Bayesian calibration and number of jump components in electricity spot price models

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Abstract:

The price spikes observed in electricity spot markets may be understood to arise from fundamental drivers on both the supply and demand sides. Each driver can potentially create spikes with different frequencies, height distributions and rates of decay. This behaviour can be accounted for in models with multiple superposed components, however their calibration is challenging. Given a price history we apply a Markov Chain Monte Carlo (MCMC) based procedure to generate posterior samples from an augmented state space comprising parameters and multiple driving jump processes. This also enables posterior predictive checking to assess model adequacy. The procedure is used to determine the number of signed jump components required in two different markets, in time periods both before and after the recent global financial crises.