

Time Series Analysis summer 2023

4 SWS + 2 SWS

Carsten Jentsch (lectures) and
Daniel Dzikowski (exercises)

Course presentation

TU Dortmund University

February 8, 2023

Audience:

- ▶ Compulsory for Master Econometrics (Module ME4).
- ▶ Voluntary for Master Data Science, Master Statistics and Bachelor Statistics.

Organization:

- ▶ Course will be taught in **english**.
- ▶ 4 SWS (Lectures) + 2 SWS (Exercise Class)
- ▶ Main communication platform: Moodle.

Prerequisites:

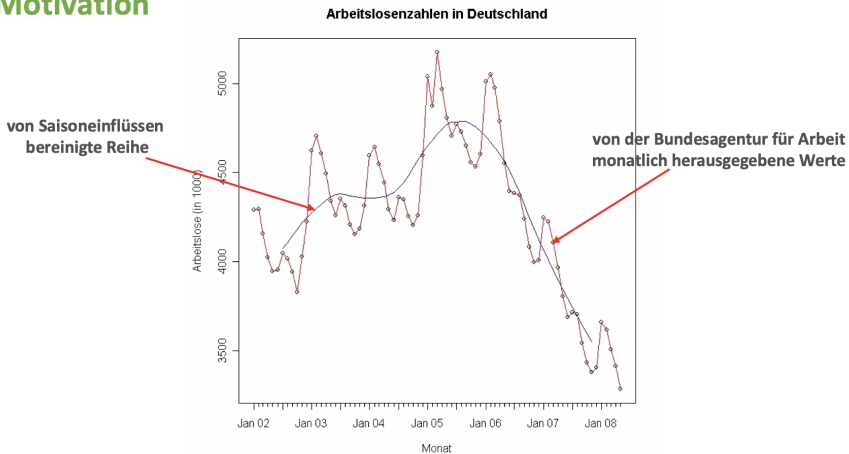
- ▶ There are no formal prerequisites, but:
 - (i) The course will mainly cover theory. For this it would be good, if you have a good understanding of mathematics/statistics and have some previous knowledge of:
 - Classical Linear Regression
 - (ii) Some exercise questions will be applied. To answer these you will need some knowledge of the software programme R.

Tentative course overview

- ▶ Descriptive Time Series Analysis
 - Trend component
 - Seasonal component
 - Irregular component
- ▶ Approximation and Elimination of Trend/Seasonal Component
- ▶ Stationary Stochastic Processes
 - Linear stochastic processes (ARMA-processes)
 - Model identification
 - Parameter Estimation
 - Forecasting
 - Spectral representation

Literature: Brockwell, J.P and Davis R.A. (1991), *Time Series: Theory and Methods*, 2nd edition, Springer

Motivation



Lectures:

- ▶ Tuesday, 10-12 in Maschinenbau - HS1
- ▶ Thursday 12-14 in CT Zentralbereich - HS ZE 02.

Exercises:

- ▶ There will be one exercise class per week. Time, place and exact format are TBD.
- ▶ You will be expected to hand in your solutions every week. Exact procedure is TBD.

Exam:

- ▶ Written exam at the end of term (most likely).
- ▶ Eligibility to exam will depend on results on exercises/mid-terms. Exact procedure is TBD.

- ▶ Content related questions? Email `jentsch@statistik.tu-dortmund.de`.
- ▶ Other questions? Email `daniel.dzikowski@tu-dortmund.de`
- ▶ The moodle password will be announced in the LSF in a few weeks.