

Case Studies

Fallstudien II

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Why Case Studies?

This is where you learn to tackle realistic problems using statistics:

- From the problem...
- ...to the data...
- ...to the report(s).

(Not to mention group work...)

Some details

Intended audience

- Master Econometrics (ME3), Master Data Science (MD4)
- Master Statistik – beware the English baseline

Prerequisites

- All requirements obtained in case of conditional admission (any of modules ME/MD Req1 to ME Req7)
- All conditions must be fulfilled before the beginning of the course!
- **Highly recommended:** Successful pass of module ME1/MD2 (Statistical Theory)

Overall task

You will provide forecasts for spot prices in the German and/or French electricity market, based on indicators like renewable generation, supply-demand difference, import - exports, etc.

- Use the publicly available prices
(<https://www.entsoe.eu/data/power-stats/>)
- Understand idiosyncracies of the market
- Provide out-of-sample forecasts using linear and ML methods
- Consider forecast MSE as performance measure
- Think about explanations/interpretation why some methods work better than others.

More specifically

Methods and findings are discussed together with the other participants and presented in formal reports:

- 1 Describe the data and use appropriate transformations.
- 2 Choose appropriate statistical methods and adapt them to the problem at hand.
- 3 Carry out a comprehensive analysis of the data.
- 4 Use the results to provide an answer to the research question.

Three Reports

Overall you will write two short reports and a longer one:

- Short report about basic forecasting with OLS predictive regressions for the load model (no more than 15 pages)
- Short report about a comparison of different methods (ML) incorporating load model (no more than 15 pages)
- Longer report about an exhaustive analysis with comparisons of different methods (no more than 30 pages)

Guidelines will be provided. You need to pass **all** three reports, but you have one chance to redo one of them.

Programming Tasks

- For each report there are different tasks in which you have to analyze data. For this we would prefer it if you use R! (Python is possible, but almost frowned upon)
- Also, you will have to hand in your own code.
(The code might have to be looked at to confirm your results in the reports!)

Schedule

- Wednesdays 2pm to 6pm
- Room CDI 121
- There will be a moodle room
- First meeting: April 10th