

Structural Vector Autoregressive Model with time varying contemporaneous effects matrix- application to the UK electricity market.

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In this paper, a Structural Vector Autoregressive (SVAR) model is applied to analyze the UK electricity market. In the proposed model, three structural shocks are distinguished: demand and wind generation shocks (called fundamental shocks) and a speculative shock. As indicated by numerous works, due to the merit order effect, responses of electricity prices to changes in demand or supply are time variant. Therefore, in the research, the contemporaneous effects matrix is allowed to fluctuate and is conditioned on a set of exogenous variables. As the results show, residuals from the reduced form of the VAR model become heteroscedastic and exhibit the property of variance clustering. The assumption of time varying responses is verified with the LR tests.

The estimation results indicate that the influence of structural shocks on electricity prices depends on the forecasted residual demand, calculated as the difference between the forecasted demand and forecasted generation from wind. Next, the input of different types of shocks into the electricity price variance is analyzed. It is shown that the share of the price variance, which can be associated with fundamental (mainly wind generation) shocks is rising and varies between 0%-20%. Still, the results indicate that the majority of the unexpected price changes result from market speculations.