

Econometric Forecasting

Course description

The course provides an overview of time-series based forecasts together with a theoretical basis of time series models.¹ To this end, we first introduce generic (and useful) concepts for time series modelling (stationarity, ergodicity, martingale difference), followed by a discussion of univariate linear processes (motivation, properties). We then extend the scope of the course to multivariate models, specifically the vector autoregressive process. Here, we also discuss estimation of autoregressive models together with basic model-based forecasting concepts. The final part of the course covers the basics of forecasting theory (loss functions, optimality, rationality) as well as practice (model-based forecasting, forecast evaluation).

Prerequisites

- Probability theory & inferential statistics;
- Econometrics is useful but not a necessary condition.

Outline

1. Model-free and model-based forecasts
2. Univariate time series models
3. Vector autoregressions
4. Optimal forecasts
5. Forecast evaluation
6. Outlook

¹Since the focus is on time series methods of forecasting, there is some overlap with the class Time Series Analysis.

Materials

- Slides and, for the first weeks, some lecture screencasts
- Lecture notes (as we progress)
- Some introductory textbooks:
 - Brockwell, P. J. and R. A. Davis (2002), Introduction to Time Series and Forecasting, 2nd ed., Springer
 - Enders, W. (2014), Applied Econometric Time Series, 4th ed., Wiley
 - Lütkepohl, H. and M. Krätzig (2004), Applied Time Series Econometrics, Cambridge University Press
- More specific textbooks:
 - Hamilton, J. (1994), Time Series Analysis, Princeton University Press
 - Hassler, U. (2018), Time Series Analysis with Long Memory in View, Wiley
 - Lütkepohl, H. (2007), New Introduction to Multiple Time Series Analysis, Springer
 - Elliott, G. and A. Timmermann (2016), Economic Forecasting, Princeton University Press

Schedule

- course, 2 hrs. per week, Thu 8-10am, room CDI 120. First meeting on April 7th, on-site! Afterwards, the course is given via screencasts in April, I will only be on-site starting May 5th.
- pen&paper tutorial (Fabian Schmidt), 2 hrs. every second week (room tba)
 - The first tutorial is for self-study!
 - Fabian will only be on-site from June 1st onwards, screencasts until then.
- noncompulsory PC tutorial (Fabian Schmidt), 2 hrs. every second week (screencasts for April & May, room tba from June onwards)

Exam

- written exam, solving problems similar to those discussed in the tutorial
- you may use the lecture notes and the slides (without any annotations!)
- rules may differ if the exam takes place online

Contact

- bell@statistik.tu-dortmun.de

Office hours

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