

Electricity price forecasting in the short term hybridising fundamental and econometric modelling

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Abstract-

Traders and practitioners in diverse power exchanges are nowadays being most exposed to uncertainty than ever. The combination of several factors such as renewable generation and regulatory changes calls for suitable electricity price forecasting models that can deal with complex and unusual market conditions. Several authors have proposed combining fundamental approaches with econometric models in order to cover all relevant aspects for electricity price forecasting. This combination has shown positive results for medium-term horizons. However, this approach has rarely been carried out for short-term applications. Moreover, several day-to-day applications in electricity markets require fast responsiveness and accurate forecasts. All of these facts encourage this work's short-term hybrid electricity price forecasting model, which combines a cost-production optimisation (fundamental) model with an artificial neural network (econometric) model. In order to validate the advantages and contributions of the proposed model, it has been applied to a real-size power exchange with complex price dynamics, such as the Iberian electricity market. Moreover, its forecasting performance has been compared with those of the two individual components of the hybrid model as well as other well-recognised methods. The results of this comparison prove that the proposed forecasting model outperforms the benchmark models, especially in uncommon market circumstances.

Index Terms- Econometric models; Electricity markets; Fundamental models; Hybrid models; Short-term forecasting

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