Volatility Analysis of Select Blue Chip Companies Listed in Nifty 50 Index of India

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Abstract

The stock market is sometimes referred to as a "mirror" of the country's economic health since it acts a barometer to measure the economic growth. A potential buyer sets a price, known as an offer price, for a share of stock in the stock market, and a potential seller asks for a fixed price for it. When buying or selling in the market, both the buyer and the seller agree on the asking price or bid price. A trade occurs when the bid and ask prices are equal. As a result, stock valuation is extremely important in day-to-day stock exchange transactions. A company's success is reflected in its stock price. Companies with strong results are thought to have strong demand for their stock, which will drive up the price, and vice versa. Stock price fluctuations are influenced by rumours, speculation, and short-selling, among other manipulation practices. The present research on the above backdrop will make an analysis on the volatility of blue chip companies listed in the NIFTY 50 of National Stock Exchange in India.

Key-words: Stock Market, Capital Formation, Economic Condition, Stock Price, NIFTY 50, National Stock Exchange.

1. Introduction

The primary goal of investing in company shares is to obtain a guaranteed overall return. The investor must carefully evaluate the different risks involved. Apart from the company's success and profitability, investors should be aware of how external factors influence share price fluctuations to make informed investment decisions. The stock price of a company's shares continues to fluctuate due to both internal and external factors. Profitability, dividend pattern, earnings per share, and other internal variables are among them. These considerations are used by investors to assess the share

price objectively. External factors, on the other hand, play an important role in deciding the stock price of a company's securities. Stock market indices, sectoral indices, shifts in the political landscape, government and other governing authority policies, and so on are among these variables. External influences, such as shifts in the political landscape and policies of the government and governing authorities, can have the smallest effect on share prices since they occur infrequently. Stock market indexes, on the other hand, can have a larger effect on share prices, which decide whether the shares are volatile or not.

Economists and finance experts have recently been paying more attention to the relationship between the stock market and the real economy. It's difficult to imagine a world without financial markets these days. The activities in the stock markets and their relationships with the macro economy have assumed considerable importance in the current scenario, which can be characterized by increasing financial market integration and the introduction of various stock market reform initiatives in India. The present value of all potential earnings projections for the firm, divided by the number of shares outstanding, is how financial theorists interpret share price. This means that the company's earning potential is what determines the price. And the earnings that a business could make in the future, the growth that it could achieve, and the time it takes to achieve those targets are all variables that influence the market's estimation of earnings potential. A company's price represents all of the knowledge available about it, as well as its potential to make money in the future. Prices fluctuate as more detail about a company's prospects becomes public. However, potential ambiguity may add to volatility, and psychological factors may intensify the impact of new knowledge. Finally, supply and demand factors may trigger fluctuations that are unrelated to new knowledge. Understanding why prices shift is critical to stock market performance.

2. Problem Discussion

Companies are concentrating their attention on building shareholder value to withstand the intense rivalry that has arisen as a result of increased global competition. As a result, it has become inevitable for the companies to build the wealth and assess them from time to time for their shareholders. Companies will take note from the past information and make managerial decisions that will enhance the shareholder value by keeping track of the value generated year after year. When it comes to stock trading, investors and market analysts depend on financial statement research. According to previous studies, the release of financial data by investors causes the market to respond.

It's worth noting that this market or index correction is due to a lack of financial knowledge. The only difference is the direction taken by the market or index as a result of the change or reaction. Equity share market investors typically invest in the market to earn higher returns than a traditional bank fixed deposit or Treasury bill rate. The desire for a higher return may take the form of dividend income and capital profit. Nonetheless, for an equity shareholder, the movement or volatility of the stock price per share, as well as its course, is critical. Many factors influence the course and movement of the stock price per share. Financial performance metrics, corporate behavior, press releases, economic development, and other variables have been mentioned in the past.

Financial statements serve as tools for communicating a company's results, particularly during the period under consideration. Performance announcements provide the public with a modest but not more relevant informations (Cheol, Resnick, & Sabherwal, 2012). According to Fama (1970), stock prices in a well-organized market depicts the consequence of knowledge based on past, present, and future events. In a well-functioning economy, any earnings or dividend report provides information that has a positive or negative impact on security prices. The potential Investors make use this information to make investment decisions. According to Hirshleifer (2001), Investors are not always logical, and they may not take into account all available information when deciding their investment for future benefits. As an outcome, investment may occur out of this irrationality. On this basis of having stock price as an informatory avenue for investment decisions, the researcher designed the following research objective:

1. To analyse the level of volatility of select blue chip companies listed in NIFTY 50 Index.

3. Methodology of the Study

The following companies are being chosen based on the market capitalization; Bharti Airtel Limited, HDFC Bank Limited, Hindustan Unilever Limited, Housing Development Finance Corporation Limited, ICICI Bank Limited, Infosys Limited, ITC Limited, Kotak Mahindra Bank Limited, Reliance Industries Limited and State Bank of India. The data for the analyses gave been collected from CMIE (Centre for Monitoring Indian Economy) PROWESS database. The share prices of NSE for the companies are from 1st April 2010 to 31st March 2020.

4. Analysis and Discussion

Table 1 - GARCH Results for Market Capitalisation Rate (MCR) of Bharti Airtel

Dependent Variable: Bharti Airtel				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.097	6.06	191340.7	0.000
MCR	3.714	7.492	692.940	0.000
	Variance Equation			
C	0.000	0.000	-30.164	0.000
RESID(-1)^2	**0.061**	**0.050**	**-34.381**	**0.000**
GARCH(-1)	0.932	0.000	9764.411	0.000

Source: Computed Data

Table 1 explains the GARCH result of MCR on Bharti Airtel. MCR, the coefficient of the constant variance term, average returns is 0.097 and its past value is significantly predicted by the series with 0.00 and the coefficients are positive and statistically significant. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (0.00) with the past (0.92) and a component that depends on past errors (0.06), as it establishes the presence of time varying conditional volatility of Bharti Airtel. The result indicates that the persistence of volatility of shocks is large and the effect of shock remains in the forecasts of variance for many periods in the future.

Table 2 - GARCH Results for Market Capitalisation Rate (MCR) of HDFC Bank Ltd

Dependent Variable: HDFCBNK				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.071	5.11	347.665	0.000
MCR	0.059	0.00	278.290	0.000
	Variance Equation			
C	0.367	0.025	-22.248	0.000
RESID(-1)^2	0.221	0.018	13.541	0.000
GARCH(-1)	0.006	0.007	-0.861	0.000

Source: Computed Data

Table 2 illustrates the GARCH result of MCR on HDFC Bank Ltd. Coefficients are positive and statistically significant, this evidences that MCR, the coefficient of the constant variance term, average returns is 0.099882 and its past value significantly predicts the series by 0.071. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level, paving for the GARCH model. The time varying volatility includes a constant (0.367998) plus its past (0.006) and a component which depends on past errors (0.221), shows the presence of time varying conditional volatility of HDFC Bank Ltd and the effect of shock remains in the forecasts of variance for many periods in the future. The results point towards the persistence of volatility of shocks is large.

Table 3 - GARCH results for Market Capitalisation Rate (MCR) of Hindustan Unilever Ltd.

Dependent Variable: HUL				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	4.012	3.876	-1035.678	0.000
MCR	0.100	8.884	112910.2	0.000
	Variance Equation			
C	0.423	0.021	-19.884	0.000
RESID(-1)^2	1.720	0.050	33.848	0.000
GARCH(-1)	0.383	0.043	-31.813	0.000

Source: Computed Data

Table 3 depicts the GARCH results for Market Capitalisation Rate (MCR) of Hindustan Unilever Ltd.. Coefficients are positive and statistically significant, MCR, the coefficient of the constant variance term, average returns is 0.100 and its past value significantly predicts the series by 0.000. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level that gives the result of the GARCH model. The time varying volatility includes a constant (0.423) plus its past (0.383) and a component which depends on past errors (1.720). This clearly establishes the presence of time varying conditional volatility on MCR of HUL. The result shows that the persistence of volatility of shocks is large and the effect of shock remains in the forecasts of variance for many periods in the future.

Table 4 - GARCH results for Market Capitalisation Rate (MCR) of Housing Development Finance Corporation (HDFC) Ltd

Dependent Variable: HDFCLTD				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.001	2.086	-607.926	0.000
MCR	0.126	3.041	59207.3	0.000
	Variance Equation			
C	0.647	0.039	-20.671	0.000
RESID(-1)^2	1.977	0.037	34.813	0.000
GARCH(-1)	1.535	0.060	-30.031	0.000

Source: Computed Data

Table 4 shows the GARCH results for Market Capitalisation Rate (MCR) of Housing Development Finance Corporation (HDFC)Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.001 and its past value significantly predicts the series by 0.126. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (0.647) plus its past (1.535) and a component which depends on past errors (1.977). This clearly establishes the presence of time varying conditional volatility on MCR of HDFCLTD. This result also indicates that the persistence of volatility of shocks is large. It denotes that the effect of shock remains in the forecasts of variance for many periods in the future.

Table 5 - GARCH results for Market Capitalisation Rate (MCR) of ICICI Bank Ltd

Dependent Variable: ICICIBNK				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	5.851	6.496	5365.528	0.000
MCR	0.424	3.652	36.215	0.000
	Variance Equation			
C	2.377	0.012	11.087	0.000
RESID(-1)^2	2.679	0.045	54.467	0.000
GARCH(-1)	1.265	0.066	39.857	0.000

Source: Computed Data

Table 5 elucidates the GARCH results for Market Capitalisation Rate (MCR) of ICICI Bank Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.0000585 and its past value significantly predicts the series by 0.424. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (2.377) plus its past (1.265) and a component which depends on past errors (2.679). This clearly establishes the presence of time varying conditional volatility on MCR of ICICI Bank and indicating that the persistence of volatility of shocks is large and the effect of shock remains in the forecasts of variance for many periods in the future.

Table 6: GARCH results for Market Capitalisation Rate (MCR) of Infosys Ltd

Dependent Variable: INFY				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	6.596	2.964	601.943	0.000
MCR	0.099	2.706	5.702	0.000
	Variance Equation			
C	0.187	0.007	-32.249	0.000
RESID(-1)^2	2.971	0.118	28.84	0.000
GARCH(-1)	2.821	0.111	-32.450	0.000

Source: Computed Data

Table 6 reveals the GARCH results for Market Capitalisation Rate (MCR) of Infosys. Coefficients are positive and statistically significant, the coefficient of the constant variance term, average returns is 0.000659 and its past value significantly predicts the series by 0.099. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (0.187) plus its past (2.821) and a component which depends on past errors (2.971). This clearly establishes the presence of time varying conditional volatility on MCR of INFY. This result also indicates that the persistence of volatility of shocks is large and the effect of shock remains in the forecasts of variance for many periods in the future.

Table 7: GARCH results for Market Capitalisation Rate (MCR) of ITC Ltd

Dependent Variable: ITC			
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.029	0.000	124.484	0.000
MCR	0.068	0.000	33.7634	0.000
	Variance Equation			
C	0.950	0.066	-11.947	0.000
RESID(-1)^2	0.472	0.024	19.288	0.000
GARCH(-1)	0.016	0.007	-3.227	0.000

Source: Computed Data

Table 7 describes the GARCH results for Market Capitalisation Rate (MCR) of ITC Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.029 and its past value significantly predicts the series by 0.068. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (0.950) plus its past (0.016) and a component which depends on past errors (0.472). This clearly establishes the presence of time varying conditional volatility on MCR of ITC and it indicates that the persistence of volatility of shocks is large and the effect of shock remains in the forecasts of variance for many periods in the future.

Table 8 - GARCH results for Market Capitalisation Rate (MCR) of Kotak Mahindra Bank Ltd

Dependent Variable: KOTAKMAHINBNK			
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	7.602	7.261	138.179	0.000
MCR	0.674	4.810	28866.320	0.000
	Variance Equation			
C	7.232	0.069	-62.549	0.000
RESID(-1)^2	8.425	0.395	42.520	0.0000
GARCH(-1)	6.509	0.278	25.999	0.053

Source: Computed Data

Table 8 portrays the GARCH results for Market Capitalisation Rate (MCR) of Kotak Mahindra Bank Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.000 and its past value significantly predicts the series by 0.674. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (7.232) plus its past (8.425) and a component which depends on past errors (6.509). This clearly establishes the presence of time varying conditional volatility on MCR of Kotak Mahindra Bank. This result also indicates that the persistence of volatility of shocks is large. It denotes that the effect of shock remains in the forecasts of variance for many periods in the future.

Table 9 - GARCH results for Market Capitalisation Rate (MCR) of Reliance Industries Ltd (RIL)

Dependent Variable: RIL				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	0.000	5.610	59.355	0.000
MCR	0.095	1.534	7611.223	0.000
	Variance Equation			
C	7.394	0.139	-72.494	0.000
RESID(-1)^2	3.672	0.119	51.639	0.000
GARCH(-1)	1.906	0.106	-76.717	0.000

Source: Computed Data

Table 9 represents the GARCH results for Market Capitalisation Rate (MCR) of Reliance Industries Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.000 and its past value significantly predicts the series by 0.095. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (7.394) plus it's past (1.906) and a component which depends on past errors (3.672). This clearly establishes the presence of time varying conditional volatility on MCR of RIL. This result also indicates that the persistence of volatility of shocks is large. It denotes that the effect of shock remains in the forecasts of variance for many periods in the future.

Table 10 - GARCH results for Market Capitalisation Rate (MCR) of State Bank of India (SBI) Ltd

Dependent Variable: SBI				
GARCH = C(3) + C(4)*(RESID(-1)^2 + C(5)* GARCH(-1)				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
C	6.788	6.446	691.528	0.000
MCR	0.724	5.350	244854.1	0.000
	Variance Equation			
C	0.132	0.004	17.208	0.000
RESID(-1)^2	0.009	0.472	31.845	0.000
GARCH(-1)	0.005	0.167	30.707	0.000

Source: Computed Data

Table 10 explains the GARCH results for Market Capitalisation Rate (MCR) of State Bank of India Ltd. Coefficients are positive and statistically significant, this illustrates the evidence that MCR, the coefficient of the constant variance term, average returns is 0.000 and its past value significantly predicts the series by 0.724. The ARCH and GARCH parameters are positive and statistically significant at 0.05 level. This gives the result of the GARCH model. The time varying volatility includes a constant (0.132) plus its past (0.005) and a component which depends on past errors (0.009). This clearly establishes the presence of time varying conditional volatility of MCR on SBI. This result also indicates that the persistence of volatility of shocks is large. It denotes that the effect of shock remains in the forecasts of variance for many periods in the future.

5. Conclusion

The parent company, shareholders, and potential shareholders all care about a company's results. A company's success can be able to assist them in improving their financial management strategy in particular, as well as their overall management strategy in general. Companies with strong results are thought to have strong demand for their stock, which will drive up the price, and vice versa. However, the market manipulation game, which includes rumours, speculation, and short-selling, affects stock price trend fluctuations. At the 0.05 mark, the ARCH and GARCH parameters are both positive and statistically important. This establishes that all of the select blue-chip companies listed in the NIFTY 50 Index have time-varying conditional volatility. This finding also suggests that shock volatility persists for a long time. It means that the shock effect will be present in future variance projections for a long time. Before choosing blue-chip shares for investment, the investor should conduct a fundamental review of the businesses using the balance sheet for at least ten years. For long-term investment, technical analysis is most helpful when buying securities. The findings of

this study could aid investors, and dealers in predicting stock performance and, more broadly, in financing companies based on their financial performance.

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