

SHARE PRICE MOVEMENT OF BIRLA CORP CEMENT IN NSE MARKET

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ABSTRACT

The stock market is one of the most significant sources for companies to raise money. This is an attractive attribute of investing in stocks, compared to other less liquid investments such as real estate. The stock market is often considered the primary indicator of a country's economic strength and development. Volatility is defined as the conditional standard deviation of the asset returns. Volatility modeling employs the Engle (1982) Autoregressive conditional Heteroscedastic (ARCH) models which allow the estimation of time varying conditional variance in financial data and the extended to Generalized Autoregressive conditional Heteroscedastic (GARCH) models which includes lags of the conditional variance of the model. Manufacturing is the use of machines, tools and labor to produce goods for use or sale. raw materials are transformed into finished goods on a large scale. Sold to wholesalers, who in turn sell them to retailers, who then sell them to end users the consumers. Cement industry is one of the key industries in India. The production and consumption of cement to a large extent indicate country's progress. It is a capital intensive industry. Cement is a cyclical commodity with a high correlation with GDP. Cement demand is closely associated to the overall economic growth, particularly the housing and infrastructure sector. Higher government spending on infrastructure, robust growth in rural housing and rising per capita incomes are likely to augur well for the cement industry. it becomes important to test stock market movement because it is the one which hinders the performance of the stock market and consumer spending. The present study identify the outcome of investments in the share market and volatility of the Birla corporation limited In india. The main objective is to study the monthly share price movement in NSE Market Birla Corp cement using GARCH Model. model of Birla cement reveals volatility will not highly persistent for longer period which means the book value may have significant impact on the market price needs to observe past performance and improve the company's sales to elevate market price that will reduce market volatility.

Key Words: Share Price Movement, Market Volatility, ARCH, GARCH, etc.

1. INTRODUCTION

The stock market is one of the most important sources for companies to raise money. This is an attractive feature of investing in stocks, compared to other less liquid investments such as real estate. The stock market is often considered the primary indicator of a country's economic strength and development. The issues of price movement (volatility) have become increasingly important in recent times to the Indian investors, regulators, brokers, policy maker, dealers and researchers. The National Stock Exchange (NSE) was incorporated in 1992 and was given recognition as a Stock Exchange in April 1993, which has been playing a lead role as a change agent in transforming the Indian Capital Market to its present form.

VOLATILITY

Volatility is defined as the conditional standard deviation of the asset returns. Volatility index of a market has become a very important financial instrument for measuring the risk in the asset return/stock. Volatility of stock market may impair or affect the smooth functioning of the financial system and adversely affect the economic performance through its effect on individual investment decisions. However, the general consensus that causes volatility is the annual of new, unanticipated information that alters expected returns and stock, Engle and Ng (1993). This implies that changes in market volatility would merely reflect changes in the local and international economic environment.

Volatility modeling employs the Engle (1982) Autoregressive conditional Heteroscedastic (ARCH) models which allow the estimation of time varying conditional variance in financial data and the extended to Generalized Autoregressive conditional Heteroscedastic (GARCH) models which includes lags of the conditional variance of the model. Nelson (1991) proposed the extended version of GARCH which unlike the ARCH and GARCH allows for the symmetry in the responsiveness to shocks, it does not impose the non-negative constraints on parameters and reduces the effect of outliers on the estimation results.

MANUFACTURING INDUSTRIES - INDIAN SCENARIO

Manufacturing is the use of machines, tools and labor to produce goods for use or sale. The term may refer to a range of human activity, from handicraft to high tech, but is most commonly applied to industrial production, in which raw materials are transformed into finished goods on a large scale. Such finished goods may be used for manufacturing other, more complex products, such as aircraft, household appliances or automobiles, or sold to wholesalers, who in turn sell them to retailers, who then sell them to end users the consumers.

CEMENT INDUSTRY

In a fast developing economy like India, there is always large possibility of expansion of cement industry. The Indian cement industry is the second largest market after China accounting for about 8% of the total global production. It had a total capacity of over 360 metric tons (MT) as of financial year ended 2016-17. Cement industry is one of the key industries in India. The production and consumption of cement to a large extent indicate country's progress. It is a capital intensive industry. Cement is a cyclical commodity with a high correlation with GDP. The housing sector is the biggest demand driver of cement, accounting for about 67% of the total consumption. The other major consumers of cement include infrastructure (13%), commercial construction (11%) and industrial construction (9%).

2. LITERATURE REVIEW

MaJose (2010) argued that the stationarity of TGARCH model depends on the distribution of the disturbance term, which is usually assumed to follow Gaussian or student-t. However, theory has not suggested a particular error distribution for estimating a PGARCH model, even though some empirical literature had it that PGARCH with a more fat tail than normal could outperform other GARCH models under certain condition.

Bollerslev (1986) relaxed the traditional normality assumption to accommodate time varying volatility in high frequency data by assuming that such data follows student t-distribution. Furthermore, **Bollerslev et al. (1994)** establish that a GARCH model with normally distributed errors could not be a sufficient model for explaining kurtosis and slowly decaying autocorrelations in return series.

Nelson (1991) notes that a student-t could imply infinite unconditional variance for the errors; hence, an error distribution with a more fat-tailed than normal will help to increase the kurtosis as well as reduce the autocorrelation of the squared observations. The author assumes that EGARCH model is stationary if the innovation has a generalized error distribution (GED), he therefore recommended GED in EGARCH model.

3. STATEMENT OF THE PROBLEM

Cement demand is closely linked to the overall economic growth, particularly the housing and infrastructure sector. Even the Modi government's thrust on housing and infrastructure development, cement demand is expected to pick up in the coming times. The weakness in the international crude oil prices and other commodities should help bring costs under control and improve profitability of the sector. If inflation comes under control, a likely lowering of interest rates would be a big positive for the cement sector. While temporary challenges remain in the form of excess capacity, the long term drivers for cement demand remain intact. Higher government spending on infrastructure, robust growth in rural housing and rising per capita incomes are likely to augur well for the cement industry. While temporary challenges remain in the form of excess capacity, the long term drivers for cement demand remain intact.

In India's it is found that impressive growth in economy, interestingly, the variability and volatility of economic growth was worrying even before the crisis i.e. before liberalization. Therefore it becomes important to test stock market movement because it is the one which hinders the performance of the stock market and consumer spending. Most of the research on the stock market movement in India was based on indices. Cement industry is categorised as large and medium capitalization, therefore, share prices also vary accordingly. The present study identify the outcome of investments in the share market and volatility of the BIRLA CORPcement in Tamil Nadu, India.

4. OBJECTIVE OF THE STUDY

- To assess the monthly share price movement in NSE Market BIRLA CORPcement using GARCH Model.

5. METHODOLOGY OF THE STUDY

The research carried out is descriptive and analytical in nature and the research is based on the secondary data of the select service sector companies collected from the NSE Index for share price movement. Out of the top performing cement companies having total assets between 3000 to 7000 crores BIRLA CORPCement operating in Tamil Nadu purposively select for the study to find the price volatility in the stock market. For the purpose of examining the price volatility in the stock market GARCH model (from ARCH Family) is used such as Unit Root Test, and GARCH model.

6. ANALYSIS AND RESULTS

DESCRIPTIVE STATISTICS

The descriptive statistics for the stock index return series for the periods from April 2008-09 to March 2017-18 are presented for the monthly returns. The statistics included the average monthly returns, median, maximums, minimums, standard deviations, skewness, kurtosis, Jarque-Bera Statistics, P-Value and Observations.

Table 1: of Descriptive Statistics result consolidation Birla Cements (April 2008-09 to March 2017-18)

Statistics	Birla (Default Series)	Birla Return
Mean	1192.082	0.577031
Median	1235.225	0.643463
Maximum	1809.500	23.63959
Minimum	405.6000	-22.98574
Std. Dev.	339.8803	8.399938
Skewness	-0.355248	-0.195772
Kurtosis	2.346434	3.180168
Jarque-Bera	4.659767	0.921093
Probability	0.097307	0.630939
Observations	120	119

Default mean of Birla cement recorded high implies that there is increase in price over the period of time. The descriptive based on returns are positively skewed, indicating that there is a low probability of earning returns which is less than mean. The K of the series is more than 3, which implies that the return series is fat tailed and does not follow a normal distribution which is also further evident from the Jarque-Bera test significant at 1% level to reject the null hypothesis which proves that there is no normal distribution.

To maintain the distribution normality and make the series stationary, the NSE returns of BIRLA CORPcement is converted into logarithmic return series. The results of the graph proves the same which reveals that the periods of low and high volatility of BIRLA CORPfor a prolonged periods based on the clustering of volatility and the return series vary around the constant mean but the variance is changing with time.

UNIT ROOT TEST

The presence of a unit root in time series which reveals the non-stationarity of data which means not normally distributed. Financial theory suggests that any data used for a study must be stationary that is normal distribution based

on the closing prices of BIRLA CORPCement from the periods 2008-09 to 2016-17 (10 years) was verified by employing Augmented Dickey Fuller (ADF) unit root test. The results of Returns and Adjusted Returns of BIRLA CORPCements are shown in the table hereunder.

TABLE 2: UNIT ROOT TEST

Null Hypothesis: Birla has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-1.600382	0.4792
Test critical values:		
1% level	-3.486064	
5% level	-2.885863	
10% level	-2.579818	

Null Hypothesis: ACCRET has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, MAXLAG=12)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-11.34975	0.0000
Test critical values:		
1% level	-3.486551	
5% level	-2.886074	
10% level	-2.579931	

The test results of the above table shows that the ADF test conclusively reject the presence of unit root in the adjusted return series at 1%, 5% and 10% levels. Therefore, it is concluded that the ADF test statistics results are all smaller than the critical values. This implies that the series is stationary to further conduct ARCH family models for BIRLA CORPCements.

GARCH MODEL

The GAARCH model is applied to find the changing variance of Birla corp Cements in the stock market. The study applies the GARCH (1,1) to measure the parameters of GARCH model for returns of BIRLA CORPCements is positively significant at 1% level which implies to reject the null hypothesis and accept the existence of volatility clustering the return series. The constant in mean equation is not significant. In the conditional variance equation, the estimated β coefficient (0.885) is considerably greater than α coefficient (-0.018) which resembles that the market has a memory longer than one period that volatility is more sensitive to its lagged values than it is to new surprises in the market values. It shows that the volatility is persistent. The sizes of the parameters α and β is (0.867) which is less than unity indicating that the shock will not persist to many future periods. Since, the risk return parameters are positive and significant at 1% level, it shows that there is close relationship between risk and return.

Table 3: GARCH MODEL

Dependent Variable: ACCRET

Method: ML - ARCH (Marquardt) - Normal distribution

Date: 01/30/19 Time: 12:59

Sample (adjusted): 2008M06 2018M03

Included observations: 118 after adjustments

Convergence achieved after 8 iterations

Presample variance: backcast (parameter = 0.7)

GARCH = C(3) + C(4)*RESID(-1)^2 + C(5)*GARCH(-1)

	Coefficient	Std. Error	z-Statistic	Prob.
C	0.667886	0.692189	0.964889	0.3346
AR(1)	-0.094259	0.089548	-1.052608	0.2925
Variance Equation				
C	7.025698	3.939946	1.783197	0.0746
RESID(-1)^2	-0.018916	0.049326	-0.383479	0.7014

GARCH(-1)	0.885144	0.089800	9.856848	0.0000
R-squared	-0.000679	Mean dependent var	0.698305	
Adjusted R-squared	-0.036101	S.D. dependent var	8.330480	
Sum squared resid	8124.947	Schwarz criterion	7.150317	
Log likelihood	-409.9420	Hannan-Quinn criter.	7.080584	
Durbin-Watson stat	1.922921			

7. SUMMARY OF FINDINGS

- ADF test statistics results are smaller than the critical values for BIRLA CORP Cements implies that the series is stationary to further conduct ARCH family models.
- It is clear that the market has a memory longer than one period that volatility is more sensitive to its lagged values than it is to new surprises in the market values. Therefore, it is also inferred that the $p > 0.05$, which led to conclude that the null hypothesis of “no ARCH effect” is accepted which means, the test statistics do not support for any additional ARCH effect remaining in the residuals of the models, which implies that variance equation is well specified for the market.

8. SUGGESTIONS AND CONCLUSION

A general problem prevailing in most of developing countries is the growth of financial markets. It is not healthy instead debatable. The financial market is playing vital role in the development of economic growth of a country, because it is on the medium to collect the investments from savers or investors and disseminates the funds to needy via proper channel. The GARCH (1,1) model of BIRLA CORP cement reveals volatility will not highly persistent for longer period which means the book value may have significant impact on the market price needs to observe past performance and improve the company's sales to elevate market price that will reduce market volatility. To improve the degree of the market efficiency of the select paper companies in the NSE and reduce market volatility thereon the timing and efficiency of information assimilation and dissemination to interested parties is important. Further, the introduction of shock absorbers in the market will reduce the impact of independent shocks rather than exploding.

9. REFERENCES

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