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The Interdependence of Monetary Policy and Stock Market

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Abstract: Stock Market is a platform where stocks and securities are traded. It is very dynamic and comprehensive market place. Various tools and techniques like fundamental analysis, technical analysis, charts, and indices are used in analyzing and selecting the appropriate security. There are "n" numbers of factor that affect stock prices like interest rate announcements, indices, inflation rates, quarterly EBIT-EPS Analysis, interim reports, mergers and acquisitions, crude oil and gas inventories, corn and wheat harvests, unexpected world changing news, Fed Actions, G7 country decisions, Brexit, technology breakouts, exchange rates, etc.

Monetary policy is the tool by which The Indian government regulate the supply of money in the economy. In this policy the government regulate the various types of rate which act as measure to control money supply in a country. The various types of rate are:-

- Bank rate.
- Cash Reserve Ratio.
- Statutory Reserve Ratio.
- Marginal Standing Facility.
- Repo Rate.
- Reserve Repo Rate.

By regulating these rate the government control money supply they do this in order to ensure the continuous growth of the country in terms of GDP i.e, Gross Domestic Product and also to maintain the Inflation level in country. In India the monetary policy is drafted and control by the central bank of India i.e, Reserve Bank of India. Every quarterly the monetary policy is revised and proclaimed.

This report examines the relation between the stock market and the monetary policy of country. How the stock market reacts to the monetary policy.

Keywords: Stock Market, Monetary policy, cash reserve ratio , repo rate, statutory liquidity ratio, marginal standing facility, reserve repo rate, National stock exchange.

1. Introduction

Stock Market plays a crucial role in the economic development of a country. The stock market can be broadly categorized into two categories:

a. Primary Market: The market platform that deals with issuance of new financial securities.

b. Secondary Market: The market for publically trading already existing securities of the primary market. One of the major functions of stock market is liquidity creation. Liquidity affects the economic activity of the country. The liquid financial market is the reason for inception of various industrial revolutions earlier. Stock market helps in channelizing the saving towards investment in various productive sectors. As stated earlier that stock market is very dynamic and comprehensive so it is obvious that along with domestic factors the international macro- economic factors also affect the stock market.

Monetary policy is the tool by which The Indian government regulate the supply of money in the economy. In this policy the government regulate the various types of rate which act as measure to control money supply in a country.

By regulating these rate the government control money supply they do this in order to ensure the continuous growth of the country in terms of GDP i.e, Gross Domestic Product and also to maintain the Inflation level in country. In India the monetary policy is drafted and control by the central bank of India i.e, Reserve Bank of India. Every quarterly the monetary policy is revised and proclaimed The various types of rate are:-

a. Bank rate:

It refers to the rate at which the central bank (reserve bank of india) lends to the commercial bank in India. Whenever the commercial bank is in need for the money they take loan from central bank. The bank are fixed by RBI. This act as a tool to maintain the money supply in country which is a measure to influence the growth rate and inflation rate of a country.

When ever the RBI want to increase the money supply in a country this act as tool. The RBI decreases the rate at which the commercial bank can take loan from the RBI. There by the commercial bsnk can loan easily and at a lower rate. Which than lead to increase in the amount of funds for loan. Than the commercial bank can give more loan. Which than trigger high purchasing power of the customer. This will lead to increase inflation and growth rate of a countryvice- versa.

b. Cash Reserve Ratio:

The reserve bank of India has the control about how much the commercial bank have to kept their some part of liquid assets. Such as gold, bonds, cash, securities, etc. the rate is set by the RBI. On the basis of that the commercial banks are allowed to maintain their deposits with the RBI.

When ever the RBI want to increase the money supply in a country this act as tool. The RBI decreases the rate at which the commercial bank has to keep their deposit RBI in the form of gold, bonds and RBI approved securities. Which than lead lead to increase in the amount of funds for loan. Than the commercial bank can give more loan. Which than trigger high purchasing power of the customer. This will lead to increase inflation and growth rate of a country vice- versa.

c. Statutory Reserve Ratio :

The SLR is fixed by the RBI. The RBI fixes the rate at which the commercial bank have to keep the certain percentage of deposits with itself in the form of liquidity in order to meet daily requirement of money.
When ever the RBI want to increase the money supply in a country this act as tool. The RBI decreases the rate at which the commercial bank has to keep their deposit with. Which than lead lead to increase in the amount of funds for loan. Than the commercial bank can give more loan. Which than trigger high purchasing power of the customer. This will lead to increase inflation and growth rate of a country and vice- versa

d. Marginal Standing Facility:

It is the new concept included by the RBI in credit policy of may 2011. According to which the commercial bank borrow the money from RBI at overnight against the government securities.

e. Repo Rate:

It refers to the rate at which the central bank (reserve bank of india) lends to the commercial bank in India. Whenever the commercial bank is in need for the money they take loan from central bank. The bank are fixed by RBI. This act as a tool to maintain the money supply in country which is a measure to influence the growth rate and inflation rate of a country.

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f. Reserve Repo Rate:

It refers to the rate at which the central bank (reserve bank of india) borrows money from commercial bank in India. Whenever the RBI is in need for the money they take loan from central bank. The bank are fixed by RBI. This act as a tool to maintain the money supply in country which is a measure to influence the growth rate and inflation rate of a country.

When ever the RBI want to increase the money supply in a country this act as tool. The RBI increase the rate at which it borrows from commercial bank .Which than lead to increase in the amount of funds for loan. Than the commercial bank can give more loan. Which than trigger high purchasing power of the customer. This will lead to increase inflation and growth rate of a countryvice- versa.

1.1 NSE

NSE stands for National Stock Exchange. It is the India's youngest but largest stock exchange. It was established in the year 1992. Gradually, different states of India started their own exchanges like Calcutta Stock Exchange, Madras Stock Exchange and so on. Government realized that there is a strong need to have a centralized nationwide automated electronic system for stock exchange. This is why, NSE was introduced in India.

1.1.1 Features of NSE Nifty Few important features of NSE Nifty are given below:

- It shows the economic development of the country.
- Top performing companies from each sector or the companies having greater market share in specific industry are listed in NSE.
- Nifty is the index of NSE which shows the average market capitalization of Top 50 companies listed in NSE.
- The top 50 companies are decided based on their free floating market capitalization.
- Free floating market capitalization is the product of total no of shares held by the public and face value or market price of each shares. A fall in the Nifty point shows fall in prices of the majority listed companies on NSE. Since, the companies listed here are the top performing companies of their respective industry. Their performance is directly linked with the economic development of the country. Therefore, indices are the important parameter of economic development of the country.

2. Rationality of study

Various studies in past had been conducted that the there are many other macro- economic factor that influence the stock market. From which the monetary policy has the direct influence on the stock market.

An investor must know how the monetary policy affects the stock market of how it react. And to establish the relationship between the monetary policy and the stock market.

Majority of the study is being done on the ground that monetary policy did affect the stock prices leaving the terminology of how it reacts.

The present study is to establish the relationship between the stock market and the monetary policy. And to know the degree of how much monetary policy affect stock market.

3. Objective and hypothesis of the study

Research study aimed at understanding and revealing the relationship between monetary policy and NSE Nifty bankex. The objective of the study more precisely can be bulleted as:

i. To investigate the impact of monetary policy as whole.

ii. To know the intensity of relationship between the monetary policy and stock market.

In order to achieve the above objective the underlying hypothesis has been drawn.

3.2 Hypothesis:

H1: There exist a positive relationship between nifty bank stock and the monetary policy.
H2 : there exist a negative relationship between nifty bank stock and the monetary policy.

4. Data and Methodology

The data consist of fragmented monthly time series observation regarding the macroeconomic variable namely monetary policy and NSE bankex covering a period from 25th January,2011 to 2nd august,2017. This data has been taken NSE website and investing.com and RBI official website. Only the monetary policy rate has been taken for analysis. Frequency of data is kept on monthly basis.

Table – 1: Methodology in Nutshell

Particulars	Descriptions
Research Design	Exploratory Research Report
Sample Design	Secondary data acquired from NSE website, investing.com and RBI official website.
Sample Selection	102
Data Collection	Secondary data has been used for this study: 1. The information of Nifty has been obtained from NSE official website http://www.nseindia.com/indices/nifty50data.aspx 2. The CRR, SLR, Repo rate, reserve repo rate, bank rate and maginal standing facility data is collected from https://www.rbi.org.in/
Time period	25th January,2011 to 2nd august,2017

5. Tools and Techniques used

The collected data were classified as per the categories and counting sheets. The working has been performed on excel sheet and the summary table of the working has been prepared accordingly. Statistical tools such as Mean, standard deviation, correlation analysis, covariance analysis and regression analysis has been used for data analysis.

6. Data Analysis

We can study the relationship between the nifty bank ex and the tools of monetary policy using graphs, diagrams and table.

Nifty and Bank rate:

Independent variable	dependent variable
X	**Y**
bank rate	**nifty bank**
6.00	10872.95
9.50	10473.60
9.00	10519.55
8.75	12722.80
8.50	11508.05
8.25	12393.60
10.25	11790.25
9.50	10686.80

9.00	10082.10
8.75	11241.65
9.00	10507.60
8.75	19235.65
8.50	19643.90
8.25	17977.30
7.75	17281.20
7.00	0.00
6.75	0.00
6.50	21622.95
6.25	25055.20

Table 2: Nifty bank ex stock change with change in bank rate.

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.086703969
R Square	0.007517578
Adjusted R Square	-0.05086374
Standard Error	6517.397452
Observations	19

Table 2.1

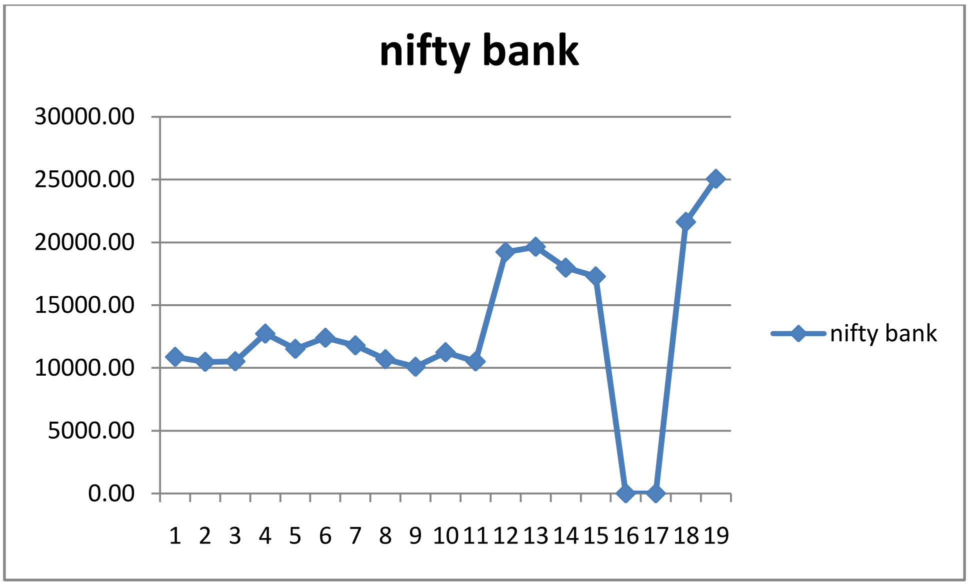
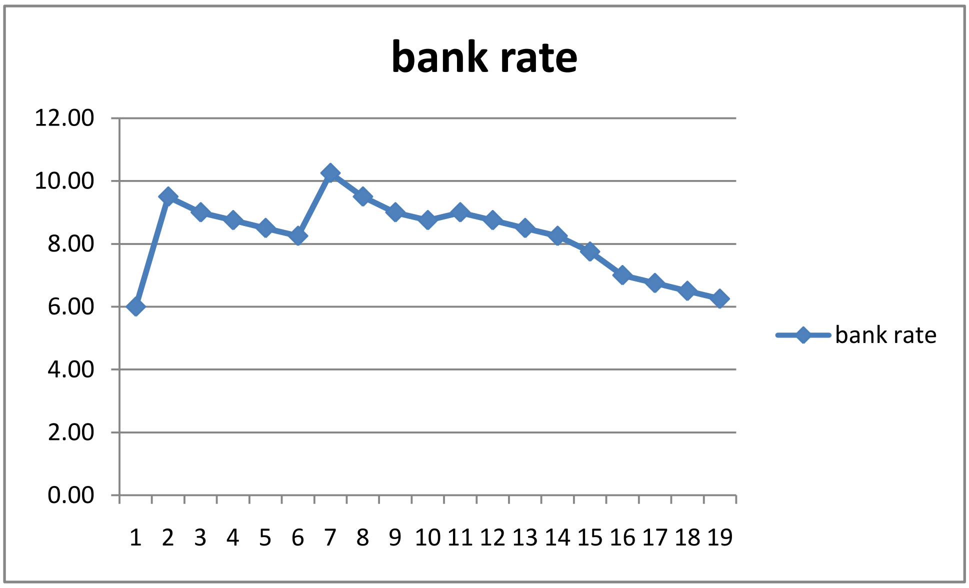


Table 2.2



With reference to the above we can establish certain relationship that as far as the bank rate is moving at a constant rate the nifty bank ex stock is positive and as the bank rate decreases the the nifty stock rises.

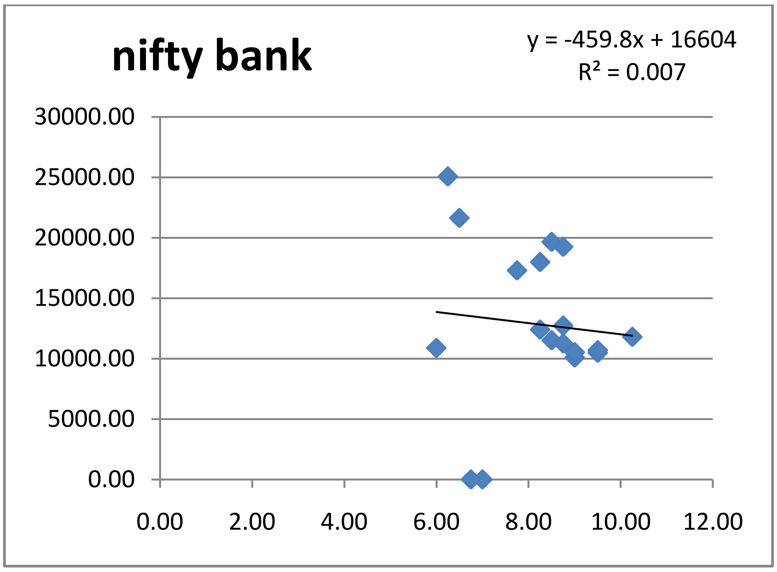
AVERAGE	12821.85
S.D	6357.71
CO-EFFICIENT	0.50

The above table contain average which is the average return of the nifty bank stock. It show that the average return is 12821.85 and standard deviation which represent the risk associated with the nifty bank stock which is 6357.71 and coefficient of variation which represent the return that we get by taking the risk. This 0.5 shows the return derived is below the risk taken.

correlation table		
Particulars	*bank rate*	*nifty bank*
bank rate	1	
nifty bank	-0.0867	1

covariance table		
particulars	*bank rate*	*nifty bank*
bank rate	1.36	
nifty bank	-625.97	38293133.85

The correlation shows the association of the nifty bank and bank rate. The correlation table has scale from +1 to -1. So this -0.08 show the negative correlation of nifty bank and bank rate



This show the movement of the nifty bank in relation to the bank rate. According to the above table it shows that nifty bank has negative direction which means as the bank rate move forward the nifty moves backward to -.625 as compared on the scale +1 to -1.

Nifty Bankand RepoRate :-

Table 2 :- change in nifty bank price with change in repo rate.

Independent variable	dependent variable
X	**y**
Repo rate	**nifty bank**
6.5	10872.95
6.75	10851.95
7.25	10898.30
7.5	10572.15
8	11114.55
8.25	9720.25
8.5	9511.60
8	10519.55
7.75	12722.80
7.5	11508.05
7.25	12393.60
7.5	10686.80
7.75	11241.65
8	10507.60
7.75	19235.65
7.5	19643.90
7.25	17977.30

6.75	17281.20
6.5	0.00
6.25	0.00
6	25055.20

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.001995
R Square	3.98E-06
Adjusted R Square	-0.05263
Standard Error	5887.033
Observations	21

correlation table		
particulars	*Repo rate*	*nifty bank*
Repo rate	1.00	
nifty bank	0.00	1.00
covariance table		
	Repo rate	*nifty bank*
Repo rate	0.437925	
nifty bank	-7.39249	31356603

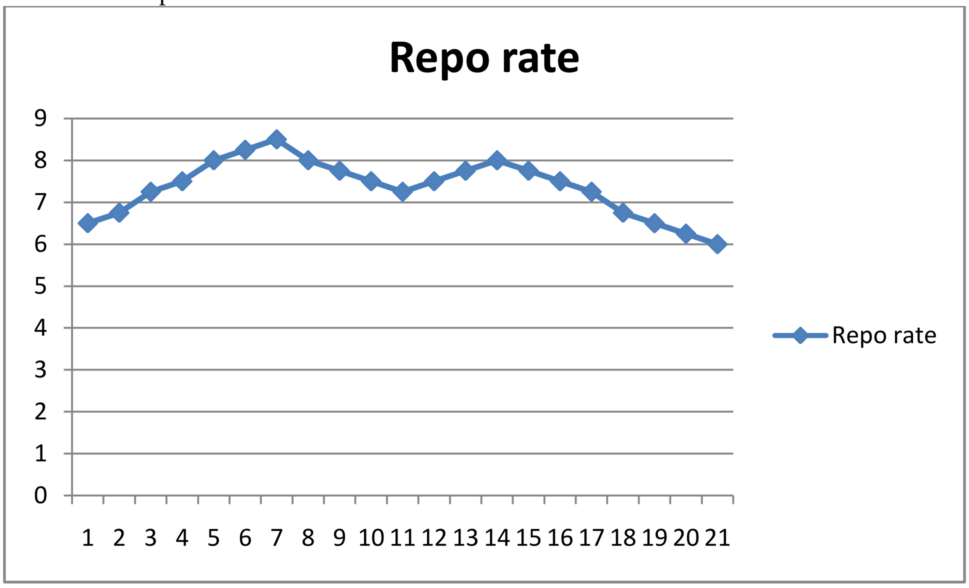
AVERAGE	12015.00
S.D	5737.98
CO-EFFICIENT	0.48

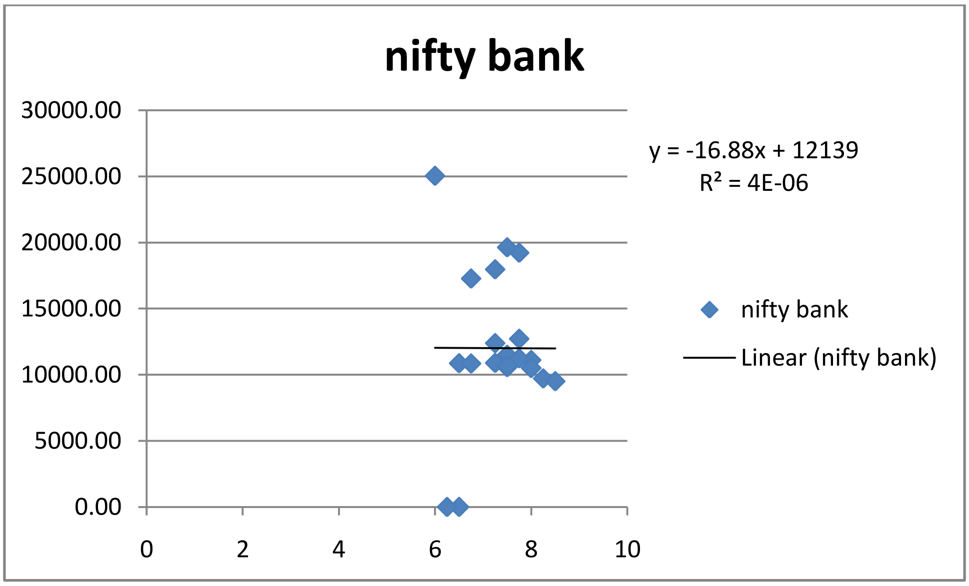
Table 2.1 (correlation table, covariance table)

The table 2.1 contain average which is the average return of the nifty bank stock. It show that the average return is 12015 and standard deviation which represent the risk associated with the nifty bank stock which is 5737.98 and coefficient of variation which represent the return that we get by taking the risk. This 0.48 shows the return derived is below the risk taken.

The correlation shows the association of the nifty bank and repo rate. The correlation table has scale from +1 to -1. So this -0.07 show the negative correlation of nifty bank and repo rate.

This show the movement of the nifty bank in relation to the repo rate. According to the above table it shows that nifty bank has negative direction which means as the repo rate move forward the nifty moves backward to -.739 as compared on the scale +1 to -1.





The above two graphs shows the relation between the repo rate and nifty bank. From the above graph of repo rate with refer to table 2.2 which shows the nifty graph. According to which as the bank rate continues to rise the nifty began to decline and as the repo rate decreases the nifty bank recover and than rises.

The linear line in the above graphs show the direction of the movement of the nifty bank in relation to the repo rate. The line is constructed where the most the point are closely to each other.

Nifty bank and reserve repo rate:-

Table 3: Change in nifty bank price with change in reserve repo rate.

Independent variable	dependent variable
X	**y**
reserve repo rate	**nifty bank**
5.5	10872.95
5.75	10851.95
6.25	10898.30
6.5	10572.15
7	11114.55
7.25	9720.25
7.5	9511.60
7	10519.55
6.75	12722.80
6.5	11508.05
6.25	12393.60
6.5	10686.80
6.75	11241.65
7	10507.60
6.75	19235.65

6.5	19643.90
6.25	17977.30
5.75	17281.20
6	0.00
5.75	0.00
6	21622.95
5.75	25055.20

Table 3.1(correlation, covariance, average ,S.D)

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.09
R Square	0.01
Adjusted R Square	-0.04
Standard Error	6082.93
Observations	22.00

Correlation		
	reserve repo rate	*nifty bank*
reserve repo rate	0.29	
nifty bank	-292.26	33936603.90

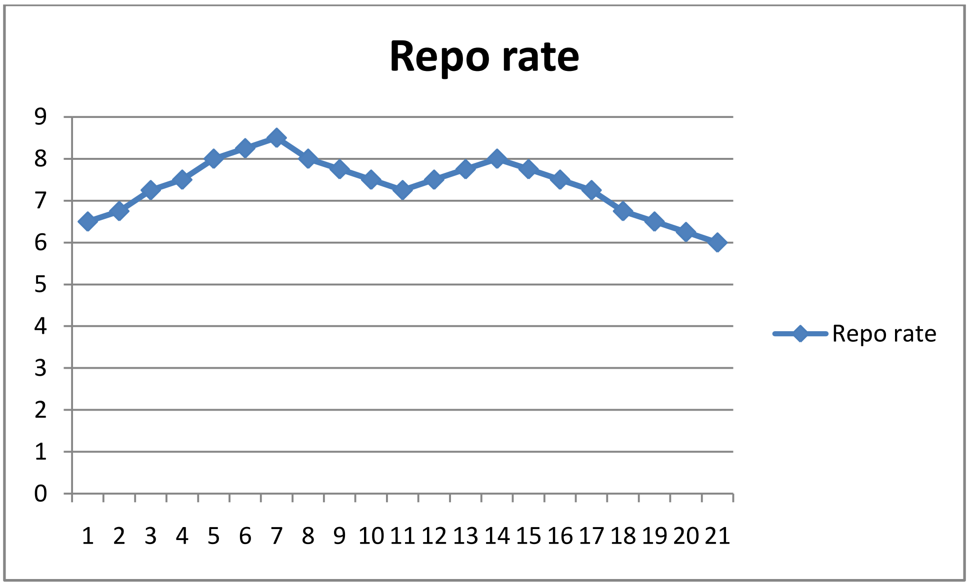
covariance table		
	reserve repo rate	*nifty bank*
reserve repo rate	1.00	
nifty bank	-0.09	1.00

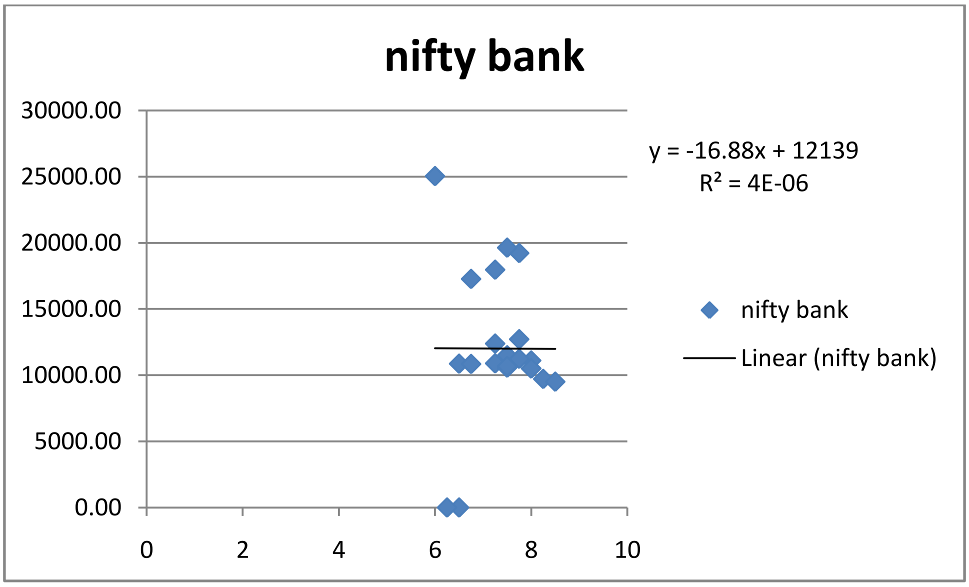
AVERAGE	12451.73
S.D	5962.60
CO-EFFICIENT	0.48

The table 2.1 contain average which is the average return of the nifty bank stock. It show that the average return is 12015 and standard deviation which represent the risk associated with the nifty bank stock which is 5737.98 and coefficient of variation which represent the return that we get by taking the risk. This 0.48 shows the return derived is below the risk taken.

The correlation shows the association of the nifty bank and repo rate. The correlation table has scale from +1 to -1. So this -0.07 show the negative correlation of nifty bank and repo rate.

This show the movement of the nifty bank in relation to the repo rate. According to the above table it shows that nifty bank has negative direction which means as the repo rate move forward the nifty moves backward to -.739 as compared on the scale +1 to -1.





The above two graphs shows the relation between the repo rate and nifty bank. From the above graph of repo rate with refer to table 2.2 which shows the nifty graph. According to which as the bank rate continues to rise the nifty began to decline and as the repo rate decreases the nifty bank recover and than rises. The linear line in the above graphs show the direction of the movement of the nifty bank in relation to the repo rate. The line is constructed where the most the point are closely to each other.

Nifty bank and Marginal standing facility:

Table 5: change in nifty bank price with change in marginal standing facility.

Independent variable	dependent variable
X	Y
marginal standing facility	nifty bank

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0	10872.95
8.25	10898.30
8.5	10572.15
9	11114.55
9.25	9720.25
9.5	9511.60
9	10519.55
8.75	12722.80
8.5	11508.05
8.25	12393.60
10.25	10686.80
9.5	11790.25
9	10082.09961
8.75	11241.65
9	10507.60
8.75	19235.65
8.5	19643.90
8.25	17977.30
7.75	17281.20
7	0.00
6.75	0.00
6.5	21622.95
6.25	25055.20

AVERAGE	12389.50
S.D	5838.78
CO-EFFICIENT	0.47

Table 4.1 (covariance, correlation, average)

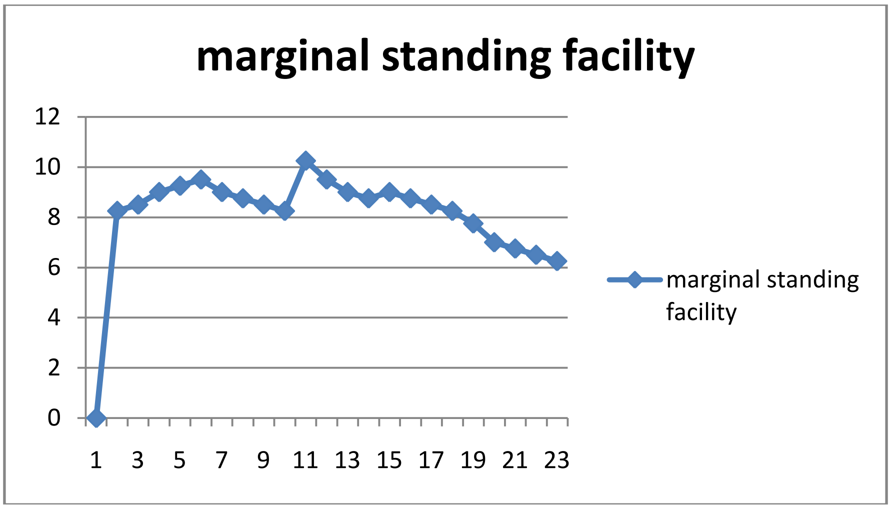
Covariance		
	marginal standing facility	*nifty bank*
marginal standing facility	3.90	
nifty bank	-396.53	32609113.59

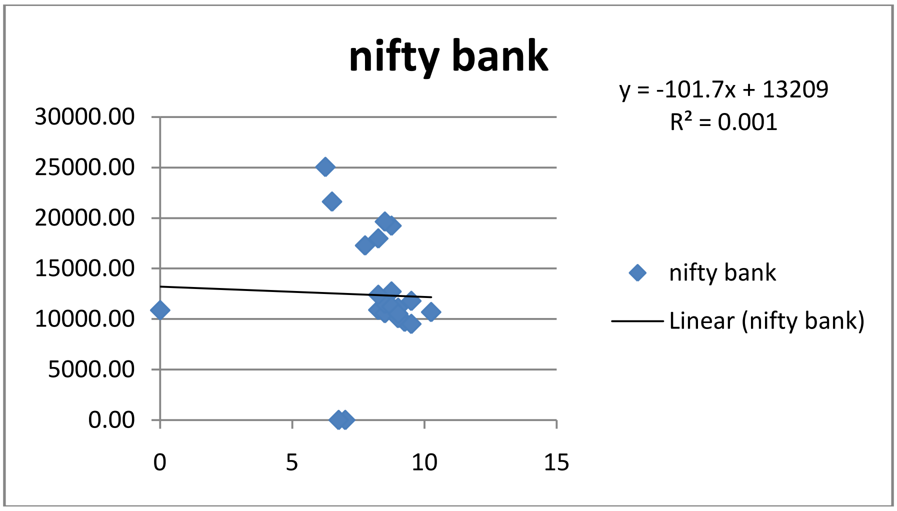
SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.035178
R Square	0.001237
Adjusted R Square	-0.04632
Standard Error	5972.483
Observations	23

The above table contain average which is the average return of the nifty bank stock. It show that the average return is 12389.5 and standard deviation which represent the risk associated with the nifty bank stock which is 5838.78 and coefficient of variation which represent the return that we get by taking the risk. This 0.47 shows the return derived is below the risk taken.

The correlation shows the association of the nifty bank and marginal standing facility. The correlation table has scale from +1 to -1. So this -0.04 show the negative correlation of nifty bank and marginal standing facility.

This show the movement of the nifty bank in relation to the marginal standing facilty. According to the above table it shows that nifty bank has negative direction which means as the repo rate move forward the nifty moves backward to -.396 as compared on the scale +1 to -1.





Correlation

	marginal standing facility	*nifty bank*
marginal standing facility	1.00	
nifty bank	-0.04	1.00

From the above graph of marginal standing facility we conclude that as the as the rate of MSF increases the nifty bank stock fall and vice versa.

Nifty bank and Cash reserve ratio:

Table 6: change in nifty bank price with change in cash reserve ratio.

Independent variable	dependent variable
X	**y**
CRR	**nifty bank**
6.00	10872.95
5.50	9537.10
4.75	10625.65
4.50	11423.50
4.25	11475.15
4.00	12333.00

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.721173
R Square	0.52009
Adjusted R Square	0.400113
Standard Error	732.0337
Observations	6

correlation		
	CRR	*nifty bank*
CRR	0.493056	
nifty bank	-436.911	744408.9

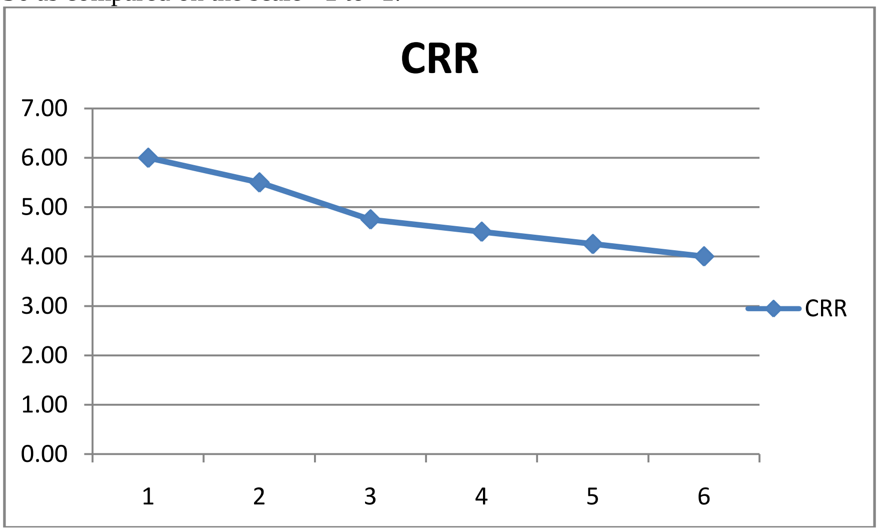
covariance		
	CRR	*nifty bank*
CRR	1	
nifty	-0.72117	1

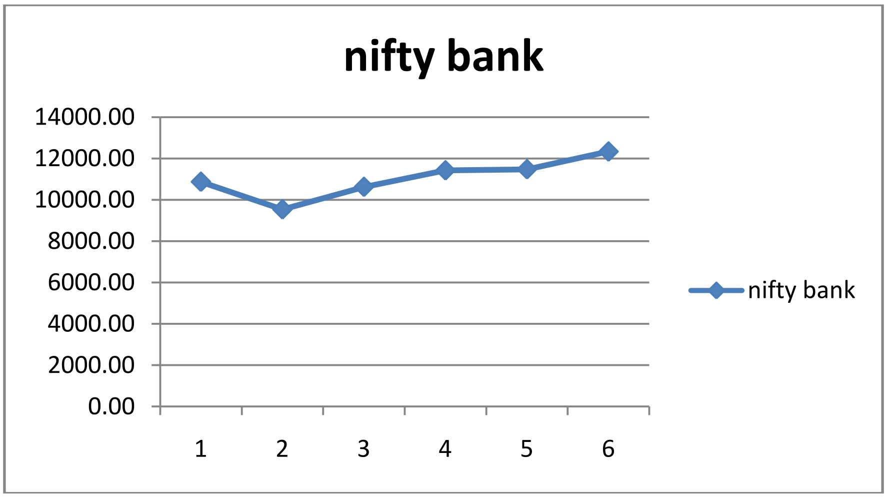
AVERAGE	11044.56
S.D	945.14
CO-EFFICIENT	0.09

The above table contain average which is the average return of the nifty bank stock. It show that the average return is 11044.56 and standard deviation which represent the risk associated with the nifty bank stock which is 945.14 and coefficient of variation which represent the return that we get by taking the risk. This 0.09 shows the return derived is below the risk taken.

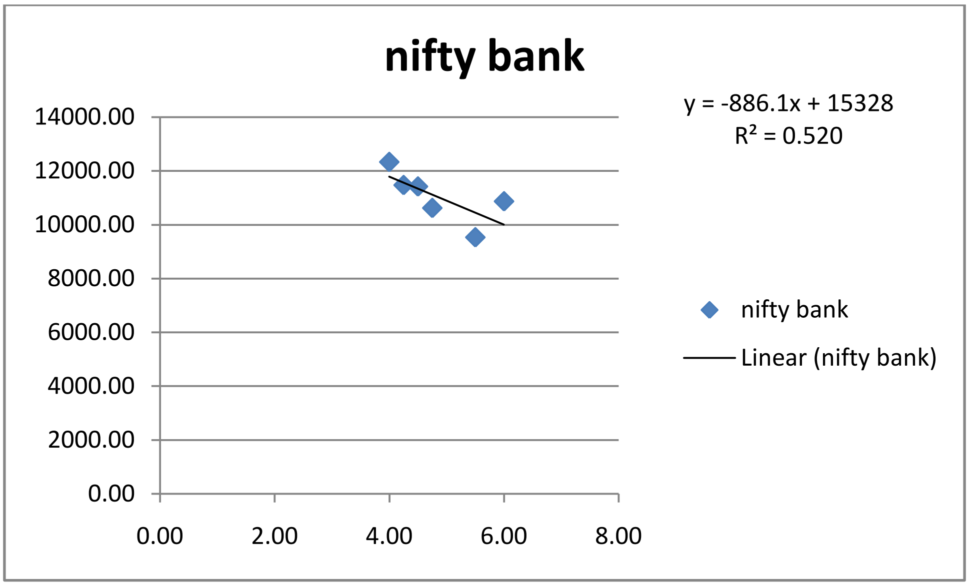
The correlation shows the association of the nifty bank and cash reserve ratio. The correlation table has scale from +1 to -1. So this -0.04 show the negative correlation of nifty bank and cash reserve ratio.

This show the movement of the nifty bank in relation to the cash reserve ratio. According to the above table it shows that nifty bank has negative direction which means as the repo rate move forward the nifty moves backward to -.436 as compared on the scale +1 to -1.





Throught the analysis of graph of nifty bank and cash reserve ratio above we can see that most of the time when the rate of CRR decreases the nifty bank stock increases.



This graph shows how closely the CRR and the nifty bank are related to each other. The line shows the direction in the nifty bank stock move. Which in the above graph represent negative slope.

Nifty bank and statutory liquidity ratio:

Table 7: change in nifty bank price with change in statutory liqidity ratio.

Independent variable	**dependent variable**
X	**Y**
SLR	**nifty bank**
24.00	10872.95
23.00	10401.30
22.50	15030.00
22.00	14846.80
21.50	18403.85
21.25	16190.60
21.00	0.00
20.70	0.00
20.50	18286.65
20.00	23216.25

Covariance		
	SLR	*nifty bank*
SLR	1.37	
nifty bank	-1037.20	52775397.54
Correlation		
	SLR	*nifty bank*
SLR	1.00	
nifty bank	-0.12	1.00

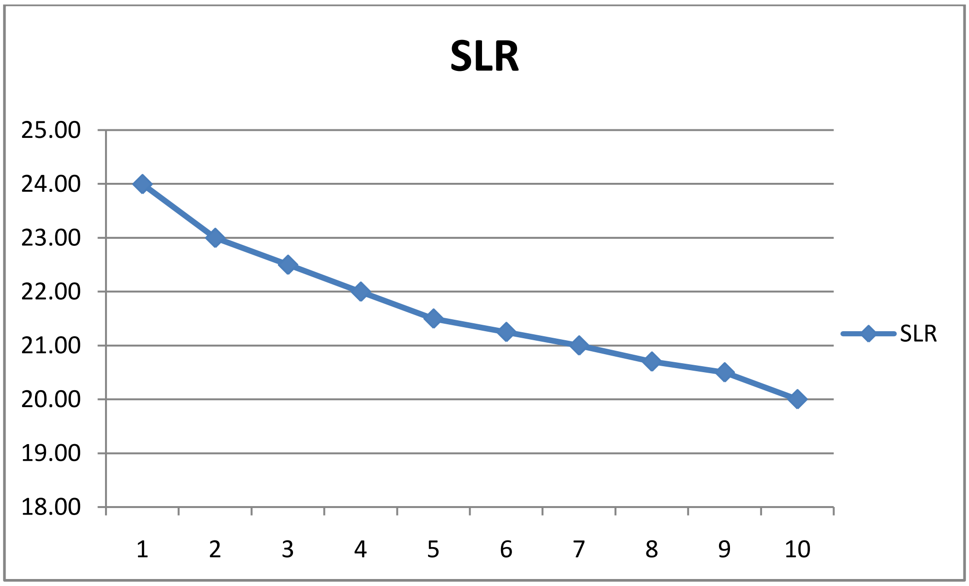
SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.121791
R Square	0.014833
Adjusted R Square	-0.10831
Standard Error	8061.682
Observations	10

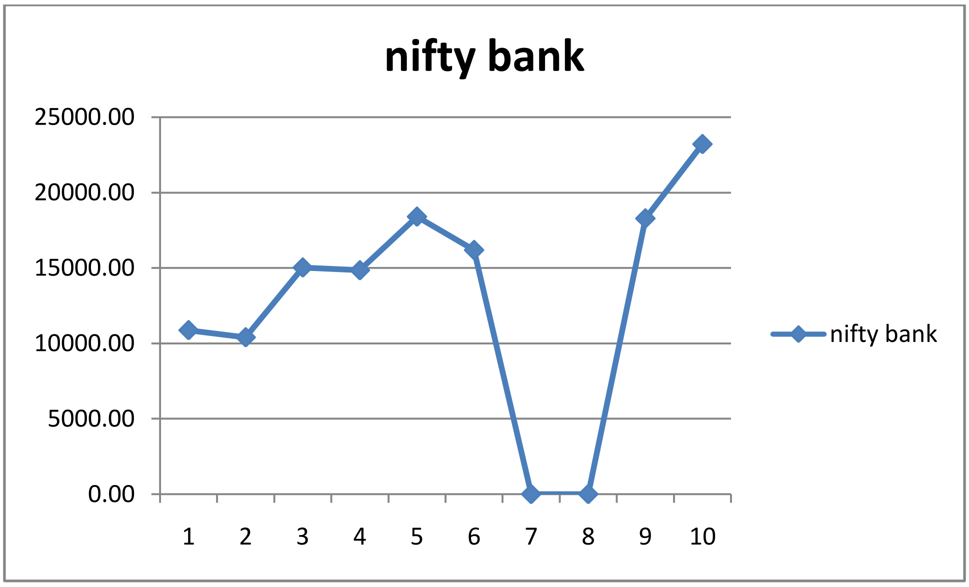
AVERAGE	12724.84
S.D	7657.63
CO-EFFICIENT	0.60

The above table contain average which is the average return of the nifty bank stock. It show that the average return is 12724.84 and standard deviation which represent the risk associated with the nifty bank stock which is 7657.63 and coefficient of variation which represent the return that we get by taking the risk. This 0.60 shows the return derived is below the risk taken.

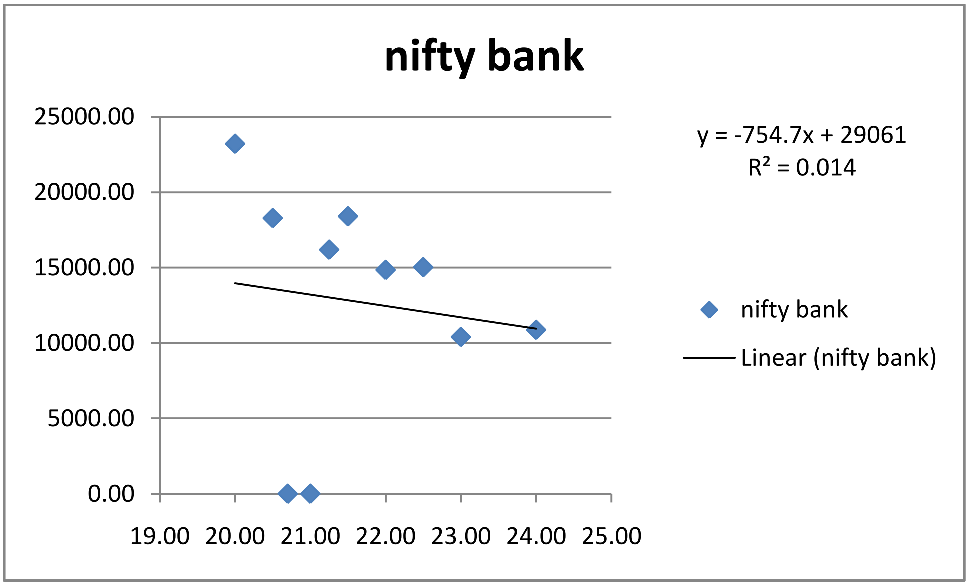
The correlation shows the association of the nifty bank and cash reserve ratio. The correlation table has scale from +1 to -1. So this -0.12 show the negative correlation of nifty bank and cash reserve ratio.

This show the movement of the nifty bank in relation to the cash reserve ratio. According to the above table it shows that nifty bank has negative direction which means as the repo rate move forward the nifty moves backward to .103 as compared on the scale +1 to -1.





From the above two graph we can analyse the relation between SLR and nifty bank .according to above as the SLR move negative downward and nifty bank move positive upward which means both have negative relation between each other.



This graph suggest the direction of movement of the nifty bank which is in graph show negatively.

Hypothesis Testing:

H1: Rejected the null hypothesis

Coming to the hypothesis “there exist a positive relationship between the nifty stock and the monetary policy”, based on covariance, correlation and regression analysis researcher has successfully rejected the null hypothesis.

H2: Failed to reject the alternative hypothesis

Coming to the hypothesis “ there exist a negative relationship between nifty bank stock and the monetary policy”, the researcher reached at a conclusion that based on the covariance , correlation and regression analysis that both are more or less moving in the opposite direction.

7. Conclusion

7.1 Conclusion and Findings

The research empirically examines the casual relationship between the monetary policy and nifty bank stock. In the study, correlation and regression model is employed to test the effects of the monetary policy and nifty bank stock from 2011 to 2017 on the montly basis. For the purpose of conducting the research, NSE nifty stock prices are used as dependable variable. While the the monetary policy is independent variable.

To begin with, absolute value of data has been taken from the internet. Than the coefficient of correlation between the two variables was computed, which indicated slightly negative correlation between them. Regression statistics was applied on the data, which shows the monetary affects the nifty bank stock negatively in the long run and play a dominant role in affecting it.

7.2 Recommendation.

Based on the above study , it is clearly observed that in the long run the monetary policy has the great impact on the nifty bank stock prices. The investors are likely to hold the stock when the rate are continuously being decreased. As the stock perform negatively with reference to the monetary policy.

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