Course Code/Type/Title: 040715/UK/Zeitreihenanalyse

Instructors: Manveer Mangat (manveer.mangat@univie.ac.at)
            Erhard Reschenhofer (erhard.reschenhofer@univie.ac.at)

Preliminary Meeting: Tuesday, 03.10.2017, 11:30, PC-SR 5, OMP1

Class Time: Tuesday, 9:45–11:15 (MM), 11:30–13:00 (ER), PC-SR 5, OMP1

Language of Instruction: German

Course Objective: Introduction to the analysis of economic time series

Prerequisites: Advanced knowledge of statistical concepts & software

Tool for Data Analysis: R

Assessment:
  Projects (trend, spectrum, models): 7 points (total maximum: 19 points)\(^1\)
  Exercises: 2 points (total maximum: 4 points)
  Proofs: 1 point (total maximum: 25 points)


Lecture Notes: Time Series Analysis with R (online: [http://homepage.univie.ac.at/erhard.reschenhofer/](http://homepage.univie.ac.at/erhard.reschenhofer/))

Textbook: P.J. Brockwell, R.A. Davis: Introduction to Time Series and Forecasting, Springer

\(^1\) Minus 1 point for each missing table or figure, minus 1 point for one or more formal deficiencies (missing or unclear captions etc.).
Topics, proofs, exercises, projects:

**9:45–11:15 (MM)**

03.10.
10.10. 9:45: Appendix B / 10:30: Appendix A 1-4
17.10. A1 A2 A3 A4 A5 A6 AE A7 A8 A9 AG / Appendix A 4-7
24.10. AQ AO AC AS AR TI TM / Appendix D 1-3
31.10. OL O3 OT / MA filters 1-2
07.11. FQ F2 F3 / Seasonal adjustment
14.11. SO SH CR CP SP S1 S2 S3 SI CB CN CM CS / Project 1
21.11. AM AD AT / AC A1 A2 AW AL / Appendix D 6-8 / Project 1
28.11. RS RI / Project 1 / ARFIMA processes 1
05.12. IR IM M1 M2 M3 / ARFIMA processes 6
12.12. MO MM / Project 2 / ARFIMA processes 7-8
09.01. MN MC PR P1 / Project 2 / Parametric spectral analysis 4
16.01. PF P2 PH PI / Parametric spectral analysis 7-8 / Project 3
23.01. GR GC GV GP GE GW G0 G2 GG / Project 3

**11:30–13:00 (ER)**

Introduction
Appendix C
A0 / Trend
AP TL / Time series operators / Appendix D 5
MA filters 3-10 / Appendix D 4
FS FW / Cycles / Project 1
Spectral analysis
Autocorrelation
RM ARFIMA processes 2-5
ARFIMA processes 9-12 / Project 2
ME ML / Parametric spectral analysis 1-3
PL PD PA / Parametric spectral analysis 5-6
GARCH processes / Project 3
?? ?? ?? ?? ?? / Project 3

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2 9:45-10:30: Only for students with no prior knowledge of R.
Selection of time series for projects

Quarterly, seasonally adjusted series for the United States

1. Real disposable personal income
2. Real personal consumption expenditures
3. Unemployment rate
4. Household debt service payments as a percent of disposable personal income
5. Homeownership rate
6. Federal government current tax receipts
7. Corporate Profits after tax with inventory valuation adjustment and capital consumption adjustment
8. Real exports of goods and services
9. Real imports of goods and services
10. Industrial production: total index
11. Delinquency rate on credit card loans, all commercial banks
12. Personal saving as a percentage of disposable personal income
13. Capacity utilization: manufacturing
14. Total public debt as percent of gross domestic product
### Monthly, seasonally adjusted series

<table>
<thead>
<tr>
<th>Country</th>
<th>Production of total industry</th>
<th>Long-term government bond yields</th>
<th>Harmonized unemployment rate</th>
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<td>102</td>
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<td>UK</td>
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## Adjusted daily closing prices

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