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ECONOMIC INDICATORS AND INDIAN STOCK MARKET VOLATILITY: AN EMPIRICAL ANALYSIS

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ABSTRACT

Volatility in prices of stocks and other financial instruments is a common phenomenon of any stock market in the world and Indian stock market is no exception to this. Volatility is caused by various reasons, company performance, growth prospects, stability of payment of dividend to share holders are some of the internal factors to name. While, many external factors also cause the volatility of stock prices like Gross Domestic Product (GDP), inflation, interest rates, money supply, employment rate, fiscal deficit, key policy rates of central bank, currency value, exports and imports, Foreign Direct Investment (FDI) etc., are few of them.

The present study focuses on the relationship between some major economic indicators like value of Indian rupee, crude oil price, key interest rates of Reserve Bank of India (RBI) and volatility of Indian stock market. Some monetary tools of RBI like Bank Rate, Repo and Reverse repo rates, Statutory Reserve Ratio (SLR), Cash Reserve Ratio (CRR) etc., have been considered at one hand and NSE Nifty 50 stock prices have been taken on the other hand to identify the relationship. Analytical measures of central tendency, dispersion, correlation and regression are applied to arrive at relationship between key economic indicators and Nifty 50 values. The empirical study has considered key economic indicators and Nifty 50 values for 12 years. The study explores that there has been a mixed result in terms of relationship between some economic indicators and stock market volatility. While some indicators have a strong positive correlation, while yet other indicators have a weak correlation or no correlation at all. The study concludes with some suggestions to the retail investors of Indian capital market to consider anticipated prices of crude oil from Organization of Petroleum Exporting Countries (OPEC), forecasted movements of Indian rupee (INR) versus other major currencies in the world.

KEYWORDS: *GDP, FDI, Repo, Reverse Repo, CRR, SLR*

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INTRODUCTION

India as an economy provides opportunities for many companies to expose their presence and facilitates them to raise capital from the market through issue of capital to the public. Stock exchanges like Bombay Stock Exchange (BSE) and National Stock Exchange (NSE) act as the intermediaries between companies and investors in the market. These stock exchanges also provide opportunity to people for trading financial securities. By carrying out the trading and settlement process for the stocks and other securities, they ensure that securities and funds get transferred from one

investor to another. It also facilitates market participants to hedge, speculate and take arbitrage activities in the market.

Volatility has been a common phenomenon in the stock market everywhere in the world. So, BSE and NSE are no exception to this. Volatility here refers to fluctuations in the prices of securities in the secondary market like BSE and NSE. Fluctuation of security prices is due to various reasons like change in performance of the company, political factors, environmental factors, change in interest rates, inflation rates, change in the flow of Foreign Direct Investment (FDI) etc. Of all the factors, change in Monetary Policy of the Reserve Bank of India (RBI) is one among the many determining factors for the changes in the Indian stock market. Monetary policy of RBI through its rates like Statutory Reserve Ratio (SLR), Marginal Standing Facility Rate (MSFR), Repo rate, Cash Reserve Ratio (CRR), Reverse repo rate, changes the flow of money in the country and controls interest rates and thereby inflation in the country. Changes in these rates by RBI will have an impact on the stock market volatility. Indian rupee value against other currencies and crude oil prices are related to stock market values to find out the volatility, in addition to the RBI rates.

A popular index of National Stock Exchange i.e., Nifty 50 has been considered for measuring the changes in stock market. Volatility is a measure of dispersion of returns of securities and market. Estimation of volatility is important and hence analytical measures f dispersion, correlation and regression are applied to check volatility and relationship. If the statistical tools like say standard deviation shows a higher value for securities or the index, it means there is a high amount risk and vice versa. The present study throws light on the relationship between NSE Nifty 50 with CRR, SLR, Repo rate, Reverse repo rate, Marginal Standing Facility Rate, value of Indian Rupee, Crude Oil price etc., to find out the fluctuations in Indian stock market.

Monetary Policy

Monetary Policy is a broad control mechanism in the hands of RBI, which focuses on macroeconomic factors of the economy. The policy highlights on demand and supply sides of money in a country in order to fulfil broader economic goals like maintaining liquidity in economy, control inflation and manage consumption levels. Monetary policy of India targets to have a proper management of amount of money supply at various sectors and also aims at enhancing the development of economy.

Tools of Monetary Policy of India

Cash Reserve Ratio (CRR)

Cash Reserve Ratio refers to ratio of deposit which commercial banks have to maintain in liquid cash form with central bank, out of the deposits collected from the public. Presently CRR is at 4%. Commercial Banks are not supposed to use this fund for lending purposes and they do not earn interest on such reserves.

Statutory Liquidity Ratio (SLR)

Statutory Liquidity Ratios is the ratio of deposit that commercial banks have to maintain in the form of liquid cash or debt securities like bonds approved by government and in gold. Commercial banks are supposed to maintain 18.75% of their deposits in the form of SLR at the present rates.

Repo Rate

The interest rate levied by RBI on the borrowings of commercial banks is known as Repo Rate. In order to borrow from RBI under Repo (referred as repurchase option) agreement, borrowing banks are supposed to use their securities as pledge with RBI. However, commercial banks are not allowed to use securities meant for SLR purposes under Repo agreement.

Reverse Repo

It is percentage of interest that RBI pays to the commercial banks for borrowed amount. Here also collateral is required to borrow cash from the banks, in worse situation if RBI does not return the amount commercial banks can sell the securities and recover their amount.

Marginal Standing Facility Rate (MSFR)

When commercial banks are in excess need of funds over and above the SLR limits, they can still borrow funds form RBI. The rate of interest levied by RBI on such borrowings of commercial banks is known as Marginal Standing Facility Rate (MSFR). Commercial banks are required to pay 1% extra than Repo for availing loan under this facility.

Bank Rate

Central bank of a country discounts negotiable instruments like bill of exchange, promissory notes or any other commercial paper. The rate charged by RBI for discounting such instruments is called Bank Rate. This is used as short term loan by banks in the retail sector. The Bank and MSF rate are normally aligned. Presently bank rate is quoted at 5.4%.

Table 1: Key Rates of Monetary Policy at a Glance (Rates in Percentage)

Year	CRR	SLR	MSFR	Repo Rate	Reverse Repo Rate
2008	5.50	24	-	6.50	5.00
2009	5.00	25	-	4.75	3.25
2010	4.25	24	-	6.25	5.25
2011	4.0	24	9.50	8.50	7.50
2012	4.0	23	9.0	8.00	7.00
2013	4.0	23	8.75	7.75	6.75
2014	4.0	22	9.0	8.00	7.00
2015	4.0	21.50	7.75	6.75	5.75
2016	4.0	20.75	6.75	6.25	5.75
2017	4.0	20.00	6.25	6.00	5.75
2018	4.0	19.5	6.75	6.50	6.25
2019	4.0	18.75	5.65	5.40	5.15

Source: www.rbi.org.in

REVIEW OF LITERATURE

Dulababu T (2017), in his research paper titled “An Analytical Study on Volatility of Volatility” tried to study whether the India VIX generates a significant volatility to perceive an opportunity to make a good return. The study exhibits India VIX does not provide a chance to earn returns. In addition, India VIX is viewed as a fear index by participants in Indian capital market. The study concludes by stating it is essential for the market to be sensitive to various variables like policies of the government and an exposure to wide and in depth population of the country.

Mitra Pradeep kumar (2017), in his Research paper titled “Dynamics of Volatility Spill over Between the Indian Stock Market and Foreign Exchange Market Return” aims to study the volatility spill over of return on forex and stock market in India. The study exhibits that there is a deep affiliation of forex and fluctuations in the Indian stock market and it

is relentless in nature. The study concludes that foreign Market and Indian market moves tandem and markets are integrated with each other significantly.

Singh Gurumeet (2017), in his research article titled "Time varying volatility in the Indian stock Market" intends to study the volatility dynamics of Indian stock Market. The study describes the Good News and Bad news do not have the same effect. It was revealed that fluctuation in the stock market is more influenced by the negative or bad news than the positive or good news.

The study concludes that the impact of good news on volatility of Indian stock market does not have the greater influence but bad news has the greater influence on volatility of Indian stock market.

Chavannavar Mrityunjaya, Patil S. C, Simoes Ms. Melita (2016), in their research article titled "Monetary Policy Effect on Nifty 50 and Sectoral Indices – A Study from Indian Stock Markets" attempts to study the relation and influence of changes in the monetary policy tools on Nifty. The research work reveals a strong linear association of monetary policy tools and Nifty 50 movement for the past 5 years. This study concludes that Nifty 50 volatility is influenced by the monetary policy of RBI.

T. Mohamed Nishad, K.T. Thomachan (2015), in their research article titled "How Volatile Is Indian Stock Market? A Study Based on Selected Sectoral Indices" intends to study the volatility among selected sectoral stock index. The research work reveals that good news creates less volatility compared to bad news. This study concludes that effect of leverage on some sectoral indices like automobile, metal and finance is considerably significant. Indices like energy, information technology and real estate are influenced more with various events of the market, when compared to other indices.

Srivastava Anubha (December 2014), in his research paper titled "Is Indian stock Market highly volatile? A comparative study" tries to explore the fluctuations in stock market by considering Bombay Stock Exchange and National Stock Exchange. Study concludes that volatility in Indian stock market was very high during the global economic recession in the year 2008.

M. Thenmozhi and Abhijeet Chandra (2013), in the article labelled "India Volatility Index (India VIX) and Risk Management in the Indian Stock Market" attempts to study if India VIX is a reason for people to stay away from taking risk as this index acts as a fear index. They have concluded their study stating that there was inverse relationship between India VIX and CNX Nifty index.

Mall Manmohan, Pradhan B, Mishra P k (2011), in their Research article titled "Volatility of India's Stock Index Futures Market: An Empirical Analysis" studied volatility of index futures market in India for a decade during 2000 to 2010. Futures market has been greatly affected by growth of trading volume of nearby month index futures. They conclude volatility is more influenced by negative news in the market, rather than positive news does.

Mishra Ban amber, Rahman Matiur, (May 2010), in their research work on Volatility of stock markets they focussed on India and Japanese market volatility. The study reveals that returns of stock markets of India and Japan are not normal and non static. Further, it was concluded by them that Japanese market is more regularised and efficient compared to Indian context.

T. Mallikarjunappa and Afsal E. M (2008), in their research article labelled "The Impact of Derivatives on Stock Market Volatility: A Study of The Nifty Index" attempted to study impact of derivatives introduction on cash market in

terms of volatility. It reveals that derivatives have not impacted on volatility of market. Further, the authors conclude that volatility neither has increased nor has it decreased due to introduction of derivatives in India.

Rajkumar and Hariomgupta (2007), in their research paper titled "Volatility of Indian stock Market: A Case Study of Individual Securities" intended to study the volatility patterns of stock price of some selected securities listed in NSE. The study exposes that the most of the securities earnings were negative during 2000-01 followed by 2001-02, 2006-07. The study concludes that the most of the companies' volatility is low with low return.

Bandivadekar Snehal and Ghosh Saurabh (2003), in their research article labelled "Derivatives and Volatility on Indian Stock Markets" attempted to analyse the relationship of starting up of index futures in India with volatility in the spot markets of India. They have found that introduction of index future has resulted in reduction of volatility in two major exchanges of India viz., Sensex and S&P CNX Nifty.

Sathyanarayana S, Harish S. N, and Gargesha Sudhindra (1997), in their research paper titled "Volatility in Crude Oil Prices and Its Impact on Indian Stock Market: Evidence from BSE Sensex" found out that the major stock exchange index of Bombay Stock Exchange i.e., Sensex has been influenced majorly by the changes in the prices of crude oil. It has concluded the study stating BSE Senxex and prices of crude oil have displayed positive correlation.

Statement of the Problem

The volatility in the stock market is attributed to various factors right from sheer performance of listed companies to macro environmental factors like changes in GDP, inflation, interest rates, rupee value etc. Among all the factors, monetary policy of the central bank also plays a vital role in the volatility of the stock market. Hence, the study on Economic Indicators and Indian Stock Market Volatility is relevant and apt.

OBJECTIVES OF THE STUDY

- To study the relationship between tools of Monetary Policy of RBI (CRR, SLR, Repo, Reverse Repo, MSFR, Bank rate) and Stock Market volatility (Nifty 50).
- To study the relationship between the value of Indian Rupee (INR) and value of Nifty 50.
- To analyse the relationship between Crude oil prices and values of Nifty 50.

RESEARCH METHODOLOGY

The empirical study is conducted by considering available data from secondary sources like monthly data from Reserve Bank of India website and from www.nseindia.com. Analytical tools of central tendency i.e., arithmetic mean, dispersion i.e., standard deviation and correlation are compared with monetary policy tools. Required data has been collected for a Period Of 12 Years from 2008 to 2019.

SCOPE OF THE STUDY

This Study covers the relationship between the Monetary Policy tools which include repo rate, reverse repo rate, marginal standing facility rate (MSFR), cash reserve ratio (CRR), statutory liquidity ratio (SLR), and Indian rupee value (INR) and crude oil prices. These variables are compared with the values of popular index of NSE i.e., Nifty 50 values. The data required for the analysis has been collected over a time span of 12 years, from 2008 to 2019.

LIMITATIONS

- The study is confined to only few economic indicators like monetary policy tools. There are so many other factors attributable to stock market volatility, which have not been considered in the study.
- The study has covered a specific period of 12 years for the analysis and interpretation of results. Hence, the study outcomes cannot be generalized at all the time periods.

ANALYSIS AND INTERPRETATIONS

The volatility in the Indian stock market is analysed by considering Nifty 50 values as the benchmark for comparison with other 8 economic indicators. The economic indicators included the key monetary policy rates of Reserve Bank of India as CRR, SLR, Repo rate, Reverse repo rate, MSFR and Bank rate. Other two indicators used were Indian rupee value and the crude oil prices were used. Analytical tools like arithmetic mean, standard deviation and correlation were used to analyse volatility.

Above the Table 2 it was found that there has been positive correlation between CRR and Nifty in the years 2008, 2010 and 2015 with high magnitude (except in 2015). There is also negative correlation between the CRR and Nifty in 2012 with high magnitude and for rest of the years there is no correlation between the CRR and Nifty.

It can be inferred from the above analysis that the change in CRR has affected Nifty values positively, which means if CRR increases Nifty value also increases and vice versa. It was also observed that there is high standard deviation of CRR independently in 2008 and Nifty also has high Standard deviation in the year 2009 that measures high volatility in that years. Thus, it can be concluded that CRR has positive impact on the Nifty values.

It is observed from Table 3 that there has been positive correlation between SLR and Nifty values in the year 2008, 2009 and 2015 with a low magnitude and there was no correlation between SLR and Nifty values in the years 2011, 2013 and 2018. It is also found that there has been negative correlation between SLR and Nifty values in the year 2010, 2012, 2014, 2016 and 2017 with a high magnitude and in the year 2019 with a low magnitude.

It can be inferred the Below values that there is negative correlation between SLR and Nifty in many years of the study, which means that if there is rise in the SLR rate, then there is fall in values of nifty and if there is fall in SLR, it will bring rise in the values of Nifty. It was also found that there is a high SD of SLR in the year 2010 independently and SD of Nifty value is high in the years 2008 and 2019 independently which shows high volatility in values in these years. It can be concluded that change in SLR by the central bank has resulted in negative change in Nifty values in most of the years of the study, although there is no correlation between both values in some years.

Table 4 makes it very clear that the correlation value is positive between Nifty and MSFR in the years 2015 and 2018 with moderate magnitude in 2015 and high magnitude in 2018. There has been negative correlation between the MSFR and Nifty in the years 2011, 2012, 2013, 2016 and 2017 with high magnitude.

It can be inferred the below analysis that in most of the years the MSFR has impacted inversely on the Nifty values, which means to say whenever the Reserve Bank of India has increased the MSFR, the Nifty values have decreased and on the other hand when the MSFR was reduced, Nifty values have gone up. Commercial Banks' borrowing through MSF route is over and above the SLR limits and hence the market discounts or honours the increase or decrease in MSF rate with opposite sentiments in the Nifty values. The SD of MSFR is high in the years 2012 and 2013 independently and SD of Nifty is high in the year 2019 and 2014 independently that signifies more

volatility in these years. Thus it can be concluded that there is an inverse correlation between the MSFR and Nifty in most of the years of study.

It is visible from Table 5 that there has been positive correlation between Repo rate and Nifty values in the year 2008, 2010, 2013, 2015 and 2018 with a high magnitude. There was negative correlation between the Repo rate and Nifty values in the year 2009, 2011, 2012, 2016, 2017 and 2019 with moderate magnitude, except in the year 2009 where high negative magnitude is found. Year 2014 witnessed zero correlation. The SD of Repo rate is high in the year 2008 which refers a greater fluctuation in Repo rate.

Below analysis it was seen that there has been negative correlation in the most of the years which states that an increase in Repo rate brings decrease in Nifty values and vice versa. The above analysis clarifies that there has always been correlation between the Repo rates and Nifty values that may be positive or Negative. But, most of the years have seen the positive correlation rather than the negative correlation, signifying that the Repo rate has impacted the Nifty values in the positive manner.

The values in Table 6 show that there has been positive correlation between the Reverse Repo and Nifty values in the years 2008, 2010, 2013, 2015, 2016 and 2018 with a moderate magnitude, except in the years 2010 and 2015, which witness the high positive magnitude between Reverse Repo rate and Nifty values. Further, it also reveals that there has been inverse correlation between Reverse Repo and Nifty values in the years 2009, 2011, 2012, 2017 and 2019 with a mixed level of magnitude in the values. The SD of Reverse Repo rate was greater in the year 2012 that signifies that high fluctuation in that year.

It is discovered the Below analysis that there Reverse Repo has impacted the Nifty values in positive manner, which means increase in Reverse Repo carry increase in Nifty values and vice versa. Reverse-repo rate is the borrowing rate of RBI from commercial banks, has mostly shown the positive trend with market sentiments through Nifty values.

Table 7 reveals that there has been positive correlation between the Bank rates and Nifty values in the year 2012, 2015, 2018 with moderate magnitude and also there has been negative correlation between the bank rate and Nifty values in the year 2013, 2016, 2017 and 2019 with low to moderate magnitude and in the remaining years there was zero correlation between the Bank rate and Nifty values. It has been observed that there was a greater SD in the year 2012, which signifies that there was high volatility in that year.

Below analysis, it was visible that Bank rate has made a negative impact on the market responses through Nifty values in most of years during study period, despite the fact that there was no correlation between both the values in some years.

It can be seen from Table 8 that there has been positive correlation between the Rupee value and Nifty Values in the years 2011, 2012, 2014, 2017 and 2018 with a high and moderate magnitude. It was discovered that the SD of Rupee value is largest in 2013 and SD of Nifty values was the highest in the year 2018, which imply that there was greater volatility of these values in those years. As expected, appreciation of rupee value against other major currencies is boosts the confidence in the market and hence the increase in rupee value has brought positive change in the Nifty values.

It is very clear from Table 9 that values of Nifty and prices of crude oil are related in a positive manner for eight years during the study period with moderate and high level of magnitude. It also reveals that SD of Crude oil price is highest in the year 2008 that shows greater volatility.

Thus it is inferred that price of crude oil is predominantly decided by Oil Producing and Exporting Countries (OPEC) has got a positive relationship with the market sentiments in some years and has got negative correlation in some

other years, through the Nifty values. It suggests that the crude oil prices in international market have got mixed reactions from the Indian capital market. Year 2008 witnessed the highest values of Standard Deviation for both crude oil prices and the Nifty values. It is quite obvious that there was a global financial crisis in the year 2008 and hence the volatility or the risk in the prices of crude oil and Indian stock market was at its peak.

Table 2: Relationship Between CRR and Nifty

Year	Mean		SD		R	β
	CRR	Nifty	CRR	Nifty		
2008	7.54	4200.52	1.26	906.81	0.63	0.63
2009	5.00	4180.81	0.00	899.62	0.00	0.00
2010	5.81	5459.12	0.38	435.38	0.50	0.50
2011	6.00	5319.92	0.00	386.13	0.00	0.00
2012	4.75	5345.45	0.40	363.00	-0.60	-0.60
2013	4.25	5907.01	0.00	259.94	0.00	0.00
2014	4.25	7425.62	0.00	825.30	0.00	0.00
2015	4.11	8330.86	0.13	340.18	0.33	0.39
2016	4.00	8294.64	0.00	527.62	0.00	0.00
2017	4.00	9661.39	0.00	602.41	0.00	0.00
2018	4.00	10899.48	0.00	476.55	0.00	0.00
2019	4.00	11349.29	0.00	457.98	0.00	0.00

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 3: Relationship Between SLR and Nifty

Year	Mean		SD		R	β
	SLR	Nifty	SLR	Nifty		
2008	24.30	4200.52	0.38	906.81	0.68	0.69
2009	24.16	4180.81	0.38	898.62	0.47	0.48
2010	24.75	5459.12	0.45	435.38	-0.74	-0.74
2011	24.00	5319.92	0.00	386.13	0.00	0.00
2012	23.58	5345.45	0.51	363.00	-0.79	-0.80
2013	23.00	5907.01	0.00	259.94	0.00	0.00
2014	22.50	7425.62	0.47	825.30	-0.89	-0.90
2015	21.54	8294.64	0.14	347.76	0.46	0.47
2016	21.12	8138.15	0.29	527.62	-0.73	-0.74
2017	20.08	9661.39	0.41	602.41	-0.88	-0.88
2018	19.50	10899.48	0.00	476.55	0.00	0.00
2019	19.03	11349.28	0.20	457.98	-0.17	-0.18

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 4: Relationship Between MSFR and Nifty

Year	Mean		SD		R	β
	MSF	Nifty	MSF	Nifty		
2011	9.03	5319.92	0.52	386.13	-0.77	-0.78
2012	9.12	5345.45	0.22	363.00	-0.52	-05.21
2013	8.93	5907.01	0.69	259.94	-0.49	-0.50
2014	9.00	7425.62	0.00	825.30	0.00	0.00
2015	8.22	8294.64	0.39	347.76	0.48	0.49
2016	7.12	8138.15	0.39	527.62	-0.76	-0.77
2017	6.45	9661.39	0.20	602.41	-0.87	-0.88
2018	6.41	10899.48	0.21	476.55	0.75	0.76
2019	6.23	11349.28	0.35	457.98	-0.17	-0.18

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 5: Relationship Between Repo Rate and Nifty

Year	Mean		SD		R	β
	Repo	Nifty	Repo	Nifty		
2008	8.02	4200.52	0.74	906.81	0.19	0.20
2009	4.89	4180.81	0.29	898.62	-0.81	-0.81
2010	5.52	5459.12	0.54	435.38	0.92	0.93
2011	7.58	5319.9`2	0.80	386.13	-0.73	-0.73
2012	8.12	5345.45	0.22	363.00	-0.52	-0.52
2013	7.52	5907.01	0.22	259.94	0.60	0.60
2014	8.00	7425.62	0.00	825.30	0.00	0.00
2015	7.20	8294.64	0.38	347.76	0.85	0.85
2016	6.50	8138.15	0.12	527.62	-0.64	-0.64
2017	6.14	9661.39	0.12	602.41	-0.73	-0.73
2018	6.16	10899.48	0.21	476.55	0.75	0.76
2019	5.98	11349.28	0.35	457.98	-0.17	-0.18

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 6: Relationship between Reverse Repo and Nifty

Year	Mean		SD		R	β
	Reverse Repo	Nifty	Reverse Repo	Nifty		
2008	5.91	4200.52	0.28	906.81	0.42	0.42
2009	3.39	4180.81	0.29	898.62	-0.81	-0.81
2010	4.25	5459.12	0.79	435.38	0.94	0.95
2011	6.58	5319.92	0.80	386.13	-0.73	-0.73
2012	7.12	5345.45	0.22	363.00	-0.52	-0.52
2013	6.50	5907.01	0.23	259.94	0.55	0.56
2014	7.00	7425.62	0.00	825.30	0.00	0.00
2015	6.22	8294.64	0.39	347.76	0.85	0.86
2016	5.87	8138.15	0.13	527.62	0.49	0.50
2017	5.83	9661.39	0.12	602.41	-0.03	-0.04
2018	5.91	10899.48	0.21	476.55	0.75	0.76
2019	6.23	11349.29	0.35	457.98	-0.17	-0.18

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 7: Relationship Between Bank Rate and Nifty

Year	Mean		SD		R	β
	Bank Rate	Nifty	Bank Rate	Nifty		
2008	6.00	4200.52	0.00	906.81	0.00	0.00
2009	6.00	4180.81	0.00	898.62	0.00	0.00
2010	6.00	5459.12	0.00	435.38	0.00	0.00
2011	6.00	5319.92	0.00	386.13	0.00	0.00
2012	9.20	5345.45	1.01	363.00	0.18	0.18
2013	8.90	5907.01	0.69	259.94	-0.49	-0.50
2014	9.00	7425.62	0.00	825.30	0.00	0.00
2015	8.29	8294.64	0.45	347.76	0.46	0.47
2016	7.12	8138.15	0.39	527.62	-0.76	-0.77
2017	6.45	9661.39	0.20	602.41	-0.87	-0.88
2018	6.41	10899.48	0.21	476.55	0.75	0.76
2019	6.23	11349.29	0.35	457.98	-0.17	-0.18

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 8: Relationship Between Rupee Value and Nifty

Date	Mean		SD		R	β
	Rupee value	Nifty	Rupee Value	Nifty		
2008	43.83	4200.52	3.83	906.81	-0.95	-0.96
2009	48.45	4180.81	1.56	898.62	-0.85	-0.85
2010	45.76	5459.12	0.91	435.38	-0.53	-0.54
2011	46.97	5319.92	3.16	386.13	0.82	0.82
2012	53.32	5345.45	2.55	363.00	0.24	0.25
2013	59.16	5907.01	4.34	259.94	-0.007	-0.01
2014	61.08	7425.62	1.35	825.30	0.180	0.18
2015	64.30	8294.64	1.76	347.76	-0.47	-0.47
2016	64.95	8138.15	1.17	527.62	-0.65	-0.66
2017	67.25	9661.39	0.11	602.41	0.120	0.12
2018	67.63	10899.48	2.90	476.55	0.65	0.66`
2019	70.06	11349.29	1.12	457.98	-0.65	-0.65

Source: Output Derived From MS Excel and SPSS by the Researcher

Table 9: Nifty and Crude Oil Prices' Relationship

Year	Mean		SD		R	β
	Price of Crude Oil (USD / Barrel)	Nifty	Crude Oil	Nifty		
2008	99.57	4200.52	29.07	906.81	0.64	0.64
2009	61.69	4180.81	13.77	899.62	0.94	0.95
2010	79.42	5459.12	4.68	435.38	0.50	0.50
2011	95.07	5319.92	7.69	386.13	-0.20	-0.21
2012	94.20	5345.45	7.51	363.00	-0.58	-0.59
2013	97.94	5907.01	5.25	259.94	-0.36	-0.37
2014	93.25	7425.62	13.76	825.30	-0.59	-0.59
2015	48.69	8294.64	6.75	340.18	0.57	0.57
2016	43.14	8133.82	6.83	533.16	0.80	0.80
2017	50.88	9661.39	3.81	602.41	0.19	0.20
2018	69.38	10857.63	6.21	491.45	0.56	0.56
2019	61.97	11349.29	4.20	457.98	0.71	0.71

Source: Output Derived From MS Excel and SPSS by the Researcher

FINDINGS

- The study has revealed that out of the 12 years of study, Cash Reserve Ratio (CRR) and Nifty have shown zero correlation for the period of 8 years. The major reason for this is the CRR was not changed for 5 years during the study period. They have positive correlation for two years with a high magnitude and for one year positive correlation with low magnitude. For only one year they have shown negative correlation with high magnitude. Thus, it was found that there is no direct impact of CRR on Nifty values during the study period.

- It was found that Statutory Liquidity Ratio (SLR) and Nifty values have shown inverse relationship for 6 years out of 12 years of study with a high magnitude. Thus, it is evident from the study that SLR has made negative impact on the Nifty values. The reason for the same is that whenever the SLR has increased, the commercial banks are left with fewer funds to lend therefore, they increase interest rates, both lending and deposit interest rates. Thus, the investors in the market withdraw their investments from the stock market and redirect it into bank deposits.

- There has been inverse relationship between Marginal Standing Facility Rate (MSFR) and Nifty values for 6 years out of 9 years of study period. The magnitude of the relationship between these values is high. As MSFR is overnight borrowing rate by commercial banks from RBI against the Government securities, increase in this rate

has resulted in the bank interest rates on borrowings and lending by commercial banks. So, investors are tempted to withdraw their funds from stock market to invest in bank deposits. Thus, increase in MSFR has impacted the decrease in Nifty values and vice versa.

- It was found that there is inverse correlation between Repo rate and Nifty values for 6 years out of 12 years of study with high magnitude. The Repo rate has negative impact on Nifty values. If Repo rate increases bank interest rate hikes then investors will withdraw their money from capital market and invest it in banks as it gives more return with low risk. Thus, there is inverse correlation between Repo rate and Nifty values.
- It was discovered that values of Nifty and Reverse Repo rates are positively correlated for 7 years out of 12 years of study and it shows high magnitude for five years. As Reverse Repo rate is the rate on deposits made by commercial banks in RBI. Suppose, RBI decreases the Reverse Repo rate then commercial banks reduce the interest rates on deposits. Then investors borrow money from banks and invest the same capital market. Thus, positive correlation is seen between Reverse Repo rate and Nifty values.
- It has been identified that there is no relation between Bank rate and Nifty values in 5 years out of 12 years of study and also observed that there is an adverse relation between Bank rate and Nifty values in 3 years with high magnitude. Bank rate is the rate on loan taken by commercial banks from RBI for short period. If RBI charges high interest rate, then commercial banks also charge high interest rates on short term loans and deposits. So the investors tend to stop borrowing money from banks and start depositing the money. Thus it states that increase in Bank rate will cause negatively on Nifty values.
- Positive correlation was observed between INR and values of Nifty for 6 years out of 12 years of study period with high magnitude in most of the years during the study period. If INR is devalued in market then foreign investors withdraw their money from Indian stock market as they get low returns and it results in decrease in the Nifty values. Thus, it can be inferred that if Rupee value appreciates in market, then Nifty values increase.
- Negative correlation was detected between values of Nifty and prices of Crude oil for 5 years out of 12 years of study and with a high magnitude for 2 years. As increase in the Crude oil prices causes hike in petroleum products' rates, it results in shortage of funds for investors. Thus, it states that increase in Crude oil prices cause the decrease in Nifty values.

SUGGESTIONS

There is always correlation between the monetary policy rates with crude oil prices and Indian rupee value and even the Nifty values, either positive or negative. Hence, the investors are advised to take a note of the following suggestions.

- The investors should wait during the monetary policy review as the monetary policy rates may impact on the Nifty values.
- The investors should consider the anticipated Crude oil prices from OPEC while investing money in stock market, because crude oil has greater influence on securities market.
- When Indian rupee value goes on increasing, Nifty values go on decreasing accordingly investors in general are advised to take a note of expected movement of INR verses major currencies in the world before investing in stock, as INR values impact on the stock prices.

CONCLUSIONS

The volatility in the stock market does not spare any country including the economically vibrant countries like USA, China, UK, German, and France and so on. India is not an exception to this. The Stock Markets across the world are so vulnerable due to numerous factors, which include dependency of domestic currency on other dominant currencies in the world, the crude oil prices. In addition to above, the sentiments of investors also play an important role in stock market fluctuations, in Indian context in particular.

This study has focussed on how monetary policy and its influence on Indian securities Market. For this study, relationship between various tools of monetary policy of RBI and Nifty 50 values has been considered.

The study explores that monetary policy, Crude oil prices and INR values are influencing on Stock Market in India. Sometimes it was positive and some other times it was negative and also some other times there was no effect of Monetary Policy on Nifty points.

In totality, the study concludes that the Monetary policy tools like Repo rate, Reverse Repo rate, Crude oil prices, CRR and INR value impact on Stock Market in India. Study concludes suggesting the investors to keep a close watch on these factors while investing in the stock Market.

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