Dokumenttyp: Zeitschriftenaufsatz

Autor(en) des Beitrags: Benth, F.; Meyer-Brandis, T.; Kallsen, J.

Nicht-TUM Koautoren: ja

Kooperation: international

Titel des Beitrags: A Non-Gaussian Ornstein-Uhlenbeck Process for Electricity Spot Price Modelling and Derivative Pricing

Abstract: We propose a mean-reverting model for the spot price dynamics of electricity which includes seasonality of the prices and spikes. The dynamics is a sum of non-Gaussian Ornstein-Uhlenbeck processes with jump processes giving the normal variations and spike behaviour of the prices. The amplitude and frequency of jumps may be seasonally dependent. The proposed dynamics ensures that spot prices are positive, and that the dynamics is simple enough to allow for analytical pricing of electricity forward and futures contracts. Electricity forward and futures contracts have the distinctive feature of delivery over a period rather than at a fixed point in time, which leads to quite complicated expressions when using the more traditional multiplicative models for spot price dynamics. We demonstrate in a simulation example that the model seems to be sufficiently flexible to capture the observed dynamics of electricity spot prices. We also discuss the pricing of European call and put options written on electricity forward contracts.

Intellectual Contribution: Discipline-based Research

Zeitschriftentitel: Applied Mathematical Finance

Jahr: