

KTH

Abstract

Faculty Name

Department of Electrical Power Systems

Master of Science

Estimation of cross-border flow in electricity markets using a Markovian-Tobit approach

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In an electricity price forecast model the influence from connected external electricity markets affects the supply. In order to predict electricity prices in a supply and demand model one can increase the accuracy by predicting the import or export from the connected markets if the connected market models are not price optimized towards each other. There is a limit for the maximum transfer capacity of electricity between the markets and the capacity is changing in time. This thesis investigates methods of predicting the influence from connected markets by using cross validation. A multiple linear regression model is compared with varieties of the Tobit model, a model that accounts for limited or censored variables. An extension is made using Markov regime shifting models in order to evaluate if this can capture more dynamics and increase the predictive power. The result shows that a special case of the Tobit model that accounts for a time varying limit increases the accuracy of the prediction compared to the other models. The Markov regime shifting models add a greater level of complexity to the prediction, but can increase the predictive power in some cases.