

Measurement of Volatility of Selected IT Companies in Context of National Stock Exchange and Assessment of Risk Factors From an Investor's Point of View.

Kanchan Naidu, Ajay Ghangare, Kaushal Chhajer



Abstract: *Volatility is an important aspect for every investor since it provides with an idea about risk and reward chances in investment portfolio. In the last decade, the benchmark indices have gained seven out of ten times, with the election result as a key driver to the market movement. The market gained by not less than 28 percent when UPA came into power after defeating NDA. They however jumped quickly by almost 16 percent when UPA came to power with the assistance of Left back in 2004. The analysts remained bullish on Information sector during this period. This paper investigates and compares the share price volatility of selected Information Technology companies based on their market capitalization in context of Nation Stock Exchange using daily closing price of last 25 months. The average comparison of the sector is understood by the analysis of the companies analysis of the IT sector using mean, beta value and monthly volatility. The paper concludes the inverse relationship between the volatility and returns which would definitely facilitate investors in taking better investment decision and also in earning better returns in the short run.*

Keywords: *Volatility, stock market volatility, volatility forecasting.*

I. INTRODUCTION

Financial markets play important role in providing economic stability to the country. Various aspects of the financial markets like stock returns and volatility have been studied by the researchers from different angles. Volatility forecasting has grabbed attention of most of the academicians in last two decades. (1) Market's volatility has been at a pivotal position when it comes to three important parameters such as asset pricing, asset allocation and risk management. However many books carry assumption that the volatility and correlations are to be a constant factor but it is not so and in reality they indeed vary over time.

This has lead to the need of research of dynamic and distributional characteristics of a market's volatility. (2) Volatility means the spread of all likely upshots of an uncertain variable

(3) Volatility is a different concept than risk. Whenever a researcher or a portfolio manager takes it as uncertainty, it immediately becomes one of the main factors in investment decisions and portfolio making of a client. (4) Share prices of a stock fluctuate on daily basis. This is a continuous process. This change basically incurs due to change in supply and demand. Volatility is an indication of highly liquid stock in nature. Share price is based upon the volatility of the market. Overall an increase in the volatility pushes the share prices higher or lower. Investors have to judge the volatility in the market and accordingly they shift their investment towards less volatile stock. India's Information Technology industry is a combination of two of its components, one being IT Services and the second being Business Process Outsourcing i.e. BPO. This sector has increased its stake from 1.2% in 1998 to 7.7% in 2017 in India's GDP growth. India is recognized as the largest exporter of its IT services to the world. Exports are being dominating the Indian IT industry and contribute around 79% of the industry's total revenue. However, besides this the domestic market is also significant, with robust revenue growth. Investors are obviously been keen on keeping this sector as the main sector for their investment and portfolio creation due to its potential. This has led this paper to put efforts in checking the volatility of the selected top rated IT Firms in past several years. Top Five IT Firms have been selected for research based on the market capitalization. These companies being Tata Consultancy Services, Wipro, Infosys, HCL Technologies and Tech Mahindra are widely known companies.

II. LITERATURE REVIEW

Pratibha Jenifer Andrade and Dr. Manita Shah in their paper on "A study on Volatility through Cross Correlation and Autocorrelation" found out the impact of the NASDAQ and Shanghai Stock Exchange on the BSE for shorter duration. The paper states that the BSE index has come out to be more volatile than NASDAQ and Shanghai Stock Exchange. (5) A. John Williamt and T. Vimala, studied the volatility of the share prices of selected private Banks in National Stock Exchange and observed volatility with the help of mean, standard deviation and beta value using the opening and closing prices. (6)



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Hsiao-fen Chang did comparison of the volatility in share market yields before and after global financial crisis using EGARCH model. He successfully found out the influences on the stock market due to price information.(7)

Banamber Mishra and Matiu Rahman did research on the stock market volatility of Indian and Japanese market. When TGARCH model was implemented it showed that the market impacted asymmetrically due to good and bad news. The returning volatility prolonged in both countries.(8)

Nawaz Ahmada, Rizwan Rahee JolitaVveinhardt and Dalia Streimikienec observed the volatility patterns of share markets of Asia and they also found out the causal relationship between particular share returns and volatility. The result gave the high correlation and volatility trend in the markets in stipulated time period. The technique of ean,standard deviation and coefficient of variation had been used for measuring and ranking motives. (9)

Dr. T. Dulababu did analytical study on volatility of volatility for calculating the volatility in Indian VIX using Z test and Anova model. Consistent volatility for the stipulated period indicated little scope to earn huge returns for those selected period.(10)

A study by Venkataramanaiah on volatility in Indian Stock Market tried to find out the risk involved in financial assets.The study mainly focused on how to regulate the excess volatility in the market. (11)

Dr. Debesh Bhowmik tested multidimensional framework of share market volatility. The relationship between international trade and share market volatility found out with the conclusion that volatility mitigates the volume of trade and enhances current account and capital account deficits.(13)

Thomas C. Chiangshuh-Chyi Doong investigated the empirical analysis of stock returns and volatility using time seris analysis.The research found out that there is a relationship between average returns and level of volatility. Taken the volatility into consideration, four stocks out of selected seven stocks showed significant returns.(14)

Objectives :

1. To Calculate Volatility in Share Price
2. To Understand The Importance of Volatility in Investment Planning
3. To Analyse the Volatility in Selected Companies of IT and FMCG Sector

III. RESEARCH METHODOLOGY :

The importance of this research work lies in understanding the relevance of the calculations and results to investors and help people understand the various causes behind the high or low volatility in stock prices and also make it understand the risk/return pattern of the underlying share. It also signifies the effect on the sector as well as the goodwill of the company itself and assists investors in their investment decision.

Various researches done in this field have concentrated only on examining the impact of macro economic factors and the Comparison of volatility between stock Exchanges rather than Comparing the Volatility of a Single sector listed in the same exchange and examining and analyzing them using market information.

The scope of the research has been selected as Information Technology sector. Five top most companies have been

selected based on their market capitalization which are listed on National Stock exchange and the period for studying this stock was considered to be 25 months starting from 1 January 2017 to 31 January 2019.

Secondary data is used for research which is taken from websites like Yahoo Finance, and National Stock exchange website. The Companies are selected on the basis of their sectors and the Market Capitalization.

The daily Closing Price of last 25 months is collected in ascending order and then the following statistics are calculated.

Mean Monthly Share Price

Mean Monthly Return

Beta Value

Monthly Volatility

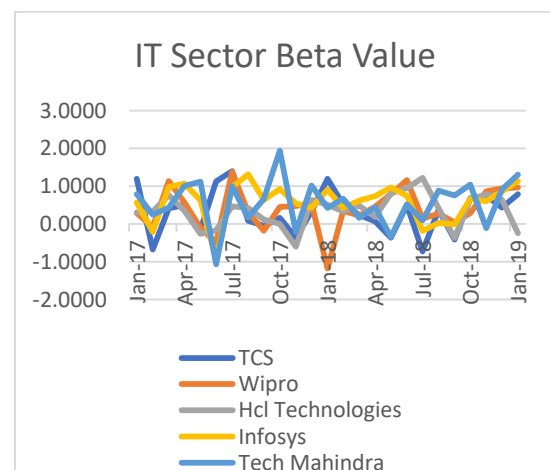
Each Company and the NIFTY (index) is Analysed of the above mentioned data-sets by the use of graphs.

The Average Comparison of the sector is understood by the analysis of the companies analyses of the respective sectors. The Comparison of the sectors will be done by using a constant which is NIFTY Index (NSE).

We have co-related the Volatility and the Monthly Average Returns of the Company to establish a relationship between the Volatility.

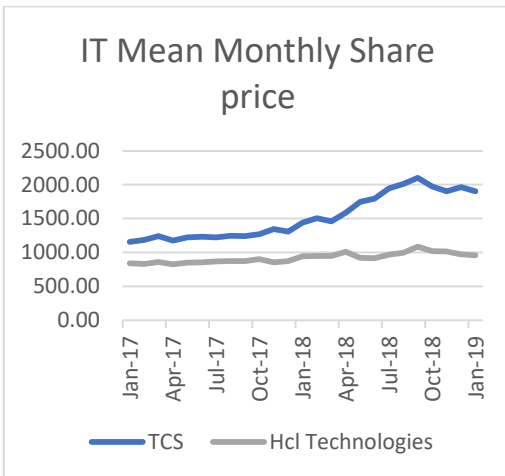
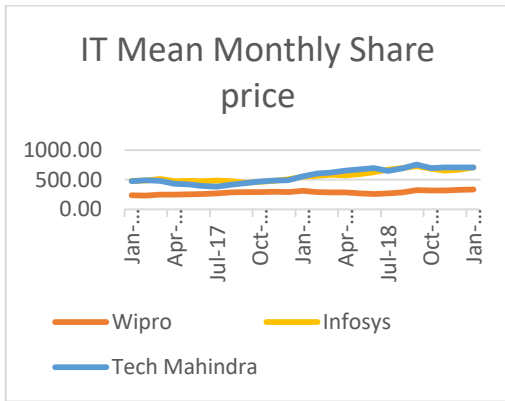
IV. DATA INTERPRETATION

The below chart shows the Beta Value of the IT companies with the National Stock Exchange Benchmark Index "NIFTY". The Beta Value of the IT sector have huge swings in February, June, October-2017 and July 2018, and the majority of the swings is prevalent in all the stock but it is more diverse and spreaded out across the period of the study.



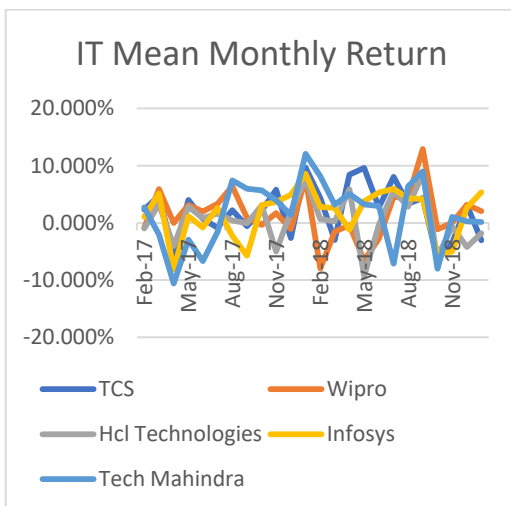
Key Highlights

- 1.Tech Mahindra has the largest Swings and moments during the period of study.
- 2.The graph of HCL Technologies shows usually perfectly Elastic in nature.



Key Highlights:

TCS and Tech Mahindra are the largest Gainers during the Period of study.
HCL Technologies Growth has been slow during the same Period.
The share prices have grown of each of the company.



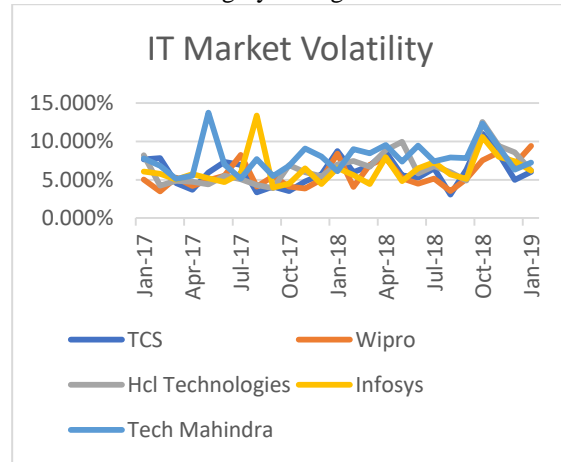
Interpretation:

The Above Graph shows the return of the monthly returns of the share-price of IT Sector Companies and the Returns have been negative at many instances during the Period of the study and also it reaches its peak in January 2018 and in September 2018 of 10-12%. The IT sectors returns are similar across the companies of the Sector. Its sector

Returns and Risk is dependent on the Foreign Relation, as the major client/buyer of the Indian IT Sector is the United States and European Countries, and during the last two years the President Trump and his Policies of Isolationist and Termination of H1B Visa have put Pressure on the IT Sector.

Key Highlights

Returns are similar Across the sector
TCS Returns was highly Swing.

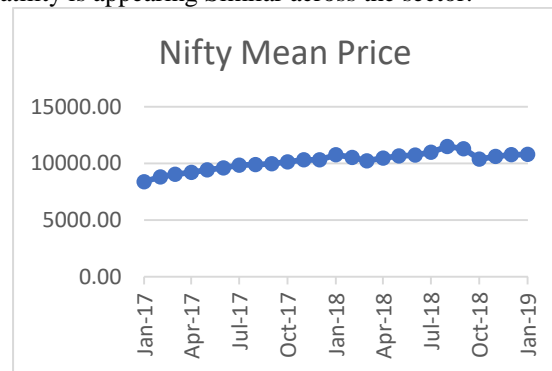


Interpretation:

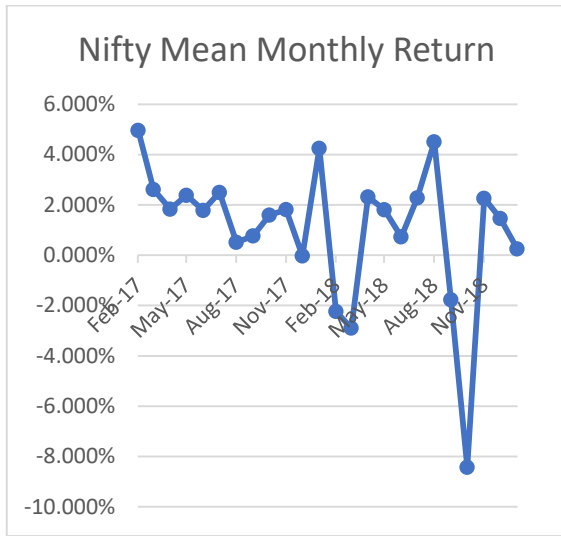
The above graph shows the Monthly Volatility of the Information Technologies companies, Tech Mahindra is the most volatile stock in IT sector with Average of 7.81% and Wipro is the Least Volatile with average of 5.67, the Volatility of the Sector is appearing to be mostly concentrated in the range of 5% to 9 % With Peaks reaching up to 14%.

Key Highlights:

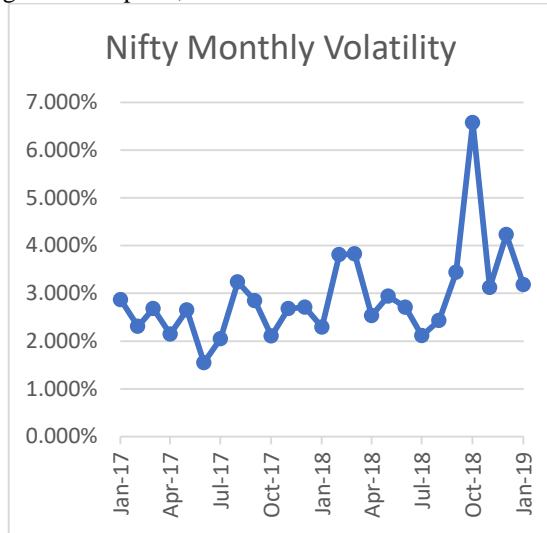
Most Volatile stock was Tech Mahindra.
Least Volatile Stock was Wipro.
Volatility is appearing Similar across the sector.



The Nifty Index Has Grown By 128.85% During the Period of the study with a Drop in the October 2018 which was led to a 2.81% Fall in the Market Price.



Nifty saw the largest Drop in Returns in the month of September 2018 and October 2018. Due to falling rupee, rising crude oil price, United states and china Trade war.



The Volatility of the Index is Beneficial and contained between the range of 3-6 % and does not show any large up and downs expect the month of October which saw the largest drop in 10 years.

V. ANALYSIS AND CONCLUSION

Beta Value

The IT Sector is less stable with beta value in the range of 1 - 1.5 as it signifies the Co-relation between the Individual Security and the market and how does it react. IT sector companies are showing huge changes in comparison to NIFTY and is relatively less perfectly elastic in nature.

Mean Monthly Return

The returns of the IT sector have been More volatile with negative return in 12 Months out of the 25 months of the Study and the largest monthly return was given by the Wipro in the month of September of 12%.

In the same period the Nifty Was rising between the range of 1- 5 % and given negative return only in 2 instances.

VI. MONTHLY VOLATILITY

Volatility of the IT Sector is been concentrated between the 5-8% with the Peaks reaching up to 14% multiple times during the Period of the study. It was observed that the Sector's Volatility was high in the Period of the October and November 2018 .whereas the Volatility of the NIFTY index have been averaged between 2-3.5% but in October 2018 it reached 6% due to the October crash.

VII. VOLATILITY AND RETURN ANALYSIS

By Comparing the graphs (Mean Monthly returns and the monthly Volatility), it is possible to develop a Correlation between the returns and Volatility, Which can assists investors for getting better returns in short-term investment by calculating implied volatility and finding Better options and avenues for investing in the short period.

The IT sector mean Monthly Returns Show the fall in the returns in the February 2017, September 2017, November 2017, Feb 2018, May 2018 and October 2018, But the Volatility was high in months May 2017, August 2017 and high levels of volatility of 10% till the October 2018 and the rise of volatility Up to the 12% In the month of October 2018,

Since with the increase in volatility, there is an increase in the risk due to which many investors sell their investments which lead to fall in the share price of the securities ultimately causing the returns to fall.

Thus this research shows the inverse relationship between the Volatility and the Returns after having been done the analysis of volatility and return analysis.

The four important factors that decide volatility of the share are political development, public relation hits and disasters, economic indicators and overseas conditions.

It is evident from the study that the volatility of Information Technology sector is relatively more volatile and have given positive returns for the majority of months during the period of study and it can provide higher returns but it is mainly dependent on the overseas development and thus is more risky for investors.

There is an inverse relationship between the Volatility and returns which can help the investor to track and make better investment decision, to earn better returns in the short run.

REFERENCES

1. Poon, S.H. (2005). A Practical Guide to Forecasting Financial Market Volatility. West Sussex. John Wiley and Sons.
2. Bollerslev, T., Chou, R.Y., Kroner, K.F., 1992. ARCH modeling in finance: a selective review of the theory and empirical evidence. Journal of Econometrics 52, 5–59.
3. Poon, S.H. (2005). A Practical Guide to Forecasting Financial Market Volatility. West Sussex. John Wiley and Sons.
4. Poon, S.H., & Granger, C. (2003). Forecasting volatility in financial markets: A review. Journal of Economic Literature, 41(2), 478-539.
5. Mrs. Pratibha Jenifer Andrade, Dr. Manita D. Shah " A study on Volatility through Cross Correlation and Autocorrelation: Evidence from NASDAQ, BSE and Shanghai Stock Markets," Pacific Business Review International Volume 6, Issue 10, April 2014
6. A JOHN WILLIAM, T. VIMALA "A STUDY ON EQUITY SHARE PRICE VOLATILITY OF SELECTED PRIVATE BANKS IN (NSE) STOCK EXCHANGE" IMPACT: International Journal of Research in Applied, Natural



and Social Sciences Vol. 3, Issue 7, Jul 2015, 87-96

7. Hsiao-fen Chang "An international Comparison of Volatility in Stock Market Returns Prior and Post Global Financial Crisis" 2012 International Conference on Economics, Business and Marketing Management IPEDR vol.29 (2012) © (2012) IACSIT Press, Singapore
8. Banamber Mishra, Matiur Rahman "Dynamics Of Stock Market Return Volatility: Evidence From The Daily Data Of India And Japan" International Business & Economics Research Journal – May 2010 Volume 9, Number 5.
9. Nawaz Ahmad , Rizwan Raheem Ahmed, Jolita Vveinhardt, Dalia Streimikiene, "Empirical Analysis Of Stock Returns And Volatility: Evidence From Asian Stock Markets" Echnological And Economic Development Of Economy 2016 Volume 22(6): 808–829
10. Dr. T. Dulababu "AN ANALYTICAL STUDY ON VOLATILITY OF VOLATILITY" ELK ASIA PACIFIC JOURNAL OF FINANCE AND RISK MANAGEMENT SSN 2349-2325 (Online); DOI: 10.16962/EAPJFRM/issn.2349-2325/2015; Volume 8 Issue 2 (2017)
11. Malepati, Venkataramanaiah, A Study on Volatility in Indian Stock Market (December 28, 2016). Available at SRN: <http://dx.doi.org/10.2139/ssrn.2890890>
12. Yadav, Sameer. (2017). STOCK MARKET VOLATILITY - A STUDY OF INDIAN STOCK MARKET. Global Journal for Research Analysis. 6. 629-632.
13. Dr. Debesh Bhowmik, " STOCK MARKET VOLATILITY: AN EVALUATION" International Journal of Scientific and Research Publications, Volume 3, Issue 10, October 2013.
14. Doong, Shuh-Chyi & Chiang, Thomas. (2001). Empirical Analysis of Stock Returns and Volatility: Evidence from Seven Asian Stock Markets Based on TAR-GARCH Model. Review of Quantitative Finance and Accounting. 17. 301-18. 10.1023/A:1012296727217.

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