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REALIZED VOLATILITY IN AGRICULTURAL COMMODITIES FUTURES

Abstract:

The objectives of this paper are to construct the efficient frontier and optimum portfolio of agricultural commodity futures, and to evaluate financial risk by Value at Risk. We evaluated alternative volatility forecasting and computed daily Value at Risk (VaR) based on Realized Volatility approach and ARFIMA - FIGARCH model. The intraday trade data of three agricultural commodity futures prices, namely corn, wheat and soybean traded in the Chicago Board of Trade (CBOT) with three different frequencies namely 1 minute, 5 minutes and 15 minutes, were collected from Bloomberg database. The complete data set covered the period from November 2015 to December 2016. The empirical results showed that the calculated realized volatility from Realized Covariance Measure (Andersen et al. 2003) of corn, wheat and soybean futures returns have the long memory feature for every frequency based on R/S test and GPH test. The simulated returns from ARFIMA - FIGARCH are applied to construct the efficient frontier and optimum portfolio. The optimum portfolio suggested investing more than half in corn followed by soybean and wheat, respectively.

Keywords:

Realized Volatility, Agriculture futures, Long-memory, Portfolio Optimization

JEL Classification: C58, G11, G32