

ECONOMETRICS FALL 2020

Mathias Bühler

Administrative & Organization

Lecture Outline:

- 180 minutes in total
 - 3x 45 minutes lecture
 - 3x 10 minutes pause/discussion in small groups
 - 3x 5 minutes open discussion

Tutorials:

- Handed out after lecture (Friday)
- Pre-recorded, available online (Monday)
 - Leonie Oberländer
- Tutorial sessions Wednesday Morning 9:00 a.m. & 1 p.m.
 - Mathias Bühler
 - Interactively: To ensure commonality between a.m. and p.m. tutorial sessions, I only answer questions that are sent in by **Tuesday 6 p.m.**

General outline of the course

This is a non-consecutive Masters course in econometrics. Thus, students exhibit a significant heterogeneity in their knowledge in econometrics. The explicit aim of this course is therefore:

- Bring everyone up to speed.
- Create a common language in econometrics.
- Introduce the basic set of estimation techniques.
- Provide the basis for your own independent research.

Naturally, this implies that some students will find this course overly repetitive. Others will find this course overly demanding due to the amount of ground we will cover. Both groups however, benefit from regularly attending, asking questions for the tutorials, and preparing the exam during the semester.

Preliminary lecture plan

1. Introduction, Asymptotics, Conditional expectation and linear projection
2. Algebra of Least Squares
3. Problems with OLS
4. Potential Outcomes and Instrumental Variables estimates
5. Potential Outcomes and Panel Data
6. Potential Outcomes and RCT, RDD

We require (1) and (2) to generate a common understanding, language, and develop the most general OLS model. We then turn (lengthily) to problems with simple OLS estimations. We then discuss the four three-letter-acronyms to solve (3): IV, DID, RCT, RDD. The second half of the lecture will have (3) in the rearview mirror and discuss:

- What problem does this strategy solve?
- What other problems might still be around?

Exam

Due to the massive amounts of topics we're covering, as well as the heterogeneous backgrounds of students, this exam will feature a wide variety of questions, aimed at general understanding of topics and concepts. An example:

Take the example of consistency and unbiasedness:

- I will not ask you to repeat the theoretic proof of either concept.
- I will ask you to show whether (and why) a specific estimate ' β ' is consistent and unbiased
- I will ask you to know the difference between the concepts.