

Dealing with multi-factor uncertainty in electricity markets by combining Monte Carlo simulation with spatial interpolation techniques

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Abstract-

Electricity markets are characterised by uncertainty that has an important influence on the behaviour of the agents. Demand, fuel costs, CO2 prices or hydro conditions are examples of sources of uncertainty. Electricity market models are useful tools to support agents's decision-making process and, therefore should consider this uncertainty. Monte Carlo simulation is a common method to incorporate the uncertainty. However, Monte Carlo simulation requires a large number of realisations of the model, which usually entails huge computational time and effort. In this study, an efficient method to cope with this drawback is described, allowing one to obtain a large number of realisations reducing the computational time and effort. The method is based on a spatial interpolation technique. The obtained results confirm that the comparison between the intensive computation and the interpolation of realisations does not show relevant differences. Additionally, the computational time is significantly reduced.

Index Terms-

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