A STUDY ON THE VOLATILIY IN STOCK MARKET- WITH REFERNCE TO SELECTED BANKS, BANK NIFTT INDEX AND NIFTY 50

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ABSTRACT

Analysis of Stock market volatility is very critical process in investment management for generating targeted profits and constructing efficient portfolios. Stock market volatility measured in different methods few are simple like standard deviation and others are complex in nature. In the present study the correlation and volatility of selected banks is investigated and compared with industry index (Bank Nifty index) and whole market index (NIFTY50) by applying the correlation and standard deviation tools for the period of one year (30-November 2021 to 31-October 2022). The statistical result evidence that, price volatility in ICICI, HDFC, Indusind and Bank of Baroda is higher than bank nifty index and nifty 50 index. Hence, investment in these banks is subject to high risk/returns than indices. However, HDFC has weak positive correlation with industry index and market index which indicates less impact of industry index and market index volatility.

Key words: stock market, volatility, bank index, NIFTY 50, security volatility
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INTRODUCTION

Stock markets emerged as leading platforms in providing accessibility of direct finance by the corporate sector and getting ownership by the public in the corporate companies. However, stock market investment mechanism is characterized by complex analysis and investment process, regular monitoring, observation of domestic and global trends, technical knowledge for entry and exit decisions and subject to high regulation etcGary E. Mullins(2016). The investors need careful observation over price movements and have to revise their trading and investment decision to maximize the profits and minimize the loss or risk. However, price fluctuation in stock market is caused by various dynamic factors such as economic, political, business, technological, social, Psychology of the investors, exports and imports, trade cycles etc. Thus, through knowledge on these aspects give clear picture and road map for investment decision and construct an efficient portfolio. However, volatility is popular term in stock market which causes scope for the both high profits and losses. The volatility refers to the price variation in the stock market regarding specific share, index, commodity and currency. The volatility in stock equity market is lower than volatility in derivative markets due to circuit breakers mechanism and change to lower losses. In derivative market volatility gives scope to erode entire investment in short period or returns abnormal profits in very short period. Thus,

volatility is very terrific world for investors and attractive word for speculator to gain short term profits or losses. Thus, in the present study volatility of the banking industry is examined in the NSE of India.

CONCEPTUAL FRAMEWORK

The high price volatility in stock market brings returns/ risk to the investor's investments. The daily participation and trading activities of the investors causes the changes in the prices of stocks gives new value them. If investors tend to buy more it price moves up, in contrast, if investors tend to sell more than price moves down, however, both causes volatility in the stock marketMamtha, D. & Srinivasan, Sakthi. (2015). Volatility of a specific asset is measured by the variability in the price over time measured as the variance or the standard deviation of the returns on the asset. This indicates that higher standard deviation indicates high volatile of the an asset. This is also a measure of the riskiness of the asset since the more variation it has the more unpredictability associated with its returns, Mishra, Sisira (2011). In Madhavan (1992) words volatility means price variance thus, low volatility preferred to reduce unnecessary risk borne by investors from high price variation.

REVIEW OF LITERATURE

Palanisamy (2017) examined the volatility and impact of derivatives on stock market volatility in Indian capital market. The sample size comprises of 50 individual stocks and two indices of NSE for the period of 14 years four months i.e 2001 to 2016. The study adopted ADF test, ARCH, GARCH models linear relation models. The study found no impact of individual stock futures on price discovery and also inconclusive impact on volatility. This is results is in line with the results of similar research studies. Ravinder Kaur (2015) found the positive effect of IIP, money supply and exchange rate and negative effect of inflation on the SENSEX. The study found high volatility in stock market due to bad news compared to positive surprises. The found the foreign earnings, liquidity and profitability affects share prices positively while leverage affects the negatively. The study adopted statistical tools such as descriptive, unit root tests, vector error correction model, correlation analysis GARCH models, fixed effect model, oscillators, ANOVA, t-test, exploratory factor analysis and cluster analysis. Saji George and Srinivasa Suresh P(2015) opined that high volatility in prices and volume of stocks in global markets caused by increase in noise trading by retail investors. Their study examined the retail investor's behavior in creation of noise in stock liquidity and price through analyzing the daily buying and selling activities of selected scripts in Indian stock markets. The study witnessed convincing evidence of noise trading in Indian equity market. Bashir Ahmad Joo&Zahoor Ahmad Mir (2014) examined the interrelationship between FIIs flow and volatility of NIFTY and SENSEX. The study collected the monthly data for 15 years i.e. 1999-2013. The study adopted ADF, means, variation, standard deviation, correlation and GARCH model. The study found significant impact of FIIs low on the volatility of NIFY and SENSEX during the study period. The study helps in prediction of stock market volatility and taking investment decisions.

RESEARCH PROBLEM

The earlier research studies have been focused on the different aspects of the stock markets such as stock market risk and returns, fundamental analysis, technical analysis, regulation, investor behavior etc. However, few studies observed on the stock volatility in India in general and with banking sector in particular. Thus, present study fulfills this gap.

OBJECTIVES OF THE STUDY:

- To investigate the correlation between share prices of selected banks and indices
- To examine the volatility of share prices of selected banks and indices
- To find the risk and returns of selected banks share prices and indices

HYPOTHESIS: The study examined the following alternative hypothesis.

H_1:The HDFC bank share prices are highly volatile than Nifty bank index
H_2:The ICICI banks share prices are highly volatile than Nifty bank index
H_3:The Indusind banks share prices are highly volatile than Nifty bank index
H_4:The BOB banks share prices are highly volatile than Nifty bank index
H_5:The HDFC bank share prices are highly volatile than Nifty50 index
H_6:The ICICI banks share prices are highly volatile than Nifty 50index
H_7:The Indusind banks share prices are highly volatile than Nifty50 index
H_8:The BOB banks share prices are highly volatile than Nifty50 index

RESEARCH METHODOLOGY

Present study is purely based on the secondary data gather from the sources of national stock exchange(NSE) India, SEBI, earlier research articles, seminar and conference papers. In the present study randomly four banks are selected as sample size such as HDFC bank, ICIC bank, Indusind bank and Bank of Baroda, these are compared with Bank nifty index and NIFTY50 index returns. In the study monthly returns of the selected banks and indices are calculated for one year (November 2021 to October 2022) and considered research variables. The study adopted correlation, regression and standard deviation as research analysis techniques.

STATISTICAL TECHNIQUES AND ADOPTION:

Correlation used to examine the presence of a linear relationship between two variables providing certain assumptions about the data are satisfied. The results of the analysis, however, need to be interpreted with care, particularly when looking for a causal relationship. The following correlation table used in the present study.

Correlation results	Interpretation
1	Perfect positive correlation
0.75 to 0.99	Strong positive correlation
0.50 to 0.75	Above average positive correlation
0.50	Average positive correlation
0.25 to 0.50	Below average positive correlation
0.01 to 0.25	Weak positive correlation
0	No correlation
-0.25	Weak negative correlation
-0.25 to -0.50	Below average negative correlation
0.50	Average negative correlation
-0.50 to -0.75	Above average negative correlation
-0.75-0.99	Strong negative correlation
-0.1	Perfect negative correlation

Correlation coefficient Formula:

$$r = \frac{n\,(\sum xy) \;-\; (\sum x)\,(\sum y)}{\sqrt{(n\sum_X 2 - (\sum_x)2)\quad (n\sum_y 2 - (\sum_y)2)}}$$

Regression analysis is one of the most commonly used statistical techniques in social and behavioral sciences as well as in physical sciences which involves identifying and evaluating the relationship between a dependent variable and one or more independent variables, which are also called predictor or explanatory variables. It is particularly useful for assess and adjusting for confounding. Model of the relationship is hypothesized and estimates of the parameter values are used to develop an estimated regression equation.

REGRESSION FORMULA:

$$\beta = \frac{n\sum XY - \quad (\sum X)\,(\sum Y)}{n\sum_X 2 - \quad (\sum_X)2}$$

Standard Deviation

A standard deviation (or σ) is a measure of how dispersed the data is in relation to the mean. Low standard deviation means data are clustered around the mean, and high standard deviation indicates data are more spread out.

Standard Deviation Formula:

$$\sigma = \sqrt{\frac{N\sum_X 2 - (\sum_X)2}{N^2}}$$

A standard deviation close to zero indicates that data points are close to the mean, whereas a high or low standard deviation indicates data points are respectively above or below the mean

DATA ANALYSIS

Table No 1: Historical Returns of the selected bank, Banking Index and Nifty 50 (%)

MONTH/ YEAR	HDFC BANK (X_1)	ICICI BANK (X_2)	INDUSIND BANK (X_3)	BOB (X_4)	NIFTY BANK INDEX (Y)	NIFTY 50 (Z)
30-Nov-21	-6.96	-11.14	-28.16	-14.04	-10.23	-5.28
31-Dec-21	-0.95	3.61	0.58	-4.37	-0.60	2.18
31-Jan-22	0.43	6.57	-1.81	32.01	7.03	-0.08
28-Feb-22	-4.00	-5.84	5.57	-1.15	-4.66	-3.15
31-Mar-22	3.09	-1.67	1.60	4.30	0.46	3.99
29-Apr-22	-5.83	1.78	4.61	1.16	-0.78	-2.07
31-May-22	73.10	1.28	-0.18	-9.39	-1.66	-3.03
30-Jun-22	-43.76	-6.06	-18.67	-4.25	-5.81	-4.85
29-Jul-22	6.39	15.75	31.37	20.88	12.17	8.73
30-Aug-22	6.54	8.39	6.57	10.52	5.46	3.50
30-Sep-22	-6.98	-2.85	6.57	1.18	-2.29	-3.74
31-Oct-22	5.30	5.42	-3.59	11.56	6.93	5.37
Source: Computed from excel (NSE)						

STATISTICAL RESULTS OF THE STUDY

Table No 2: HDFC bank, NIFTY bank Index and NIFTY50

	X_1Y	X_1Z	X_1Y	X_1Z
Correlation	0.212	0.147	Weak positive correlation	Weak positive correlation
Regression	0.872	0.848	X_1has low risk than y	X_1has low risk than z
Alpha	1.762	2.086	-----	-----
	X_1	Y	Z	-----
Standard deviation	24.951	6.065	4.346	$X_1$is high volatile than y and z

Table No 3:ICICI bank, NIFTY bank Index and NIFTY50

	X_2Y	X_2Z	X_2Y	X_2Z
Correlation	0.955	0.828	Strong positive correlation	Strong positive correlation
Regression	1.109	1.343	X_2has high risk than y	X_2 has high risk than z
Alpha	0.715	1.093		
	X_2	Y	Z	----
Standard deviation	7.044	6.065	4.346	X is high volatile than y and z

Table No 4: INDUSIND bank, NIFTY bank Index and NIFTY50

	X_3Y	X_3Z	X_3Y	X_3Z
Correlation	0.727	0.657	Above average positive correlation	Above average positive correlation
Regression	1.654	2.086	X_3 has high risk than y	X_3 has high risk than z
Alpha	-0.455	0.097		
	X_3	Y	Z	-----
Standard deviation	13.788	6.065	4.346	X_3 is high volatile than y and z

Table No 5: BOB bank, NIFTY bank Index and NIFTY50

	X_4Y	X_4Z	X_4Y	X_4Z
Correlation	1.481	0.616	Prefect positive correlation	Above average positive correlation
Regression	1.772	1.763	X_4 has high risk than y	X_4 has high risk than z
Alpha	3.147	3.801		
	X	Y	Z	
Standard deviation	12.431	6.065	4.346	X_4 is high volatile than y and z

DISCUSSION ON STATISTICAL RESULTS

- The correlation results support that HDFC Bank has weak positive correlation with Nifty bank index and Nifty 50.The regression results reveals that, HDFC bank is low risk than nifty bank index and nifty 50 index, due to reporting of less than one value.The standard deviation of HDFC bank is higher than both Nifty bank index and Nifty 50 which indicates that HDFC bank is high volatility than two indices.
- The correlation results support that ICICI Bank has strong positive correlation with Nifty bank index and Nifty 50.The regression results reveals that,ICICI bank is high risk than nifty bank index and nifty 50 index, due to reporting of higher than one value.The standard deviation of ICICI bank is higher than both Nifty bank index and Nifty 50 which indicates that ICICI bank is high volatility than two indices.
- The correlation results support that Indusind Bank has above average positive correlation with Nifty bank index and Nifty 50.The regression results reveals that,Indusind bank is high risk than nifty bank index and nifty 50 index, due to reporting of higher than one value.The standard deviation of Indusind bank is higher than both Nifty bank index and Nifty 50 which indicates that Indusind bank is high volatility than two indices.
- The correlation results support that Bank of Baroda has prefect positive correlation with Nifty bank index and above average positive correlation with Nifty 50.The regression results reveals that, BOB is high risk than nifty bank index and nifty 50 index, due to reporting of higher than one value.The standard deviation of BOB is higher than both Nifty bank index and Nifty 50 which indicates that BOB is high volatility than two indices.
- The standard deviation results supported alternative all hypothesis which means all selected banks are highly volatile than NIFTY bank index and NIFTY50 index.

FINDINGS OF THE STUDY

- The study observed that investments, in HDFC Bank are subject to low risk due to having weak positive correlation and less than one regression value with Nifty bank and Nifty 50, however, volatility in HDFC bank is higher volatility than Nifty bank and Nifty 50 indices due to high standard valuation.
- The study found that, investment ICICI bank are subject to high risk due to having strong positive correlation and more than one regression value with Nifty bank and

Nifty 50, Besides, it is highly volatile than Nifty bank and Nifty 50 indices due to having high standard deviation

- The study investigated that, investments in Indusind Bank are subject to high risk due to having above average positive correlation and high regression value with Nifty bank and Nifty fifty. Besides, the study found that Indusind bank are highly volatile than nifty bank and nifty 50 indices due to high standard deviation value.
- The study found that, investments in Bank of Baroda are subject to high risk due to having of perfect positive correlation with Nifty Bank and above average positive correlation with Nifty fifty. The study observed that Bank of Baroda, is highly volatile than Nifty Bank and Nifty fifty indices due to high standard deviation.

CONCLUSION

Stock market volatility analysis is very critical component in investment management for generating targeted profits and constructing efficient portfolios. However, stock market volatility measured in different methods few are simple like standard deviation and others are complex mode. In the present study the correlation and volatility of selected banks is investigated and compared with industry index (Bank Nifty index) and whole market index (NIFTY50) by applying the correlation and standard deviation tools for the period of one year. The statistical result evidence that, price volatility in ICICI, HDFC, Indusind and Bank of Baroda is higher than bank nifty index and nifty 50 index. Hence, investment in these banks is subject to high risk/returns than indices. However, HDFC has weak positive correlation with industry index and market index which indicates less impact industry index and market index volatility. The statistical results supported that individual selected banks securities are highly volatile than banknifty index and nifty 50 returns.

REFERENCES

1. Mamtha, D. & Srinivasan, Sakthi. (2015). Stock Market Volatility – Conceptual Perspective through Literature Survey. Mediterranean Journal of Social Sciences. 7. 10.5901/mjss.2016.v7n1p208.
2. Mishra, Sisira. (2011). Volatility in Indian Stock Markets. SSRN Electronic Journal. 10.2139/ssrn.1788306.
3. Madhavan, A., 1992. “Trading mechanisms in securities markets”, Journal of Finance, XLVII (2), 607-641.
4. Palanisamy (2017), Impact Of Financial Derivatives On Stock Market Volatility In India, Department Of Commerce Chikkanna Government Arts College, Tiruppur, Tamilnadu
5. Ravinderkaur (2015), price behaviour of selected sensex stocks: fundamental and technical analyses, department of management studies, central university of haryanamahendergarh.
6. Saji George & Srinivasa Suresh P(2015) Noise Trading: An Analysis Of Retail Trading In The Indian Equity Market, Indian Journal Of Research In Capital Markets, Volume 2, Issue 1.
7. Bashir Ahmad Joo&Zahoor Ahmad Mir (2014), Impact of FIIs Investment on Volatility of Indian Stock Market: An Empirical Investigation, Journal of Business & Economic Policy ISSN 2375-0766 (Print) 2375-0774 (Online) Vol. 1, No. 2
8. Gary E. Mullins , Stock Market Volatility: Measures and Results.
9. Hussain, Sartaj and Murthy, K. V. Bhanu and Singh, Amit, Stock Market Volatility: A Review of the Empirical Literature (March 11, 2019). IUJ Journal of Management, Vol.7, Issue 01, May 2019., Available at SSRN: https://ssrn.com/abstract=3418148
10. K Banumathy (2015), R Azhagaiah, Modelling Stock Market Volatility: Evidence from India. Managing Global Transitions, volume 13,
11. D Bhowmik (2013), Stock market volatility: An evaluation, International Journal of Scientific and Research Publications, volume 3, issue 10, p. 1 - 17