

Abstract

This thesis investigates the relationship between trading volume and stock return volatility using GARCH model in the framework of Mixture of Distribution Hypothesis. Analysis is carried out for five well-known stocks selected from the American S&P500 stock index. Our approach was to extend the variance equation of the well known GARCH model on the trading volume which was split into three explanatory variables capturing different effects of volume on volatility. Apart from the relationship itself, we examined the changes of GARCH and ARCH parameters after the inclusion of volume, implicitly testing the Mixture of Distribution Hypothesis. Interesting results and implications for future research were identified. Firstly, we highlight the appropriateness of the volume decomposition into expected and unexpected volume, where all the volume parameters turned out to be statistically significant. General observation was that the increase of both expected and unexpected trading volume leads to the increase of volatility. On the other hand, negative volume shocks tend to decrease it. Eventhough we performed the analysis with lagged and also contemporaneous volume, we were not able to confirm that the inclusion of volume leads to insignificance of the ARCH and GARCH parameters, thus not confirming the Mixture of Distribution Hypothesis. However, we found that the volume models perform significantly better than the plain GARCH models according to AIC. Considering these findings, it is possible to conclude that there is positive relationship between the stock return volatility and trading volume. We also found that the volume models perform substantially better in modeling and predicting the future volatility.

JEL Classification C22, C52, C55, G12

Keywords GARCH, volatility, trading volume, Mixture of Distribution Hypothesis

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