

Forecasting Methods
Winter term 2023/24
PD Dr. Ralf Stecking
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Lecture:

Tuesday 16.15-17.45 o'clock in room A5 0-055

Exercise:

Thursday 12.15-13.45 o'clock in room A5 1-161

Starts: 17th October 2023, ends: 1st February 2024

Content of the module

Students of this course shall be able to choose, apply, and evaluate *quantitative forecasting methods*. The course is data-oriented: students will be able to solve economic problems from the area of time series as well as from classification analysis.

The module consists of two parts: the lecture imparts knowledge about the basic theoretical principles of forecasting methods. The exercise includes case studies using actual economic data sets with appropriate software packages.

Structure

The following parts are the content of the course *Forecasting Methods*:

- Time series components,
- Trend and seasonal adjustment procedures,
- Stationarity,
- Uni- and multivariate forecasting methods,
- Classification methods for prediction,
- Model evaluation.

Literature

Abraham, B. and Ledolter, J. (2005): *Statistical Methods for Forecasting*, New York

Box, G.E.P and Jenkins, G.M. (1976): *Time series analysis: forecasting and control*, San Francisco

Chang, W. (2018): *R Graphics Cookbook*. O'Reilly Media, Inc. <https://r-graphics.org/>

Grolemund, G. (2014): *Hands-On Programming with R: Write Your Own Function and Simulations*. O'Reilly Media, Inc. <https://rstudio-education.github.io/hopr/>

Hamilton, J.D. (1994): *Time series analysis*, Princeton NJ

Hyndman, R.J. and Athanasopoulos, G. (2021): *Forecasting: principles and practice*, 3rd edition, OTexts: Melbourne, Australia. <https://otexts.com/fpp3/>

Makridakis, S., Wheelwright, S.C., MacGee, V.E. (1983): *Forecasting: methods and applications*, New York

Venables, W. N., and Smith, D. M. (2010): *An Introduction to R*. <https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf>

Wickham, H., and Grolemund, G. (2017): *R for Data Science: Import, Tidy, Transform, Visualize, and Model Data*. O'Reilly Media, Inc. <https://r4ds.had.co.nz/>