arising from currency fluctuations. Above regression analysis shows that if Rupee depreciates or Dollar becomes stronger then due to negative correlation Power Sector, Oil and Gas Sector will go down. So, investor can either sell their existing shares of companies of these sectors to reduce losses, or can go for a short position. Similarly, investors can go for long position if Rupee appreciates. Same situation arises for investors who invest in auto sectors. Although, the slope value of auto index is less so impact on auto index due to currency fluctuation also becomes less. So, if investors seek to generate money faster then, the investors have an option to invest either in Power or Oil sectors. IT and Pharma are the 2 sectors which can move in any direction due to currency fluctuation, so, investors can either hold their existing positions or they can exit the market by netting of their positions. Investors can either invest in shares of the companies of these sectors or they can invest in sectoral mutual funds (as discussed earlier). To obtain greater advantage investor can always look at the prevailing interest rates, or the inflation rate to predict the currency movement.

LIMITATIONS

- The effect of extraneous variables cannot be quantified and these variables can affect the relation between currency and stock market.
- No significant relation can be obtained in cases of IT sector and Pharma sector as the effect of extraneous variables on these 2 sectors is very high.
- Regression analysis is done between one dependent variable and just one independent variable. A multi-variate analysis can be done to assess the impact of multiple independent variables on dependent variable

REFERENCES

1. Impact of Inflation and Interest Rates on Exchange Rate Trends. 2021. Available at: https://www.fxcm.com/uk/insights/exchange-rate-trends/
2. Goel S. So How Can RBI Rate Hike Help Stem the Rupee Slide? 2018. Available at: https://economictimes.indiatimes.com/markets/forex/so-how-can-a-rbi-rate-hike-help-stem-the-rupee-slide/articleshow/66071179.cms

3. Jethmalani H. A Stronger Rupee: Who Wins, Who Loses. 2017.Available at: https://www.livemint.com/Money/QRl7U8L7T8cIneTwTwDw6J/A-stronger-rupee-who-wins-who-loses.html

4. The Investopedia Team. How Does Inflation Affect the Exchange Rate Between Two Nations? 2021. Available at: https://www.investopedia.com/ask/answers/022415/how-does-inflation-affect-exchange-rate-between-two-nations.asp

5. Laskar A. Stock Markets Rattled By Demonetization Impact, Tax Worries. 2016. Available at: https://www.livemint.com/Money/hV5dYRkS0hJOgPsMLikqBL/Live-Sensex-falls-over-220-points-Divis-lab-shares-down-8.html

6. Monga R, Philipose M. Reliance Power Stumbles, As Does the Stock Market, 2008. Available at: https://www.livemint.com/Money/YhaVK4XCFlEG9kJyJycoJK/Reliance-Power-stumbles-as-does-the-stock-market.html

7. Varma T. Stocks That Will Help You Gain with a Falling Rupee. 2013. Available at: https://www.businesstoday.in/moneytoday/cover-story/depreciating-rupee-stocks-and-sectors-that-stand-to-gain/story/197197.html

8. Dhanorkar S. Should You Invest in Sectorial Mutual Funds? Find Out. 2016. Available at https://economictimes.indiatimes.com/wealth/invest/should-you-invest-in-sectoral-mutual-funds-find-out/articleshow/54375247.cms

9. Jose T. What Is the Connection Between Balance Of Payments and the Value Of Rupee? 2016. Available at: https://www.indianeconomy.net/splclassroom/what-is-the-connection-between-balance-of-payments-and-the-value-of-rupee/

10. Moore S. How Currencies Help Or Hurt Your Investments. 2017. Available at: https://www.forbes.com/sites/simonmoore/2017/01/30/how-currencies-impact-your-stock-and-bond-investments/#4863294b2102\

11. Segal T. Currency Fluctuations: How They Affect the Economy. Available at: https://www.investopedia.com/articles/forex/080613/effects-currency-fluctuations-economy.asp

12. Swedroe L. How Government Policy Decisions Move Stocks. 2012. https://www.cbsnews.com/news/how-government-policy-decisions-move-stocks/

13. Oberoi T. As FIIs Rush To Exit India, These Stocks Are Risking Big Correction. 2018. Available at: https://economictimes.indiatimes.com/markets/stocks/news/as-fiis-rush-to-exit-india-these-stocks-are-risking-big-correction/articleshow/64367697.cms