

## Modelling Volatility Spillovers and Cross Hedging among Major Agricultural Commodity Futures

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**Abstract :** From the past recent, the global financial crisis, economic instability, and large fluctuation in agricultural commodity price have led to increased concerns about the volatility transmission among them. The problem is further exacerbated by commodities volatility caused by other commodity price fluctuations, hence the decision on hedging strategy has become both costly and useless. Thus, this paper is conducted to analysis the volatility spillover effect among major agriculture including corn, soybeans, wheat and rice, to help the commodity suppliers hedge their portfolios, and manage the risk and co-volatility of them. We provide a switching regime approach to analyzing the issue of volatility spillovers in different economic conditions, namely upturn and downturn economic. In particular, we investigate relationships and volatility transmissions between these commodities in different economic conditions. We purposed a Copula-based multivariate Markov Switching GARCH model with two regimes that depend on an economic conditions and perform simulation study to check the accuracy of our proposed model. In this study, the correlation term in the cross-hedge ratio is obtained from six copula families - two elliptical copulas (Gaussian and Student-t) and four Archimedean copulas (Clayton, Gumbel, Frank, and Joe). We use one-step maximum likelihood estimation techniques to estimate our models and compare the performance of these copula using Akaike information criterion (AIC) and Bayesian information criteria (BIC). In the application study of agriculture commodities, the weekly data used are conducted from 4 January 2005 to 1 September 2016, covering 612 observations. The empirical results indicate that the volatility spillover effects among cereal futures are different, as response of different economic condition. In addition, the results of hedge effectiveness will also suggest the optimal cross hedge strategies in different economic condition especially upturn and downturn economic.

**Keywords :** agricultural commodity futures, cereal, cross-hedge, spillover effect, switching regime approach

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