

Electric Spot Prices and Wind Forecasts: A dynamic Nordic/Baltic Electricity Market Analysis using Nonlinear Impulse-Response Methodology

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Abstract

This paper uses nonlinear impulse response methodologies to analyse the relationship between the contemporaneous Nordic/Baltic electric spot prices and wind forecasts. The main objective of the analysis is step-ahead spot price movements from wind forecast information. Dynamic impulse response analysis is a technique for analysing the step-ahead characteristics of a nonparametric estimate of the one-step-ahead conditional density. From strictly stationary processes we build a bivariate price/wind semi-parametric density model. The model estimates report a significant negative non-linear covariance between spot prices and wind forecasts movements in the Nordic/Baltic electricity market. The impulse-response analysis shows that the step-ahead contemporaneous co-variance between spot prices and wind forecasts are one important predictor for the spot price mean movements and volatilities. A dynamic nonlinear impulse-response analysis can therefore offer market participants access to dynamic step-ahead spot price mean and volatility strategies.

Classification:

Keywords: Electricity Markets, Nordic/Baltic System Price, Seasonality, Wind Forecasts, Impulse-response functions, Step-Ahead Market Strategies