

PhD Course

Causal Inference in Statistics, Social, and Biomedical Sciences and Economics

Block course: September 2016 (4 days), September 20th – September 23rd

Time: 9am – 5pm, room 2079

Course instructor: Professor Martin Spindler (UHH)

Course value: 2 SWS or 4 LP

Course overview:

The main goal of this course is to give an introduction to statistical methods for causal research with applications to Economics and Business Administration. PhD students working empirically are invited to attend the class. Every participant is expected to give a short presentation and / or to hand in a paper. Details will follow. It is highly welcome if you present own papers / ideas (if they fit to the topics) or present empirical applications which are of interest for your research. Proposals are appreciated.

Topics to be covered and further reading (preliminary)

1. Rubin Causal Framework

- Little, R. and Rubin, D.B. (2000). Causal Effects in Clinical and Epidemiological Studies Via Potential Outcomes: Concepts and Analytical Approaches. *Annu. Rev. Public Health* 21, 121-145.
- Holland, P.W. (1986). Statistics and Causal Inference. *Journal of the American Statistical Association* 81:945-969.
- *Rubin, D. B. (1974). Estimating Causal Effects of Treatments in Randomized and Non-randomized Studies. *Journal of Educational Psychology* 66: 5, 688-701.

2. Instrumental Variable Estimation I

- Imbens, G. W. (2014). Instrumental Variables: An Econometricians Perspective. *Statistical Science* 29:3,323-358.

And discussion in this issue of *Statistical Science*

3. Instrumental Variable Estimation II

- * Angrist, J. D. and Imbens, G. W. (1994). Identification and Estimation of Local Average Treatment Effects. *Econometrica* 62:2, 467-475.
- Angrist, J. D., Imbens, G. W. and Rubin, D. B. (1996). Identification of Causal Effects Using Instrumental Variables. *Journal of the American Statistical Association* 91: 434, 444-455.

4. Regression Discontinuity

- Imbens, G. W. and Lemieux, T. (2008). Regression Discontinuity Designs: A Guide to Practice. *Journal of Econometrics* 142:2, 615-635.
- Lee, D. S. and Lemieux, T. (2008). Regression Discontinuity Designs in Economics. *Journal of Economic Literature* 48:2, 281-355.

5. Matching and Propensity Score

- Caliendo, M. and Kopeinig, S. (2008). Some Practical Guidance for the Implementation of Propensity Score Matching. *Journal of Economic Surveys* 22:1, 31-72.
- Huber, M., Lechner, M. and Wunsch, C. (2013). The Performance of Estimators Based on the Propensity Score. *Journal of Econometrics* 175:1, 1-22.
- *Heckman, J. J., Ichimura, H. and Todd, P. E. (1997). Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme. *The Review of Economic Studies* 64:4, 605-654.
- *Imbens, G. W. and Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature* 47:1, 5-86.

6. Difference-in-Differences

- Lechner, M. (2010). The Estimation of Causal Effects by Difference-in-Difference Methods. *Foundations and Trends in Econometrics* 43:165-224.
- *Imbens, G. W. and Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature* 47:1, 5-86.

General literature:

- Angrist, J.D. and J.-S. Pischke (2009). *Mostly Harmless Econometrics*, Princeton University Press.
- Imbens, G. W. and Donald Rubin (2014). *Causal Inference in Statistics, Social, and Biomedical Sciences: An Introduction*, Cambridge University Press.
- Imbens, G. W. and Wooldridge, J. M. (2009). Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature* 47:1, 5-86.

Location: tba

Teaching language: English

Student evaluation: paper presentation

Application: by email to spindler@mea.mpisoc.mpg.de until July 31st