

Algorithmic Traders and Volatility Information

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Over the last decade, algorithmic trading has registered a significant growth momentum not only in developed markets but also in emerging markets. Algorithmic trading is a process of executing orders through pre-programmed and automated trading instructions utilising finance theories and relevant publicly available information which may have impact on total return of a particular portfolio. The nature of information that the algorithmic trader use can be either directional or volatility information. Information is called directional when the trader knows whether a particular stock price will move up or down. In case of volatility related information, traders does not have any clear idea about the direction of stock price. However, the trader can estimate the stock price better if the stock price moves in either direction. Hence, both directional and volatility related information are important for traders in the market.

In the current world where a significant proportion of daily available information generated through exchanges are automatically transferred to major market participants without any real time manual intervention, role of algorithmic trading has increased significantly as they can incorporate those publicly available information in the system and change their portfolio on real time basis. Hence, it becomes very crucial to understand the role of algorithmic trading, particularly in the derivatives segment where they are more active. Do algorithmic traders use directional and volatility information in their trading mechanism? Whether they utilise volatility information while trading in the options markets as volatility is an essential element of options pricing mechanism?

In a recent study “*Algorithmic Traders and Volatility Information*”, Banerjee and Banerjee (2019) analysed NSE trading data in both stock and stock options market for 160 stocks during January-June 2015 to compare trading strategy of algorithmic traders with non-algorithmic traders. They estimated volatility demand and realised volatility measures for both spot and options market. All algorithmic traders are further divided to proprietary (who trade in their own account) and agency (who trade on behalf of others) algorithmic traders to test their trading behaviour based on volatility information.

Before explaining the findings of this research paper, let us first understand, what is volatility information trading? How to detect whether a trader has traded based on volatility information? Volatility information trading, typically, means traders incorporate information related to future expected volatility of a particular stock to decide their current position, particularly in the options market. Generally, investors with private information regarding future volatility of a stock generally takes positions in the options market which is positively related to future realised volatility. In other words, if demand for volatility in the options market is positively related to future realised volatility in the spot market, this automatically implies that traders utilised some private information about future volatility, and hence, they are involved into volatility information trading.

This study has utilised above hypothesis to show that “non-algorithmic traders are informed regarding future volatility while algorithmic traders are not”. Hence, the options market volatility demand of non-algorithmic traders has predictive ability for the future realised volatility in the spot market even after controlling for options implied volatility and other important factors. However, “the predictive ability of options market volatility demand rarely lasts more than two days into the future”.

On the contrary, algorithmic-traders did not utilise volatility information while executing their trades. These results were robust even when they include exogenous shocks in the model through scheduled and unscheduled corporate announcements during the period with high information asymmetry. The traders behave similarly to both these kind of events. The above findings remain intact for both proprietary and agency algorithmic-traders as well. Although, agency traders (like, institutional

investors) are known to trade on such information, the study found that these traders did not utilise volatility information when they employ algorithms to execute their trades. Similarly, proprietary traders mostly use algorithms for high-frequency trading which did not incorporate volatility information in their trading algorithms.