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A Study on the Volatility and Return with Reference to Stocks of Bank Nifty

Rohith U. J
Bhavan's Royal Institute of Management,
Kochi, Kerala
rohithuj83@gmail.com

Abstract: ***Study on stock market trends has been an area of vast interest both for who wish to make profit by trading stock in the stock market. India is one of the emerging economies, which has witnessed significant developments in the stock markets during the liberalization policy initiated by the government. However, investing in banking shares include high risks which can be guided but not controlled. The banking sector is the backbone of country's economy. This sector has given very good return to the investors in the past. But the recent financial crisis has proved, that the Banking stocks tend to be more volatile than other stocks. This paper is a humble attempt to measure the volatility of the Bank index stocks and compare it with that of the volatility of NIFTY. Stock markets, in general, are considered volatile and volatility plays a key role in measuring the risk-return trade-offs. Estimating volatility enables the pricing of securities and, understanding stock market volatility or individual stock price volatility enables good decisions on the part of investors. Investors who are risk-averse would not be happy to invest in a highly fluctuating stock, whereas those with a thirst for riskiness would happily invest in a highly volatile market. The study evaluates the performance of banking stocks mainly to identify the required rate of return and risk of a particular stock based upon different risk elements prevailing in the market and other economic factors***.

Keywords: Volatility, Stocks of Bank Nifty, Financial Crisis.

INTRODUCTION

Indian banking industry, the backbone of the country's economy, has always played a positive key role in prevention the economic disaster from reaching horrible volume in the country. The risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. The Risk and Return are the two faces of the Investment coin. The ultimate goal of any investment is to maximize returns and minimize risk. The attitude of investors is they wanted to earn a maximum return but they are not willing to take the risk. But practically risk and return go hand in hand. Higher the risk, higher the expected return and vice versa. The risk is more in certain investments like equity stock. Risk means earning less than what you expected from a given Investment or losing part of what you invested. In other words, Risk means "variability of returns." It is the probability of having adverse or low returns as compared to the expected returns. Risk can be broadly classified into systematic risk (Market risk) and unsystematic risk (company risk). Systematic risk is that portion of total variability which is attributed to economy wide factors like Interest rate, Inflation, GDP growth rate, Business cycles, Balance of payment positions, the exchange rate of the currency, Government policies etc. The unsystematic risk is that portion of total risk which is attributed to Industry or company specific factors like inefficient management, low quality product, new product failure, the emergence of a competitor, labor strike etc. the unsystematic risk can be eliminated through proper diversification of investment. But unsystematic risk is non-diversifiable in nature. It has to be borne by all the investors.

The Equity market in India is extremely volatile. Equity Markets across the world are volatile but India has a higher level of volatility. The stock market risk is the tendency of stock prices to decrease due to the change in the value of the market risk factors. Value of units or shares is directly related to the market value of those investments held by the stock market. Though banking and financial services sector funds have accelerated on generating superior risk adjusted returns until now, they suffer from the risk of portfolio concentration as an single stock account for equity portfolio in some gear.

The market value of those investments will go up and down depending on the financial performance of the issuers and general economic, political, tax and market conditions.

Banks play an important role in supporting economic growth and have proved to be more volatile than the pure diversified equity funds which make some of them a high risk proposition. Equity investment includes high risk at the same time it earns higher return unusually high returns may not be sustainable. Since the banking industry is under the control of Reserve Bank of India (RBI), it is adversely used as the tool to control the external problems like inflation, interest rate, and money supply. Because of this, there is a high instability in the share price that reduces the real investor's interest. This study is structured to analyses the performance of the selected shares in the banking industry to reveal the risk and return in a particular period of time and the investor's perception towards the Banking industry. In this study, the Bank index is considered to reflect the banking industry of the nation.

National Stock Exchange Index (NIFTY)
National Stock Exchange is the leading index of the Indian Stock market, popularly known as NIFTY 50 or Standard & Poor's CRISIL NSE Index(S&P CNX Nifty). Nifty stocks consist of 23 different economic sectors. One of the sectors which have active trading in the National Stock Exchange is the Banking sector.

Bank Index
Popularly known as the Bank Nifty or CNX Bank Index provides an overview of the stock market performance of the Indian banking sector. It comprises 12 banks which are considered the most liquid and large capitalized stocks. The index serves as a benchmark and enables investors to easily understand and make rightful decisions with regards to investments in the banking sectors as it reflects the performance of banks in India. The list of the 12 banks appearing in the Bank Nifty is given below:

1. Axis Bank Ltd.
2. Bank of Baroda
3. Bank of India
4. Canara Bank
5. Federal Bank Ltd.
6. HDFC Bank Ltd.
7. ICICI Bank Ltd.
8. IndusInd Bank Ltd.
9. Kotak Mahindra Bank Ltd.
10. Punjab National Bank
11. State Bank of India
12. Yes Bank Ltd.

REVIEW OF LITERATURE

Raghavan. R. S (2000) commented on the risk perceptions and the risk measure parameters. He opined that risk measures are related to the return measurements. While risks can only be contained and cannot be eliminated altogether, there is no doubt that some risks have to be taken to get adequate returns. Returns can be increased or made quicker by taking more financial and operating risks. But the environmental risks typically do not increase returns but serve as constraints on return and risk decisions. He concluded that the process of retaining the levels of risks within the desirable levels must be practiced in the daily operations.

Manickaraj & Loganathan, (2004) examined Beta's relevance as a measure of risk in Indian context was done. They analyzed the betas of eight equity shares listed in BSE between 1990 &1996, they found that no security has negative beta and betas have the regression tendency of moving towards the mean beta of 1.

Rudra&Jaydev (2009), the sensitivity of bank stocks to Risk management has been analyzed. The general inference from their analysis is that the returns of Indian bank stocks appear to be sensitive to the risk management capability of banks. They suggested the banks focus on risk management techniques to enhance their shareholder value.

Shanmugasundram and Benedict (2013) conducted a study on the volatility of the sectoral indices with reference to NSE. In this study, the risk relationship in different time intervals of the CNX NIFTY index and five sectoral indices including Auto index, Bank index, FMCG index, Infrastructure index and IT index was examined. The results of the study did not support any significant difference across the risk of sectoral indices and NIFTY.

Anbukarasi and Nithya (2014) made an attempt to bring out the correlation between select stock indices and the NIFTY from January 2013 to June 2014. It was found that there was a significant correlation of all the selected indices except Metal, Pharma, Bank and Realty indices. It was also concluded that the Pharma and Bank indices have a strong impact on NIFTY movements.

William and Vimala (2015) examined the volatility of equity share price of five select private banks listed on the National Stock Exchange. Considering that banks play an important role in the economy of India, an attempt was made to analyze the market volatility of the selected banks by using mean, standard deviation and beta values using the opening and closing prices. It was concluded that the volatility of the closing prices was similar for all the five banks selected for the study.

Dr. Prema Chandran (2016) made an attempt to measure the volatility of the Bank index stocks and compare it with that of the volatility of NIFTY. It was found that the stock appearing in the Bank index are more volatile than the NSE NIFTY. Banks in

India as in any country are highly regulated and the macro level decisions of the economy could have a direct impact on the banking sector.

STATEMENT OF THE PROBLEM

The Indian banking sector has shown strong progress over the last decade and has supported the country's economic growth. It is a growing trend. It has vastly benefitted from the surge in disposable income of individuals in the country. The banking industry in India has the potential to become the fifth largest banking industry in the world by 2020 and third largest by 2025 according to KPMG-CII report, India's banking and financial sector is expanding rapidly. Making an investment in equity stocks of the banking sector is very common among investors. But the recent global financial crisis has proved that the banking and financial sector stocks tend to be more volatile than ever. Currently, we are recovering from a financial crisis that started in 2008 in the United States and then hit Europe. The consequences of this crisis were enormous. For instance; the housing market collapsed, stock prices decreased significantly, the employment rate increased, banks went bankrupt and so did some other companies. In particular, banks had a very important role in determining the crisis. This role was mainly caused by the great problems banks faced. Volatility is an important factor in the economy, it is important to see what happened to it in economic crises and recessions. Banks' volatility is even more interesting because banks are very important in an economy. In this present situation risk and return analysis of selected banking stocks in India is felt highly relevant.

OBJECTIVE OF THE STUDY

The study is done to find out:

- The nature and extent of the relationship between returns and volatility of the Bank Index and the NSE NIFTY.
- To find out if the stock appearing in the Bank index are more or less volatile than the NSE NIFTY.
- To study the bank's stock movement with respect to Bank Nifty.

SCOPE OF THE STUDY

The study covers market risk analysis of banks listed in the Bank Nifty. The Bank's stock prices and Bank Nifty movements for a period of January 2016 to December 2017 has been considered for calculation of Beta's of banks. The betas were compared in terms of periodicity and among the banks to analyze their market risk. There are various other sectors which are not covered in this study. In addition, stock market movements are affected by several other factors that are not discussed in this paper.

RESEARCH METHODOLOGY

The data used in for the study is purely secondary in nature where the daily closing of the NIFTY index and daily closing prices of stock of the banks that appear in the bank index is used. The daily closing prices have been collected from the official website of National stock Exchange (NSE) for a period of two years from January 2016 to March 2017.

For data analysis here the descriptive statistics with regard to daily closing prices average, high and low and the daily returns are used. Volatility is explained using standard deviation and beta. The NIFTY index returns and each of the bank returns has been correlated to see the relationship. An explanation of the terms and method used is given below:

Monthly Returns

To measure monthly returns of the NIFTY index as a percentage between any two months, the difference between closing index value of two months divided by the first month is taken. To measure the monthly return of the 12 bank stock as a percentage between any two months, the difference between the closing price of the individual stock value of the second month and the first month is divided by the closing price of the individual stock of the first month.

Standard Deviation

Volatility is a measure of dispersion. If volatility is high, the risk of the security is considered to be high as well. Here standard deviation is used as a tool to measure volatility. Standard deviation is a measure of dispersion of a set of data from its mean.

Correlation

Correlation is used to find if there is any relationship between the NIFTY index returns and the individual stock returns. In this paper, a one to one correlation using MS Excel is used. The data sets of daily returns of the NIFTY index were correlated to the daily returns of the top 5 banks individually and the correlation coefficient was generated to check if there is a relationship.

Beta

Beta is a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole. Beta is used in the capital asset pricing model (CAPM), which calculates the expected return of an asset based on its beta and expected market returns. Beta is also known as the beta coefficient. Beta represents the tendency of a security's returns to respond to swings in the market. A security's beta is calculated by dividing the covariance the security's returns and the benchmark's returns by the variance of the benchmark's returns over a specified period.

A beta of 1 indicates that the security's price moves with the market. A beta of less than 1 means that the security is theoretically less volatile than the market. A beta of greater than 1 indicates that the security's price is theoretically more volatile than the market.

DATA ANALYSIS AND INTERPRETATION

The banking sector has been on a roll over the last couple of years, throwing up huge opportunities for wealth creation on the way. If the investors invested Rs 1 lakh in the banking index in 2007, your money would have grown to Rs 1.9 lakh today, a compounded annual growth rate (CAGR) of 18% compared to Rs 1.3 lakh which you would have got had you invested in the Nifty index i.e. a CAGR of 7%.

1. Bank Nifty Closing Price

Table: 1

Date	Bank NIFTY Closing Price
16-Jan	15,522.40
16-Feb	13,946.40
16-Mar	16,141.65
16-Apr	16,795.00
16-May	17,620.90
16-Jun	17,935.40
16-Jul	18,953.15
16-Aug	19,787.60
16-Sep	19,285.70
16-Oct	19,523.55
16-Nov	18,627.80
16-Dec	18,177.20
17-Jan	19,515.15
17-Feb	20,607.25
17-Mar	21,444.15
17-Apr	22,358.25
17-May	23,424.80
17-Jun	23,211.20
17-Jul	25,103.65
17-Aug	24,318.40
17-Sep	24,053.00
17-Oct	25,019.35
17-Nov	25,332.40
17-Dec	25,191.95

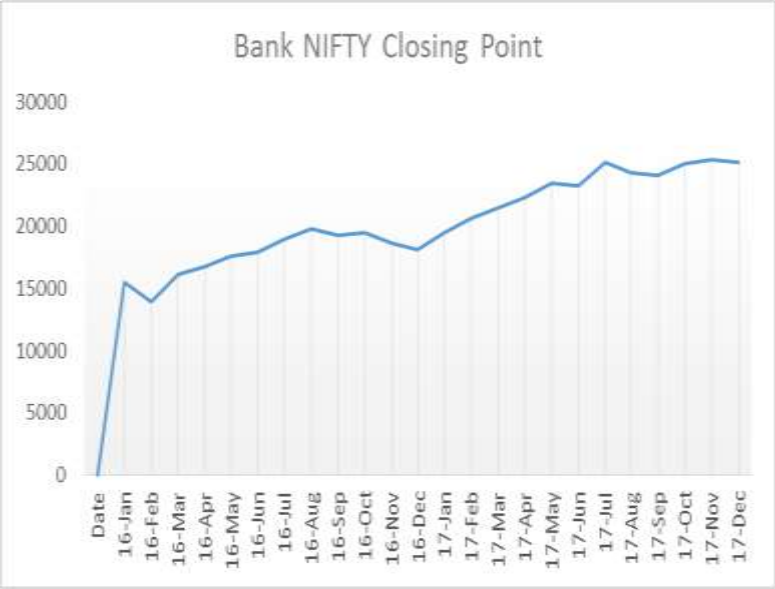

Fig: 1

Interpretation

Data relating to the closing value of the bank nifty from the period of January 2016 to December 2017. It shows that the closing point of bank nifty was a constant growth. From the point of 15522.40 in 2016, it has reached to 25191.95 in 2017 end. That means 38.38% change. Therefor the bank sector indices are one of the good indices among NSE indices to invest.

2. Market Capitalization of Banks Under Bank Nifty

Market capitalization describes the market size of a company. Market capitalization is an equity market segregation used broadly in the investment industry. A company's market capitalization is an important characteristic considered by investment companies and individual investors.

Table: 2

Sl.No	Company Name	Mcap Rs(in Cr)
1	HDFC Bank Ltd.	477,574.25
2	ICICI Bank Ltd.	195,875.64
3	Kotak Mahindra Bank Ltd.	191,380.99
4	State Bank of India	269,967.38
5	Axis Bank Ltd.	127,999.33
6	IndusInd Bank Ltd.	99,478.57
7	Yes Bank Ltd.	70,290.12
8	Federal Bank Ltd.	21,207.09
9	Bank of Baroda	38,723.14
10	Punjab National Bank	37,471.74
11	Bank of India	21,931.87
12	IndusInd Bank	100,121.25

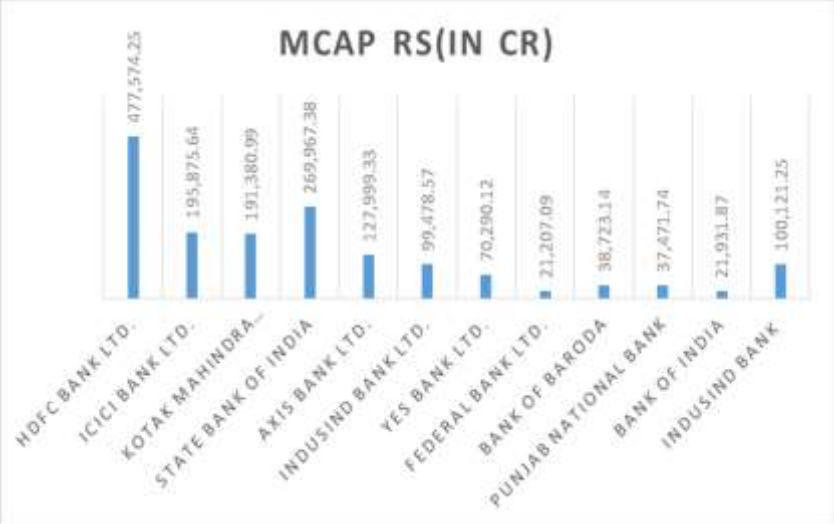

Fig: 2

Interpretation

Among the 12 banks in bank nifty HDFC bank have the highest market capitalization with an amount of INR 4,77,574.25 Crore. That means the stocks of HDFC bank were safer than other with low market capitalization. HDFC bank is an innovative market leader and their stock price can gain significantly through specific market initiatives. The investors who were looking for a long term investment, HDFC bank stocks are an ideal one.

3. One Year Performance Comparison of Sector Indices

4. Table: 3

Sl.No	Sector	Return %
1	Nifty Bank	36.2
2	Nifty Auto	23.4
3	Nifty Energy	41.7
4	Nifty Financial Services	37.78
5	Nifty FMCG	25.8
6	Nifty IT	12.7
7	Nifty Media	26.6
8	Nifty Metal	31.6
9	Nifty PSU Bank	20.1
10	Nifty Pharma	-18.3
11	Nifty Private Bank	36
12	Nifty Realty	94

Fig: 3

Interpretation

Nifty consist of 12 sector indices. Bank Nifty is one among that. When comparing the performance of sector indices Nifty Realty was the top position among the 12 sector indices with an average return of 94%. Bank nifty was in the 3rd position followed by Nifty financial services with an average return of 36.2%. It shows that bank nifty is one of the good indexes that provides good return compare to rest of the sector indices. Investors who look for invest in the index, bank nifty is one of the good options among the 12 nifty sector indices.

4. Average returns of the Index and Bank stocks

The average of monthly returns for the Bank index stocks and Average Bank Nifty returns was calculated. The average returns of the Bank Nifty index for the period Jan 2016 – Dec 2017 was positive (1.956%). Average daily returns for the 12 stock for the corresponding period are presented in Table below.

Table: 4

Name of Index/Stock	Average Return %
Bank Nifty	1.959633237
HDFC Bank Ltd.	1.908289512
ICICI Bank Ltd.	1.319456622
Axis Bank Ltd.	0.964417012
State Bank of India	2.042641296
Kotak Mahindra Bank Ltd.	1.543307152
Bank of Baroda	0.911661247
Bank of India	1.679790817
Canara Bank	2.208797525
IndusInd Bank Ltd	2.348900251
Punjab National Bank	1.583981857
Yes Bank Ltd	2.722265787
Federal Bank	3.360728901

Fig: 4

Interpretation

The average monthly returns of the bank stocks indicate that the returns were similar to the Bank Nifty index average returns. All the stock in the bank index has positive returns for the period mentioned. That means bank stock was performing better and have a good percentage of return. The federal bank had the good percentage of average return among all 12 bank stocks in the market. Federal bank is one of the top growing banking company in India with an average return of 3.36%. Yes, Bank Ltd and IndusInd Bank were the two other banks have the good percentage of average return in the banking sector.

5. Correlation

Correlation analysis is a method of statistical evaluation used to study the strength of a relationship between two, numerically measured, continuous variables. If the correlation is found between two variables it means that when there is a systematic change in one variable, there is also a systematic change in the other; the variables alter together over a certain period of time. If there is correlation found, depending upon the numerical values measured, this can be either positive or negative.

- A positive correlation exists if one variable increases simultaneously with the other, i.e. the high numerical values of one variable relate to the high numerical values of the other.
- A negative correlation exists if one variable decreases when the other increases, i.e. the high numerical values of one variable relate to the low numerical values of the other.

Table: 5

Sl.No	Name of the bank	Correlation With Bank Nifty
1	HDFC Bank	0.938595445
2	ICICI Bank	0.972208829
3	Axis Bank	0.590139754
4	SBI Bank	0.920358683
5	Kotak Mahendra Bank	0.98615401
6	Bank of Baroda	0.514150639
7	Bank of India	0.896960999
8	Canara Bank	0.934373605
9	IndusInd Bank	0.989007805
10	PNB	0.872858128
11	YES Bank	0.934456787
12	FED Bank	0.967650589

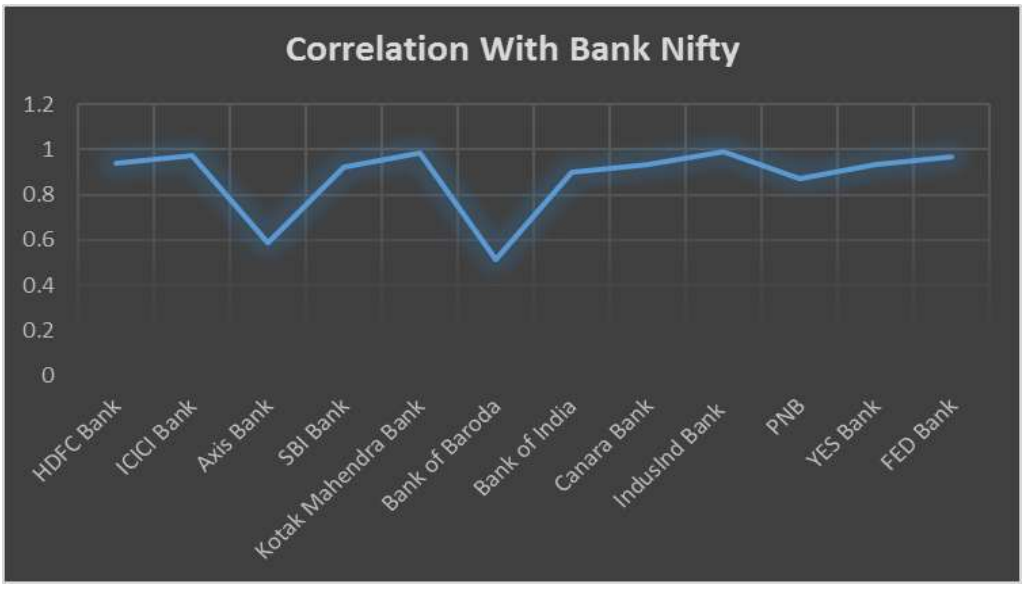

Fig: 5

Interpretation

The correlation statistics between the monthly average returns of the individual stocks of banks with Bank Nifty index shows a positive correlation. Stocks of banks under bank nifty were positively correlated with Bank Nifty. From the table, it is clear that IndusInd bank has a highest correlation (positive) with Bank Nifty index among other 12 banks. Other banks such as Kotak Mahindra Bank, ICICI Bank, Federal Bank have a higher correlation with an above point of +0.95. Only two stocks of Axis Bank and Bank of Baroda have the least correlation with Bank Nifty among 12 banks at a point of +0. 59 and +0.51.

The result shows that more than 80% percentage of stocks in the bank nifty have a positive correlation of more than +0.8 that of Bank Nifty. That means both the Bank Nifty index and stocks of the bank under bank nifty moves together.

6. Standard Deviation

Standard deviation is a measure of the dispersion of a set of data from its mean. It is calculated as the square root of variance by determining the variation between each data point relative to the mean. In finance, the standard deviation is a statistical measurement; when applied to the annual rate of return of an investment, it sheds light on the historical volatility of that investment. The greater the standard deviation of a security, the greater the variance between each price and the mean, indicating a larger price range.

Table: 6

Name of Index/Stock	Average Return %	Standard Deviation
Bank Nifty	1.959633237	24.22711291
HDFC Bank Ltd.	1.908289512	50.95973934
ICICI Bank Ltd.	1.319456622	39.14005768
Axis Bank Ltd.	0.964417012	30.94407322
State Bank of India	2.042641296	40.25384489
Kotak Mahindra Bank Ltd.	1.543307152	24.468765
Bank of Baroda	0.911661247	41.29014576
Bank of India	1.679790817	68.6939819
Canara Bank	2.208797525	56.30282218
IndusInd Bank Ltd	2.348900251	29.19604722
Punjab National Bank	1.583981857	73.85667964
Yes Bank Ltd	2.722265787	45.92451578
Federal Bank	3.360728901	39.08658694

Interpretation

The table shows that the Bank Nifty had the monthly average return of 1.959%. In this table annualized standard deviation of Bank Nifty and stocks of banks listed in the bank nifty were shown. Among the listed bank, Punjab National Bank had the highest standard deviation of 73.856. It reflects that the stocks of Punjab National Bank have the highest fluctuation in its price. Kotak Mahindra Bank had the least standard deviation among the banks listed in the bank nifty.

7. Beta (β) of Bank Stocks

Beta is a measure of a stock's volatility in relation to the market. By definition, the market has a beta of 1.0, and individual stocks are ranked according to how much they deviate from the market. A stock that swings more than the market over time has a beta above 1.0. If a stock moves less than the market, the stock's beta is less than 1.0. High-beta stocks are supposed to be riskier but provide a potential for higher returns; low-beta stocks pose less risk but also lower returns.

Table: 7

Sl. No	Name of Index/Stock	Beta (β) of the Index/Stock
1	HDFC Bank Ltd.	1.025474168
2	ICICI Bank Ltd.	1.32223814
3	Axis Bank Ltd.	0.929140006
4	State Bank of India	1.260610359
5	Kotak Mahindra Bank Ltd.	0.834658531
6	Bank of Baroda	0.486115337
7	Bank of India	1.416328329
8	Canara Bank	1.629051624
9	IndusInd Bank Ltd	1.001262684
10	Punjab National Bank	1.875456667
11	Yes Bank Ltd	1.277321205
12	Federal Bank	0.702756858

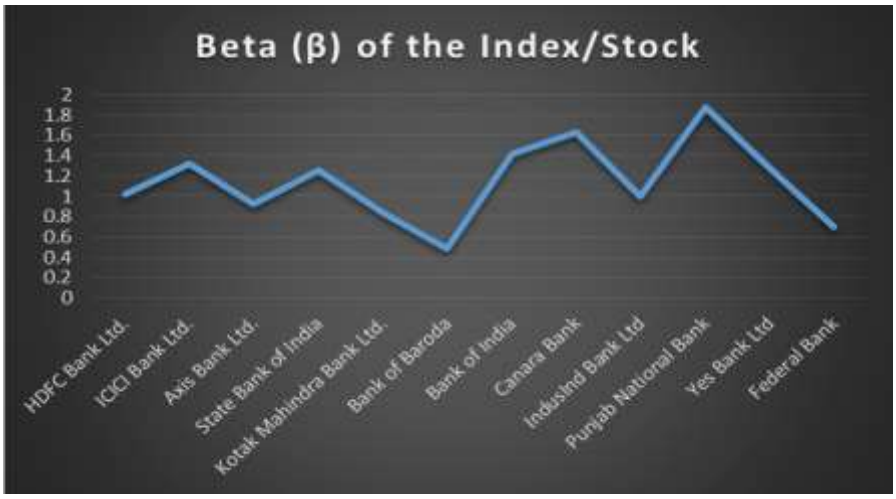

Fig: 6

Interpretation

As mentioned earlier beta reflects the volatility of the respective stock in relation to the market movements which is in this case considered as Bank NIFTY index movements, as NIFTY reflects market movement. The table shows that stocks listed under bank nifty have higher volatility during the period. Most of the stocks under bank nifty have beta value above 1 which shows the riskiness of the stocks in the market. Punjab National Bank shows the higher beta value of 1.87 followed by Canara Bank and Bank of India with a beta value of 1.62 and 1.41 respectively. When the beta value is above 1.3 the stocks are considered as high risky. Bank of Baroda had the lowest beta value of 0.48 followed by Federal Bank. The stocks with low beta are considered as low risky stocks. When the stocks have low risk, the return will also be low. This gives a clear indication that all banks except Bank of Baroda, Federal Bank, Kotak Mahindra bank and Axis bank were more volatile than the market.

FINDINGS AND CONCLUSION

Stock markets, in general, are considered volatile and volatility plays a key role in measuring the risk –return trade-offs. While there are so many factors that make the stock market volatile, this study attempted to measure the volatility of the banking sector. Estimation of volatility helps in the pricing of securities and in decision making. The main objective of the paper was to present the nature of stocks listed in the Bank Nifty.

Findings

- When comparing the performance of sector indices, Bank nifty was in the 3rd position followed by Nifty financial services with an average return of 36.2%.
- The average monthly returns of the bank stocks indicate that the returns were similar to the Bank Nifty index average returns.
- The federal bank had the good percentage of average return among all 12 bank stocks in the market. Federal bank is one of the top growing banking company in India with an average return of 3.36%.
- Stocks in the bank nifty have a positive correlation of more than +0.8 that of Bank Nifty. That means both the Bank Nifty index and stocks of the bank under bank nifty moves together.
- Stocks listed under bank nifty have higher volatility. Stocks under bank nifty were considered as highly fluctuated stocks.
- Punjab National Bank shows the higher beta value of 1.87 followed by Canara Bank and Bank of India with a beta value of 1.62 and 1.41 respectively.
- Market risk of Punjab National Bank, Canara Bank and Bank of India were higher compared to other selected bank.

CONCLUSION

Stock markets, in general, are considered volatile and volatility plays a key role in measuring the risk –return trade-offs. Stock markets are sometimes highly volatile. It depends on the investors how he put the money in different securities to maximize his wealth. An investor should be in a position to analyze the various investment options available to him and thus minimize the risk and maximize the returns.

The market risk of the selected nationalized banks was analyzed and compared by the Beta coefficient. Beta is useful for comparing the relative systematic risk of different stocks & in practice; it is used by investors to judge a stock's riskiness. Investors should keep the risk associated with the return from the portfolio were a risk and return is positively correlated. Banks listed in the Bank Nifty have high volatility for the period mentioned. Beta is a statistical measure of how much a security or a stock index fluctuates with respect to the broader market. A beta of 1.3 means the security will fluctuate 30% more than market either way. Therefore, if the bank stocks are expected to do well in future, their gains will be higher than that of the broader market.

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