Comparison Between the Models of GARCH and EGARCH in Predicting the Change of Composite Stock Price Index

Endang Soeryana hasbullah, Sukono, and Sudradjat Supian
Department of Mathematics
Padjadjaran University
Bandung, Indonesia
endangsoeryana@yahoo.co.id; sukono@unpad.ac.id; sudradjat@unpad.ac.id

Nur Fadhlina bt Abdul Halim
School of Informatics and Applied Mathematics
University Malaysia Terengganu
Terengganu - Malaysia
lina@umt.edu.my

Abdul Talib Bon
Department of Production and Operations
Universiti Tun Hussein Onn Malaysia
Batu Pahat, Malaysia
talibon@gmail.com

Abstract

GARCH model is very well known for predicting the volatility of stock price index, but this model can't capture the nature of leverage effect from financial series, that would be met by EGARCH model. To found whether EGARCH model that is able to meet leverage effect a better improvement from GARCH model. In this study researcher compared the accuracy between those two models in predicting the change of Composite Stock Price Index (CSPI), both the value of its return and its closing price using AIC, SIC, RMSE, MAE and MAPE. In the process, GARCH and EGARCH were applied to the time series model of ARMA family for stationary series and ARIMA for non-stationary series. The research shows that EGARCH model is a better volatility than GARCH based on criteria that being used. Furthermore, researcher also forecast the movement of the return and the closing price of CSPI for the next few periods using the best models.

Keywords: Leverage effect, GARCH, EGARCH, ARMA, ARIMA.