

## Seminar “Forecasting in a data-rich environment”

### Description

The aim of the seminar is to make you acquainted with techniques allowing you to deal with the situation in which the number of available predictors in a time series forecasting problem is comparable with, or larger than, the number of observations, such that the usual OLS estimator of the predictive regression is highly unstable, or even unfeasible, and the resulting forecasts highly imprecise. These techniques involve, among many others, variable selection or shrinkage methods.

### Intended audience

- Master Econometrics, Master Data Science, Master Statistics.

### Prerequisites

- Time Series Analysis/Forecasting or equivalent

### Learning outcome

The participants will learn to

- acquire new econometric techniques from the literature,
- apply econometric techniques to an empirical question,
- relate their findings to the literature,
- use econometric software,
- present scientific results to an academic audience, and
- critically discuss the results of others.

## Structure

- In a first meeting, each participant is allocated one particular forecasting method such as factor models, LASSO, elastic net, boosting, and, if need be, Bayesian methods.
- We provide a data set and the details of the forecast experiment (Moodle, in due time).
- During the winter term, each participant writes a seminar paper (ca. 20 pages) that describes the forecasting method and applies it to the data set using a pseudo out-of-sample forecast experiment. The paper has to be submitted electronically and as a hard copy. The electronic submission has to include all files (scripts, functions, data files etc. except for built-in functions and public packages) that are used to generate the results described in the paper<sup>1</sup> together with a “readme.txt” file that explains which scripts need to be executed.<sup>2</sup>
- In a block seminar, each paper is presented and discussed. Since all use the same data set and forecast experiment, we can even compare the forecast quality of the individual methods in a kind of horse race. (The performance of each method does not matter for the final grade, provided that the methods are well-implemented and understood.)

## Milestones

- October 2022, exact date TBA: In-person meeting, QnA and allocation of topics.
- January 15th 2023: Deadline for electronic submission of the paper (pdf format). An identical hard copy version must be supplied in the subsequent meeting.
- Presentation of the final results: TBA (End of January 2023)

## Materials

- Specific references and data; see Moodle in due time.

## Contact:

- `mdeme@statistik.tu-dortmund.de`

## Office hours:

- by appointment; but before resorting to such desperate measures do not hesitate to ask simpler questions per email.

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<sup>1</sup>The software to be used is R or Matlab unless otherwise agreed.

<sup>2</sup>To this end, make sure you program in a way that allows changing paths easily.