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Pricing and Hedging Calendar Spread Options on Agricultural Grain Commodities

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Abstract



The calendar spread options (CSOs) on agricultural commodities, most notably corn, soybeans and wheat, allow market participants to hedge the roll-over risk of futures contracts. Despite the interest from agricultural businesses, there is lack of both theoretical and empirical research on pricing and hedging performances of CSOs. We propose to price and hedge CSOs under geometric Brownian motion (GBM) and stochastic volatility (SV) models. We estimate the model parameters by using implied state-generalized method of moments (IS-GMM) and evaluate the in-sample and out-of-sample pricing and hedging performances. We find that the average pricing errors of the SV model are 0.79% for corn, 0.75% for soybeans and 1.2% for wheat; the pricing and hedging performance of the SV model are mostly superior to the benchmark GBM model, both in and out of sample, with only one exception where the out-of-sample hedging error for the GBM model for market makers is slightly better than the SV model.

Details



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