SPIKES AND MEMORY IN (NORD POOL) ELECTRICITY PRICE SPOT PRICES

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Abstract
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Abstract

Electricity spot prices are subject to transitory sharp movements commonly referred to as spikes. The paper aims at assessing their effects on model based inferences and predictions, with reference to the Nord Pool power exchange. We identify a spike as a price value which deviates substantially from the normal price, where the latter is defined as the expectation arising from a model accounting for long memory at the zero and at the weekly seasonal frequencies, given the knowledge of the past realizations. Hence, a spike is associated to a time series innovation with size larger than a specified threshold. The latter regulates the robustness of the estimates of the underlying price level and it is chosen by a data driven procedure that focuses on the ability to predict future prices. The normal price is computed by a modified Kalman filter, which robustifies the inferences by cleaning the spikes, i.e. shrinking an observation deviating substantially from the normal price towards the one-step-ahead prediction. Our empirical application illustrates the effects of the spikes on the estimates of the parameters governing the persistence of the series; moreover, a real time rolling forecasting exercise is used to establish the amount of cleaning for optimizing the predicting accuracy at different horizons.