

Econometrics

-Syllabus-

Lecture

- Instructor: Benjamin Born, e-mail: born@uni-bonn.de
- Office: Kaiserplatz 7-9, Room 4023
- Office Hour: Wednesdays, 14:00 - 15:00. Please sign up via Doodle on my homepage.
- Lecture Hall: Juridicum, Room F
- Times
 - Wednesdays, 8:30 - 10:00 (bi-weekly)
 - Thursdays, 8:30 - 10:00 (weekly)

Tutorial

- Tutor: Lisa Dähne, e-mail: lisa.daehne@uni-bonn.de
- Office: Kaiserplatz 7-9, Room 4.017
- Office Hour: upon appointment
- Lecture Hall: Juridicum, Room F
- Time: Wednesdays, 8:30 - 10:00 (bi-weekly)
 - starts with an introduction to matrix algebra on Oct. 12

Organization

- **Book:** Marno Verbeek. *A Guide to Modern Econometrics*. Fourth edition. Wiley., 2012
 - in German: Marno Verbeek. *Moderne Ökonometrie*. First edition. Wiley., 2014
- **Website:** All relevant materials (slides, problem sets, etc.) for the course can be found on eCampus at <https://ecampus.uni-bonn.de/bl.php?id=131531>. 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:** We will use the open-source software *Julia* (<http://julialang.org>) which is a newly developed programming language especially suited for scientific computing and data science.¹ You can try it out without installation at <http://juliabox.com/>. Eventually, you should install Julia on your local machine. A good setup guide and introduction to Julia is available at http://lectures.quantecon.org/jl/learning_julia.html.

¹For example, the New York Fed recently ported their DSGE model from Matlab to Julia: <http://libertystreeteconomics.newyorkfed.org/2015/12/the-frbny-dsge-model-meets-julia.html>.

- **Grading:** 100% of the grade will be based on the final (60 minute) exam.
- **Prerequisites:** Background knowledge in Statistics and Mathematics at the undergraduate level is absolutely necessary. Having taken an introductory course in Econometrics would be a great advantage. Francesc Dilme will review probability theory in the *Mathematics for Economists* class. In addition, Lisa will refresh the basics of matrix algebra in the first tutorial. You might also want to have a look at Appendix A of <http://www.ssc.wisc.edu/~bhansen/econometrics/Econometrics.pdf> (page 335ff).

Outline

The objective of the course is to prepare a solid ground for empirical research using advanced econometric techniques. We will derive some theoretical results but the focus will be on what is important for doing and understanding empirical work. The course covers microeconomic tools as well as modern time series methods. Modern computer software will be used throughout the course.

1. Linear Regression Model (Verbeek, ch. 2+3)
2. Heteroskedasticity, Autocorrelation, and the Generalized Regression Model (Verbeek, ch. 4)
3. Endogeneity and Instrumental Variables (Verbeek, ch. 5)
4. Maximum Likelihood and Limited Dependent Variable Models (Verbeek, ch. 6+7)
5. Univariate Time Series Models (Verbeek, ch. 8)

References

- [1] Marno Verbeek. *A Guide to Modern Econometrics*. Fourth edition. Wiley., 2012.
- [2] Marno Verbeek. *Moderne Ökonometrie*. First edition. Wiley., 2014.