

Time Series Econometrics

-Syllabus-

Lecture

- Instructor: Benjamin Born, e-mail: born@uni-bonn.de
- Office: Kaiserplatz 7-9, Room 4023
- Office Hour: Thursdays, 13:00 - 14:00. Please sign up via Doodle on my homepage.
- Time and Place
 - Wednesdays, 16:00 - 18:00, Lecture Hall B (Juridicum)
 - Fridays, 8:30 - 10:00, Lecture Hall B (Juridicum)
- Tutorials are integrated into the lecture (roughly every second week).

Organization

- **Literature:** The course is mainly based on:
 - Kirchgässner, Wolters, and Hassler (2013).

for the univariate part and

- Kilian and Lütkepohl (2017)

for the multivariate VAR part. A preliminary version of the latter book (together with code) is available at <http://www-personal.umich.edu/~lkilian/book.html>.

General textbooks that are great as references are:

- Hamilton (1994)
- Lütkepohl (2005)

- **Website:** All relevant materials (slides, problem sets, codes, etc.) for the course can be found on eCampus at <https://ecampus.uni-bonn.de/bl.php?id=125028>. You need a password to sign up for the course in order to access the materials. The password will be announced in the first week of the semester.
- **Software:** A considerable part of this course will be to conduct econometric analysis using the computer. You will need to bring your own laptop to class. We will be using *gretl* and *Julia*. Gretl is freely available at <http://gretl.sourceforge.net/> (please also install the X-13 ARIMA package for gretl). You can either use Julia via <http://juliabox.com/> or install it on your local machine. A good setup guide and introduction to Julia is available at http://lectures.quantecon.org/jl/learning_julia.html. We will have a quick introduction/refresher to both programs in the first week.

- **Grading:** 100% of the grade will be based on the final (60 minute) exam.
- **Prerequisites:** Successful participation in the first-semester Econometrics course is crucial. The course will build on the foundations built there.

Outline

The objectives of the course are threefold: (1) develop a feeling for time series data and potential problems when working with it; (2) get to know a comprehensive set of tools and techniques for analysing various forms of univariate and multivariate time series, and for understanding the current literature in applied time series econometrics; (3) learn how to use up-to-date econometric software to estimate time series models.

1. Univariate Stationary Processes
2. Forecasting
3. GARCH
4. Nonstationary Processes
5. Cointegration
6. Vector Autoregressions
7. Structural Vector Autoregressions
8. Bayesian Time Series Models (if time allows)

Changes in the schedule

There will be no classes on the following dates

- Friday, April 13
- Wednesday, May 16
- Friday, May 18
- Wednesday, June 20

Replacement dates will be announced in class.

References

- Hamilton, James D. (1994). *Time series analysis*. Princeton, NJ: Princeton University Press.
- Kilian, Lutz and Helmut Lütkepohl (2017). *Structural vector autoregressive analysis*. Cambridge University Press.
- Kirchgässner, Gebhard, Jürgen Wolters, and Uwe Hassler (2013). *Introduction to modern time series analysis*. 2nd edition. Berlin: Springer.
- Lütkepohl, Helmut (2005). *New introduction to multiple time series analysis*. Berlin: Springer.