Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

FAKULTÄT
FÜR BETRIEBSWIRTSCHAFT

PhD Course

Recent Developments in Causal Inference

Block course

Time: End of January 2018 (TBA), Place: Moorweidenstr. 18, room 0005

Course instructor: Professor Martin Spindler (UHH)

Course value: 2 SWS or 5 LP

Course overview:
The main goal of this course is to give an introduction to advanced topics in Econometrics with a focus on causal inference. In Economics and Business Administration there has been a strong focus on identification and estimation of causal effects ("programme evaluation") which has been an active field of research in the last decade in Statistics, Economics and many other fields. PhD students should be prepared to conduct empirical studies on a research level, understand potential problems and pitfalls in empirical studies and enabled to find potential solutions.

Topics: In this edition of the course we will focus on machine learning methods and follow partially Efron & Hastie (2016).

Efron & Hastie (2016): Computer Age Statistical Inference: Algorithms, Evidence, and Data Science

The book is freely available here: https://web.stanford.edu/~hastie/CASI/

Teaching language: English
Student evaluation: Oral presentation of a recent paper, written summary of a recent research paper or own research proposal (one of them).
Registration: not required

References

Efron, B. and T. Hastie. Computer Age Statistical Inference. Cambridge University Press 2016.

Athey, Imbens, and Wager (2016). Approximate Residual Balancing: De-Bias Inference of Average Treatment Effects. arxiv.

Athey, Susan, and Guido Imbens. "Machine learning methods for estimating heterogeneous causal effects." arXiv preprint arXiv:1504.01132 (2015).

Athey and Imbens (2016). Recursive Partitioning for Heterogenous Causal Effects. PNAS.

Athey and Wager (2017). Estimation and Inference of Heterogenous Treatment Effects using Random Forests. JASA.

Bloniarz et al. (2015). Lasso Adjustment of Treatment Effect Estimates in Randomized Experiments. arxiv.

Belloni et al. (2017). Program Evaluation and Causal Inference With High-Dimensional Data. Econometrica.

Imbens, Guido W., and Donald B. Rubin. Causal inference in statistics, social, and biomedical sciences. Cambridge University Press, 2015.

Künzel et al. (2017). Meta-learners for Estimating Heterogenous Treatment Effects using Machine Learning. arxiv.

Powers et al. (2017). Some Methods for Heterogenous Treatment Effect Estimation in High-Dimensions. arxiv.