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# An Analytical Study on the Factors Impacting The Bank Nifty Volatility Growth

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**Abstract:**
Stock Market Index are volatile in nature. It is seen that lot of studies have been done to find out the impact of macro-economic factors on nifty and Sensex but very few studies have been done to find out the impact of monetary policy instruments and several other macro-economic factors on bank nifty volatility. Primarily, the study was conducted to find the impact of selected factors on Bank Nifty volatility. The factor selected for the study includes repo rate, reverse repo rate, CRR rate, SLR Rate, fiscal deficit, gold rate per Gram & GDP per capita. Pearson correlation is used to study the relation between various factors & Bank Nifty. Multiple regressions is used to predict the Bank Nifty growth based on the given factors.

**Keywords:** Bank Nifty Volatility, Monetary policy instruments, Fiscal Deficit & Gold rate.

## 1. Introduction:

Stock market index are volatile in nature. It is seen that lot of studies have been done to find out the impact of macro-economic factors on nifty and Sensex but very few studies have been done to find out the impact of monetary policy instruments and several other macro-economic factors on bank nifty volatility. Primarily, the study was conducted to find the impact of selected factors on Bank Nifty volatility. It is often seen that monetary policy instruments and several other macro-economic factors affects the movement of bank nifty. Volatility is an integral part of the stock market, in this study researcher is going to explore the relation between the Bank Nifty growth rate with the selected factors through the correlation and multiple regression analysis. The time period considered for the study is from 2011-12 to 2020-21.

## 2. Review of literature:

- T. Mallikarjunappa, Afsal E.M. (2008)[1], In this study researcher analyze the impact of introduction of Future Trading on Spot Market Volatility. They analyze the volatility conduct of CNX Bank Nifty with the help of GARCH Modal. According to Research, they find that there's no effect at the CNX Bank Nifty due to the introduction of derivatives.
- Gahlot, Ruchika, Saroj K. Datta, and Sheeba Kapil (2009) [2], The study is carried out to discover the effect of derivatives trading on stock market volatility. Researcher observes the volatility behavior of Bank Nifty in conjunction with its element scrips and use the GARCH modal for these studies. The end result indicates that the volatility of Bank Nifty isn't affected by the introduction of the future trading in the stock market.
- Md. Gazi Salah Uddin's (2009) [3] , The relationship between the interest rates and stock prices is being watched in this study. Researcher had use the closing prices of S&P CNX and the closing price of five derivative and non-derivative stocks. From this research they found that, out of 15 developed and

developing countries 6 countries have a negative relationship between the interest rates and the securities prices.

- Sangeeta Wats (2010) [4] , Researcher studied the Impact of Expiration day or week at the Spot Market Volatility. For that they observe the period at some point of June 12, 2000 to Dec 31, 2007, and subperiod from November nine, 2001 to Dec 31,2007. To Examine this issue , the expiration weeks are also taken into consideration to discover the volatility inside the spot market for this they used GARCH model in this study. They locate in the studies that the introduction of futures and options, the spot marketplace volatility is increased at the expiration days and weeks.
- Gahlot, Ruchika; Datta, Saroj K. (2011) [5] , In this research they investigate the impact of future trading on volatility of stock prices of banking sector. In this research they considered the closing prices of bank nifty and individual banks from April 2003 to March 2008. Researcher had used the least square method and EGARCH modal. The report suggested that introduction of futures does not affect on volatility of individual stocks as well as bank nifty.
- Sangram Keshari Jenaa, and Ashutosh Dash (2014) [6] , In this research they explores the character of the relationship between open interest, volume and volatility in the most recent Nifty index futures contract. In this research they used GARCH (1, 1) version. They find in this research that trading activity variables, the current open interest, carrying potential and lagged volume, representing the strength of Nifty futures price levels, play an important role in predicting the volatility level.
- Gao, Bin; Yang, Chunpeng (2016) [7] , This study is conducted to investigate the effects of investor trading behavior and investor sentiment on futures market return. To study the short-term speculative behavior of sentiment traders, they construct daily sentiment index and daily investor trading behavior index. From this study they find that the combined effects of spot market sentiment, spot investor trading behavior, futures market sentiment, and futures investor trading behavior have great explanatory power on the returns earned in future.
- Ranajit Chakrabarty and Asima Sarkar (2016) [8] , This study is conducted to analyze the behavior of Volatility in the Indian stock market with respect to some ecopolitical factors like union budget and elections announcement conducted between 1994-2012. In this research Granger Causality Test, Johansen's Cointegration Test, ADF Test, and TGARCH (1,1) Model with Dummy Variable are used. From this research, they find that the union budget and political uncertainties has a significant effect on the volatility of the Indian stock market.
- Nivedita Mandal (2017) [9] , This Study is conducted to understand the impact of Futures Trading on Indian Banking Industry and how does the introduction of future index affect its spot volatility? For this study GARCH model with futures dummy has been used for the period 2000 to 2013. Also for sampling the 'Multi-Stage Judgmental Sampling' technique is used. This research study shows that introduction of future trading is not having a notable impact on the spot market volatility.
- Dr . Hemendra Gupta (2017) [10] , The study attempts to discover the co-relations amongst diverse sectoral indices which include Auto, Banking, Capital items, Consumer durable, FMCG, Health Care, Metal Power, Realty and Sensex. This study is finished using the closing daily index of all stock markets from 1st April 2001 to 30 April2016. In the observe returns for investment durations for one month, one year, three 12 months, 5 years and seven-12 months have been calculated and had been as compared the usage of Descriptive Analysis. From this examine they locate that, In monthly investment there's no distinction in go back but there may be a distinction in multiple 12 months of

funding, there's excessive degree of correlation in returns between various sectors when the investment is more than 5 years.

- Suresh Narayanarao (2018) [11] ,This study is conducted to understand the impact of BANKNIFTY derivatives transaction on spot market volatility of India. Descriptive statistics, the ADF test GARCH model are used in this study to find the impact of bank nifty derivatives on spot market volatility. Eight stocks are considered in this research. In this study they find the impact of futures on spot market volatility and from descriptive analysis, they found that data returns from all the stocks are not normally distributed.
- Harshita Srivastava (2020) [12] , This study is conducted to understand the relationship between 10 sectoral with the help of correlation and regression analysis with the data of six years starting from Jan 2012. From the selected sector,Nifty Auto, Nifty Bank, Nifty Financial Services, Nifty FMCG, Nifty IT and Nifty Media has strong positive correlation with each other and the other has weak correlation with each other.
- Mr. Smit Mehta, Dr. Varsha Nerlekar (2020) [13] , In this study they studied the factors impacting the Indian share market volatility during the period of the Covid-19 pandemic, especially in March 2020 to May 2020. According to them there are a total of 7 factors that affect the banking effect in Covid 19 which are Interest, Deposits, NPA, Liquidity, Economic Activities, Digital Transformation and Defaulters. In this study they find that the agriculture sector is affected because of shortage or slowdown of supply chain, also the main factors affecting Aviation industry because of huge decrease in tours and travels income, also the huge loss in entertainment industry (Cinema industry), etc. because of all these sectors are performed bad at the time of covid-19 it impacts also psychology on peoples money so peoples trading and investment technique is change so because of all this volatility of stock market is high.
- Jayanth Konanki | Dr. P. Basaiah (2020) [14], The study analysis the performance of the banking industry specially 12 stocks (Axis Bank, Bank of Baroda, Federal Bank, HDFC Bank, ICICI Bank, IDFC First Bank, IndusInd Bank, Kotak Mahindra Bank, Punjab National Bank, Ratnakar Bank Limited, State Bank of India, Yes Bank) and this study is conducted mainly to identify the risk and return of the stocks and to analyze the bank nifty movements with reference to stocks of the bank nifty. In this study they used Beta, Mean, S.D. and Correlation of this 12 stocks for overall comparison.
- Parizad Phiroze Dungore and Sarosh Hosi Patel (2021) [15] , The study analysis the relationship between volatility, volume and open interest for Nifty Index futures traded on NSE. Generalized autoregressive conditional heteroscedastic model (GARCH) is used to estimate volatility for Nifty Index futures on day trades, also they have used the VAR modal to further understand the relationships between volatility, volume and open interest for all investors. They found that most variance of volatility (volume or open interest) comes from itself. Moreover, the impact of volume is stronger on volatility than open interest on volatility.

**Research Gap:**

Researcher had reviewed several research paper and articles and it is found that very few studies had been done on the bank nifty volatility and macro-economic factors. Researcher had come across various study on nifty and Sensex volatility but very few studies had been done on bank nifty volatility and factors affecting bank nifty volatility. Researcher had selected the following factors for study:

1. Repo Rate

2. Reverse Repo Rate
3. CRR Rate
4. SLR Rate
5. Fiscal deficit
6. Gold Rate per Gram
7. GDP Per Capita.

Hence researcher had selected the topic, "An Analytical Study on the Factors Impacting the Bank nifty Volatility growth"

**3. Research Methodology:**

This study is descriptive in nature. Time period for the study is financial year 2011-12 to financial year 2020-21. Data for repo rate, reverse repo rate, CRR, SLR is collected from the RBI website, data for fiscal deficit is collected from annual budget of government, data for gold rate per gram is collected from Statista & GDP per capita data is collected from world bank data. Bank nifty data is collected from NSE website. For all selected factors data was collected as on the end of the financial year.

The primary objective of the study is to study the impact of selected factors on bank nifty volatility.

**Hypothesis**:

H01: There is no significant relationship between Bank Nifty & Repo Rate growth
H02: There is no significant relationship between Bank Nifty & Reverse Repo Rate
H03: There is no significant relationship between Bank Nifty & CRR
H04: There is no significant relationship between Bank Nifty & SLR
H05: There is no significant relationship between Bank Nifty & Fiscal Deficit
H06: There is no significant relationship between Bank Nifty & GDP per Capita $
H07: There is no significant relationship between Bank Nifty & Gold prices.

**4. Result & Discussion:**

Researcher had converted the bank nifty and selected macro-economic factors into growth rate. Following table shows the historical data for Bank Nifty & different factors from 20011-12 to 2020-21

**TABLE NO 1 Growth Rate of Bank Nifty & Selected Factors**

| YEAR | BANK NIFTY Growth % | Repo rate growth % | Rev. Repo Rate growth % | CRR growth % | SLR growth % | Rate (fiscal deficit) growth % | Gold rate/gram growth % | GDP per capita Growth (%) |
|---|---|---|---|---|---|---|---|---|
| 2020-21 | -12.50% | -24.39% | -32.14% | -22.28% | -5.06% | 104.35% | 38.13% | -9.52% |
| 2019-20 | -10.80% | -16.56% | -17.11% | -3.50% | -2.77% | 34.50% | 12.03% | 4.69% |
| 2018-19 | 9.16% | 5.67% | 4.29% | 0.00% | -2.01% | -1.16% | 5.97% | 1.21% |
| 2017-18 | 24.47% | -5.96% | -0.85% | 0.00% | -4.46% | -0.57% | 3.65% | 14.37% |
| 2016-17 | 9.91% | -8.86% | -2.65% | 0.00% | -3.12% | -10.08% | 8.65% | 7.91% |
| 2015-16 | 7.86% | -8.26% | -12.46% | 0.00% | -2.27% | -5.61% | -5.94% | 2.03% |
| 2014-15 | 48.61% | 0.00% | 5.67% | 0.00% | -4.35% | -8.48% | -5.38% | 8.55% |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2013-14 | 0.29% | -4.62% | -7.24% | -12.47% | 0% | -9.13% | -4.67% | 0.42% |
| 2012-13 | 9.97% | 10.34% | 2.92% | -23.19% | -4.17% | -16.58% | 17.61% | -0.96% |
| 2011-12 | 6.70% | 20.83% | 45.53% | -0.83% | 0% | 7.45% | 42.70% | 7.41% |

Source: Primary

**Table no 2: Correlation Between Bank Nifty growth & Selected Factors**

| Sr. No. | Particulars | Correlation |
|---|---|---|
| 1 | Repo rate growth | 0.377026 |
| 2 | Rev. Repo Rate growth | 0.385221 |
| 3 | CRR growth | 0.440726 |
| 4 | SLR growth | -0.25568 |
| 5 | Fiscal Deficit Growth | -0.57316 |
| 6 | Gold rate/gram Growth | -0.47303 |
| 7 | GDP per capita Growth | 0.624598 |

Source: Primary

**Table no 3 Multiple regression Between Bank Nifty & Selected Factors**

| SUMMARY OUTPUT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| *Regression Statistics* | | | | | | | | |
| Multiple R | 0.99851115 | | | | | | | |
| R Square | 0.99702452 | | | | | | | |
| Adjusted R Square | 0.98661034 | | | | | | | |
| Standard Error | 0.02021024 | | | | | | | |
| Observations | 10 | | | | | | | |
| | | | | | | | | |
| ANOVA | | | | | | | | |
| | *df* | *SS* | *MS* | *F* | *Significance F* | | | |
| Regression | 7 | 0.27372953 | 0.03910422 | 95.7372331 | 0.010375501 | | | |
| Residual | 2 | 0.00081691 | 0.00040845 | | | | | |
| Total | 9 | 0.27454644 | | | | | | |
| | | | | | | | | |
| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | -0.00373142 | 0.01679953 | -0.22211434 | 0.84484344 | -0.07601397 | 0.06855113 | -0.07601397 | 0.06855113 |
| Repo rate in % | -1.58561268 | 0.32842813 | -4.82788336 | 0.04032556 | -2.99872485 | -0.17250051 | -2.99872485 | -0.17250051 |
| Rev. Repo Rate | 2.53422848 | 0.25102652 | 10.0954613 | 0.00966969 | 1.454148555 | 3.61430841 | 1.45414855 | 3.61430841 |
| CRR | -0.49749917 | 0.14984024 | -3.32019729 | 0.07998156 | -1.1422097 | 0.14721136 | -1.1422097 | 0.14721136 |
| SLR | -9.15131978 | 0.62029898 | -14.7530788 | 0.00456304 | -11.8202509 | -6.48238867 | -11.8202509 | -6.48238867 |
| Rate (fiscal defi | 0.19628204 | 0.0672911 | 2.91690929 | 0.10018038 | -0.0932482 | 0.48581228 | -0.0932482 | 0.48581228 |
| Gold rate/gram | -1.58011019 | 0.11942946 | -13.230489 | 0.0056643 | -2.09397369 | -1.06624669 | -2.09397369 | -1.06624669 |
| GDP per capita( | -1.30221216 | 0.32555596 | -3.99996419 | 0.0571919 | -2.70296638 | 0.09854206 | -2.70296638 | 0.09854206 |

**Source: Primary**

**Interpretation:**

From the Table no 2 following inference can be made:

1. There exists a weak positive correlation between bank nifty growth & repo growth rate.
2. There exists a weak positive correlation between bank nifty growth and reverse repo growth rate.
3. There exists a moderate positive correlation between bank nifty growth and CRR growth rate.
4. There exists a negative weak correlation between bank nifty growth and SLR
5. There exists a moderate negative correlation between bank nifty growth and fiscal deficit growth.
6. There exists a moderate negative correlation between bank nifty growth and gold rate per gram
7. There exists a strong correlation between bank nifty growth and GDP per capita growth

Researcher had used the multiple regression model to predict bank nifty & check whether there exists any significant relationship between bank nifty growth rate & selected factors. Following Model is proposed by the researcher:

The multiple regression equation is given by

$y = a + b_{1\times1} + b_{2\times2} + \ldots\ldots + b_{kxk}$ ---------- (I)

Where;

Y= Dependent Variable i.e. Bank Nifty growth

$_{\times1, \times2, xk}$ = Independent Variable i.e. Selected Independent Variable

After running a multiple regression test using SPSS software following inference can be drawn from table no 3:

1. R value of 0.9970 states that 99.70% independent variable predicts dependent variable which is a very strong predictor model.
2. The p value of model is <0.05 & hence researcher rejects the null hypothesis and hence it can be stated that bank nifty can be predicted using the selected factors.
3. Since p value> 0.05 for CRR growth, Fiscal deficit growth & GDP Per capita growth, it can be stated that there is no significant relationship between bank nifty growth rate & CRR growth rate, bank nifty growth rate & fiscal deficit growth rate, bank nifty growth rate & GDP per capital growth rate.
4. Since p value< 0.0.5 for repo rate, reverse repo rate, SLR & Gold rate per gram, there exist a significant relationship between bank nifty growth rate & repo rate growth rate, bank nifty growth rate & reverse repo rate growth rate, bank nifty growth rate & SLR growth rate, bank nifty growth rate & gold rate per gram growth rate.

Hence, we will reject null hypothesis H01, H02, H04, H07 & accept null hypothesis H02, H03 & H05. Following is the multiple regression model propose from the study for predicting bank nifty volatility growth rate:

**Y(Bank Nifty Growth Rate)= -0.00373142+(-1.5856*Repo Rate growth rate)+ (2.5342*Reverse Repo rate growth rate)+(-9.1513*Statutory liquidity ratio)+ (-1.5801*Gold Rate per gram growth rate).**

## 5. Conclusion:

Bank nifty is volatile in nature. From the study it can be concluded that bank nifty is having significant relationship with repo rate, reverse repo rate, statutory liquidity ratio rate & gold rate per gram growth rate. Researcher had also identified that bank nifty is not having significant relationship with cash reserve ratio, fiscal deficit & GDP per capita. This study helps to predict the bank nifty growth rate on the basis of the selected factor growth rate.

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