

Master Thesis

Modelling balancing prices in the German Electricity Balancing Market

Background

SWM is one of the biggest power supply companies running a virtual power plant and marketing its output on different energy markets, including the day-ahead market. In order to market the virtual power plant efficiently, SWM needs a precise forecast of the output the virtual power plant needs to produce. Any deviation (e.g. due to power plant outage) needs to be accounted for on the German Electricity Balancing Market. Such deviations are causing costs which need to be predicted.

Research Questions

What is the main driver behind the balancing market price volatility? How does the pricing on the balancing market relate to the intraday market's prices? Can the risk behind the output forecasts deviations be quantified? To answer these questions, the student has to:

- Gather and prepare electricity balancing and electricity intraday market data. Parts of the data can be provided for by the Center for Energy Markets or by SWM.
- Find out which drivers are responsible for electricity balance market prices' volatility. Discuss possible caveats of the chosen selection method and their influence on the obtained results.
- Experiment with and design econometric strategies that can be used for forecasting electricity balancing prices and in particular relating them to the intraday prices.
- Find a way to benchmark or validate the constructed model.

The thesis is co-supervised by the *Stadtwerke München (SWM)*. The selection of a suitable candidate and the detailed specification of the project will take place in close cooperation with the SWM.

Qualified applicants are invited to send their electronic application to cem@wi.tum.de.