
VLADIMIR SURKOV, University of Toronto

FFT-Based Option Pricing under Mean-Reverting Jump Diffusion

Energy commodities, such as oil, gas and electricity, exhibit high volatilities, have sudden price jumps and tend to revert to a long run equilibrium. We develop an FFT-based method for valuing path-dependent contingent claims written on mean-reverting processes with jumps. The method is efficient as European options can be priced using a single time-step to obtain option values for a range of spot prices. Furthermore, Bermudan options do not require time-stepping between monitoring dates and the method can be readily extended to the multi-asset framework. We carry out several pricing experiments on European, American styled swing and two-asset spread options.