Spatial Pattern in Modeling Electricity Prices: Evidence from the PJM Market

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ABSTRACT

This paper presents a model that takes into account the spatial features of a network of a electricity market. The model extends the existing literature on electricity price modelling and forecasting by including the spatial features as well as structure of the electricity market. The model is applied to equilibrium electricity spot prices of the Pennsylvania New-Jersey and Maryland (PJM) market. An empirical analysis indicates that the problem of unobserved spatial correlation in the network can be modelled by the Spatial Error Model providing an additional insight about the dynamics of spot electricity prices in the PJM market. The topology of the network and the structure of the market are responsible for the spatial correlation in equilibrium electricity prices, which should not be ignored by careful research.