

Module Advanced Topics in Applied Econometrics”

Summer semester 2024

Outline

The ability to understand empirical research and perform appropriate data analysis is now a central skill in economics. This course introduces selected advanced methods of applied econometrics with a focus on state-of-the-art causal inference methods. The lecture follows an example-driven approach, i.e. all methods and concepts are illustrated with examples from economic policy and research contexts. To intensify the learning success and to foster students' data literacy and programming skills, the lecture includes hands-on exercises with real data using the statistical software Stata. The focus is on the following topics:

- I. Review of basic concepts of causal inference
- II. Matching
- III. Difference-in-differences: recent developments
- IV. Instrumental variables: shift-share instruments and marginal treatment effects
- V. Regression discontinuity: local linear regressions and kink design

By the end of the course, students will be able to propose appropriate empirical designs and apply state-of-the-art estimators to address concrete research questions. They will also be familiar with the central assumptions and challenges of the applied methods and be able to critically evaluate the quality of empirical studies. Along the way, the course teaches students how to conduct their own empirical research project and perform an appropriate data analysis using Stata. The course is a good basis for an empirical Master's thesis.

Instructor

Prof. Dr. Kamila Cygan-Rehm
Office hours: Tuesday, 1:00 – 2:30 pm, HÜL 308

Modules

MA-WW-ERG-3804 DWW-ERG-3804 WW-MA-PIE-ATE: Advanced Topics in Applied Econometrics

Schedule

Lecture: Tuesday, 4:40 – 6:10 pm, HÜL S390, Begin on April 9, 2024.
Tutorials: Tuesday, 4:40 – 6:10 pm, SCH B247, Begin on April 16, 2024.
Exam: During the regular exam period, the exact date and room will be communicated on time.

Requirements

A basic knowledge of causal inference methods is required, as taught in the modul Empirical Economics. For a refresher, see the textbook "Causal Inference. The Mixtape" by Scott Cunningham (publically available [online](#)).

The course language is English. Participants should have a sufficient command of English to actively participate in the lecture and the tutorials (i.e., level B2 of the Common European Framework of Reference for Languages).

Resources:

The lecture slides and problem sets for the tutorials will be provided via OPAL. For access, please log into OPAL via your TU Dresden account and register for [this course](#). The number of participants is limited to 25 students. Hands-on data exercises using Stata will be conducted within the regular lecture time in a PC-Pool.

The course is mainly based on papers and the following textbooks:

Cunningham, Scott. Causal inference: The mixtape. Yale University Press, 2021. Available online at <https://mixtape.scunning.com/>

Huntington-Klein, N. (2021). The Effect: An Introduction to Research Design and Causality. Chapman and Hall/CRC. Available online at <https://theeffectbook.net>

Further recommended literature:

Angrist, J. D., & Pischke, J. S. (2015). Mastering 'metrics: The Path from Cause to Effect. Princeton University Press. For accompanying materials, see <https://www.masteringmetrics.com/>

Huber, M. (2023). Causal Analysis: Impact Evaluation and Causal Machine Learning with Applications in R. MIT Press. Available online at <https://mitpress.ubliish.com/ebook/causal-analysis-impact-evaluation-and-causal-machine-learning-with-applications-in-r-preview/12759>

Assessment

Written exam, duration 90 minutes. The exam language is English.