

## ABSTRACT

Agricultural sector has played important role for the Indonesian economic, especially the plantation sub-sector which has contribution in earning high revenues for Indonesian foreign exchange. The primary commodities in Indonesian exports as discussed in this study are Crude Palm Oil (CPO), Natural Rubber TSR20, Arabica Coffee, Robusta Coffee, Cocoa, White Pepper and Black Pepper. Meanwhile, the volatility nature of agricultural commodity is famous. The volatility refers to heteroscedasticity nature which can be modeled by GARCH-type models. The returns volatility depends on the residual from the mean equation and volatility of error variances in the previous periods. The aims of this study are to examine the predictability of GARCH-type models on the returns volatility of those seven agricultural commodities and to determine the best GARCH-type models for each commodity based on the traditional symmetric evaluation statistics. The data used in this study is spot price data of each commodity from Indonesian Commodity Futures Trade Agency (CoFTRA). The price series data are from January 2005 to June 2011. The GARCH-type models applied in this study are ARCH, GARCH, GARCH-M, EGARCH and TGARCH. This study applies root mean square (RMSE), mean absolute percentage error (MAPE), and mean absolute error (MAE) as the traditional symmetric evaluation statistics. The results of this study show that the GARCH-type models have different predictability for each commodity. ARCH model is found as the best prediction model for the returns volatility of White Pepper. GARCH model is found as the best model to predict the returns volatility of Robusta Coffee. GARCH-M model is found as the best model to predict the returns volatility of CPO, Arabica Coffee, Cocoa, and White Pepper. EGARCH model is the best model to predict the returns volatility of Natural Rubber TSR20, Arabica Coffee, Robusta Coffee, Cocoa, White Pepper and Black Pepper.

**Keywords:** ARCH, GARCH, GARCH-M, EGARCH, TGARCH, returns volatility, residual, agricultural commodity.