Econometrics - Advanced Methods

(Research Metrics 2)

Introduction

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Winter 2024/25

Schedule

- Wednesday, 8:30-10:00, 10:15-11:45, Amalienstr. 73A - 112
- Friday, 8:30-10:00, 10:15-11:45, Geschw.-Scholl-Pl. 1 (A) - A 015
- The exam will take place on the March, 5 in Kaulbachstr. 37 – 023 between 9-11 am.

Lecture Material

- All material will be uploaded to moodle page of our course.
- The download area contains lecture slides, exercises, data sets, and supplementary material.
- Enrollment Key for moodle: Rese@rchMetrics2_2026

Office Hours

- I don't have office hours, but this does not mean you won't have opportunity to ask questions.
- On the contrary, I strongly encourage you to ask questions:
  - Ask questions during the lecture (or before or after).
  - Send me an email and make an appointment for your questions.
  - Some questions are ok to ask per email (questions which does not require me writing several equations are usually ok to ask per email).
  - To sum up: Feel free to ask questions!

What to expect and what not to expect

- The main objective is to introduce several fundamental estimation methods in econometrics
- We will spend fair amount of time on theoretical features of the estimators, but also discuss the practical aspects.
- The tutorials consist of theoretical exercises and empirical applications with the software R.

This course is NOT

- on causality or on identification
- an R course

Outline of the Course (Tentative)

- Large Sample Asymptotics (assumed to be known)

$\Rightarrow$ I will upload a full chapter as an appendix and only recap some concepts as we go.

- Maximum Likelihood
- MM & GMM
- IV
- Simulation-based estimation
- Non-/ Semi-parametric estimation
- Introduction to machine learning

Literature

- **Hansen, B. (2022)**, *Econometrics*, Princeton University Press
- **Cameron A.C. and P.K Trivedi (2005)**, *Microeconometrics: Methods and Applications*, Cambridge University Press. [CT2005)]
- **Wooldridge, J.M. (2010)**, *Econometric analysis of cross section and panel data*, 2nd ed., Cambridge, Mass: MIT Press [W2010]
- **James, G., Witten, D., Hastie, T., & Tibshirani, R. (2023)**. *An introduction to statistical learning* , 2nd ed. New York: Springer.[ISL23]

Statistics reference:

- **Casella G. and Berger R. L. (2002)** Statistical Inference, Duxbury Advanced Series

- Other references will be introduced if needed

Coding/File Organization Advice

- Code and Data for the Social Sciences: A Practitioner's Guide (Matt Gentzkow and Jesse Shapiro)
- Data Science for Economists (Grant McDermott) [Includes slides on version control with git and webscraping info]
- For Stata fans: Stata Coding Guide (Julian Reif)

Grading

- The course grade will be based on a 120-minute written exam scheduled for March 5th.