

Forecasting Stock Price Volatility : Empirical Study in India

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Abstract

Volatility is one of the important and booming areas of research in time series econometrics and economic forecasting in modern times. Present study aims to compute and foreknowledge the volatility of chosen Pharmaceutical companies in India. 5 Pharmaceutical Companies in India are taken as sample and it covers during January 2010 - December 2014. Tools applied are Descriptive Model, Augmented Dickey Filler (ADF) test, Philips-Perron (PP) Test, EGARCH and GARCH Model. The GARCH model performs better than the other and gives the most accurate predictions about RMSE and MAE. Although mathematically and statistically simple, the GARCH model provided suitable model for the study. The results of the analysis from the selected companies provide considerable and quantitative information, which could be used by the portfolio managers, risk managers and other practitioners.

JEL Code : G1, G12, G15, G17

Keywords : Forecasting, Volatility, Stock, Capital Market, ADF test, Philips-Perron Test, GARCH, EGARCH

I. Introduction

VOLATILITY IS ONE of the keen and booming areas of research in time series econometrics and economic forecasting in modern times. Volatility is a statistical estimation of the dispersion of gains in the security or market Index. Some of the factors like subprime crisis, political situations and war that commonly affect all the companies. It is an important occurrence in common and security markets in particular. Modelling stock market volatility had been the subject of empirical and theoretical exploration by academicians, traders and investors. Recent markets had four differentiators: average returns were higher, returns were more predictable, volatility was higher and correlations with developed country returns were low. They argued that it is difficult to model volatility in emerging markets, particularly in segmented markets.

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5.2 GARCH

The results shows the GARCH model for the selected companies are indicates less volatile during the study period.

5.3 E GARCH

This results shows that leverage is significant for selected pharmaceutical companies. Positive impact has been proven to have a great impact on all businesses.

5.4 Forecasting the Volatility of Selected Companies

The results show the results of pharmaceutical companies have evaluated the presentation of two different models. RMSE and MAE are the lowest under the GARCH model of the five pharmaceutical companies except Sun Pharma. Therefore, we can conclude that the GARCH model performs better than the other and gives the most accurate predictions about RMSE and MAE. Although mathematically and statistically simple, the GARCH model provided suitable model for the study.

VI. Conclusion

The traditional measures of volatility were inadequate to capture the leptokurtosis, volatility clustering, mean reversion and heteroscedasticity characteristics of the time series data. GARCH model can adequately capture these features and hence, has been employed in this study. The results of analysis of the selected sector provide econometric evidence for the policy makers. From such information, policy makers in the government and its related functions could regulate the particular industrial sector if necessary by providing interest incentives for the loans, manufacturing incentives, reducing/imposing taxation, import/export regulations and so on. The results of the analysis from the selected companies provide considerable and quantitative information, which could be used by the portfolio managers, risk managers and other practitioners.

References

- Ahmed, A. and S. Suliman, (2011), "Modeling stock market volatility using GARCH models evidence from Sudan", *International Journal of Business and Social Science*, Vol. 2, No. 23, pp.114-128.
- Angabini, A. and S. Wasiuzzaman, (2011), "Impact of the global financial crisis on the volatility of the Malaysian stock market", *Management and Economics IPEDR*, Vol. 3, pp.79-84.
- Engle, R.F., (1982), "Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of United Kingdom Inflation", *Econometrica*, Vol. 50, No. 4, p.987.
- Miron, D. and C. Tudor, (2010), "Asymmetric conditional volatility models: Empirical estimation and comparison of forecasting accuracy", *Romanian Journal of Economic Forecasting*, Vol. 3, No. 1, pp.71-92.