

38th ASP

TIME SERIES FORECASTING: WITH AN APPLICATION TO GDP

ASP Course Nov. 22-26, 2021

Prof. Jens Boysen-Hogrefe (Kiel)

Forecasting is a useful device for economic policy making. Numerous institutions like governments, central banks, the European Commission, the OECD, or the IMF regularly provide economic forecasts. This course aims at giving insights into the field of time series forecasting from a practitioner's point of view.

Outline

1. Introduction: Forecasting what and for whom?
2. National accounts
 - a. Short introduction to the system of national accounts
 - b. GDP: Decomposition of the time series
3. Forecasting models
 - a. Time series forecasting: AR, ARIMA, ARX, VAR
 - b. Forecasting with ragged edge data
 - c. Out-of-sample forecast experiment
 - d. Judgemental forecasting, conditional forecasting
 - e. Further topics
4. Forecast evaluation
 - a. Loss functions
 - b. Forecast rationality
 - c. Evaluating interval forecasts
5. Forecast comparison and combination
 - a. Diebold-Mariano test
 - b. Test on forecast encompassing
 - c. Forecast combination
 - Digression: State space models (time varying weights)
6. Forecasting in data rich environments
 - a. Model selection
 - b. Shrinkage (Ridge, Lasso, Elastic Net)
 - c. Bayesian VARs
 - Digression: Bayes statistics
 - d. Boosting
 - e. Factor models
7. Forecasting with ragged edge data and mixed frequencies
 - a. Bridge equations
 - b. MIDAS
 - c. Mixed frequency VARs

Readings:

- F. Lequiller and D. Blades (2014). Understanding national accounts. 2nd edition. OECD.
<http://www.oecd.org/sdd/UNA-2014.pdf>
Section 1 is based on this.
- Elliott, G., and A. Timmermann (2016). Economic Forecasting. Princeton University Press.
Very rigorous.
- Hyndman, R.J., and G. Athanasopoulos (2012). Forecasting: Principles and Practice. OTexts.
<https://www.otexts.org/fpp/>
- Hendry, D.F., and M.P. Clements (2019). Forecasting: An Essential Introduction.
Nice background reading. Less technical.
- And several papers cited in the lecture slides.