

Univariate Time Series Analysis

SoSe 2020

Dr. Klaus Wohlrabe, Dennis Mao



Lectures (Wohlrabe)

- Every Tuesday from 14:00 - 18:00
- Online via Zoom

Exercises (Mao)

- Every Monday from 16:00 - 20:00
- Online via Zoom

Examination

- Still not clear how to proceed, it will likely take place at the end of the semester
- Additional repetition courses will be offered prior to the exam

All details can be found on the moodle page, the inscription key is also visible at the bottom of the univariate time series section.



Teaching Style

- A script (slides) will be provided on weekly basis for **self-study**
- Lectures will highlight the important sections and provide life programming examples with matlab
- Students are encouraged to ask questions during the lecture or in the moodle forum prior and after the lecture
- Problem sets will be uploaded on weekly basis, the solutions will be uploaded afterwards
- Both lecture and exercise sessions will be recorded and uploaded on LMUCast
- Lecture and exercise sessions are **complementary**, i.e. some topics discussed in one session will not be treated in the other, attendance in both sessions is advised

Theory

- Basic knowledge of OLS, maximum-likelihood estimation, heteroscedasticity and autocorrelation functions
- Sound knowledge of basic stochastic concepts, i.e. expectation, variance, autocorrelation
- Sound knowledge of calculus in particular working with series and sums

Practical

- **Matlab**, R or **Python** are beneficial but **NOT** required
- Matlab will be used during the lecture
- Python will be used in the exercise session (if time permits)

- **Shumway and Stoffer (2017): Time Series Analysis and Its Applications: With R Examples**
- Box, Jenkins, Reinsel (2015): Time Series Analysis: Forecasting and Control
- Lütkepohl (2005): Applied Time Series Econometrics.
- Hamilton (1994): Time Series Analysis.
- Lütkepohl (2006): New Introduction to Multiple Time Series Analysis
- Chatham (2003): The Analysis of Time Series: An Introduction
- Neusser (2010): Zeitreihenanalyse in den Wirtschaftswissenschaften



- Introduction
- Linear Models
- Modeling ARIMA Processes: The Box-Jenkins Approach
- Prediction (Forecasting)
- Non-stationarity (Unit Roots)
- Financial Time Series