



## Schwerpunktseminar (Bachelor), SS 2017

# Empirical Economic Research in the Age of Big Data

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### Course description

The digitalization of the economy and many aspects of daily life and the availability of new types of data profoundly transforms the way economic research is conducted in general and empirical economic research in particular. This seminar provides an overview of recent empirical research that uses new and unconventional data sources and innovative methods. The seminar in particular aims to:

- Enable students to understand the advances in economics that come from these new research approaches
- Introduce students to state-of-the art empirical methods and innovative sources of data
- Highlight avenues for future research for students who consider doing a master or Ph.D.

The primary focus of the seminar is to discuss the use of “big data” with respect to the identification of causal effects and the creation of alternative measures of economic statistics. The seminar does *not* deal with questions of market design in online markets. Topics that will be discussed in the seminar include the following:

- Large-scale administrative datasets encompass information on almost all transactions between public authorities and individuals of populations of entire countries, which allows rigorous examination of variation in wages, health, productivity and other measures across different subpopulations.
- Digital transactions (e.g. credit card payments, social media communication, Google search patterns) generate data about human behavior that has been unobservable until only recently. Such data not only provide a deeper understanding of the behavior of economic agents but can also provide real-time measurements of aggregate statistics like unemployment rates.
- Combining high-quality datasets from governments or firms with natural or randomized experiments allows moving beyond identification of average treatment effects and moving towards identifications of individual treatment effects.
- Data generated by natural scientists, such as genetic codes or high-resolution satellite images on precipitation and night-lights, becomes increasingly important in economics and moves economics closer to these sciences.
- Digitalization of large historic records (e.g. census data, tax lists, boarding lists of ships, etc.) transforms the way research in economic history is conducted, turning it into a more quantitative subfield of economics.

### Organizational issues

1. Introductory meeting (*10 February 2017, 2 pm*)

Details of the course will be discussed and a short lecture will be given during an introductory meeting in February.

## 2. Assignment and grading (12 ECTS)

Each participant writes a seminar paper (15 pages) on a particular topic primarily based on assigned research articles. This work is then presented during the seminar. Grading: seminar paper (50%), presentation (50%).

## 3. Seminar paper

Participants can express their preferences over topics. In case of oversubscription of individual topics, topics will be assigned randomly. There are two time spans (of four weeks each) during which seminar papers can be written: either *between 28 February 2016 and 27 March 2016* or *between 15 March 2016 and 11 April 2016*. Seminar papers must be written within either of these time spans.

## 4. Presentation

Students present the assigned topic, highlight the scientific contribution, the strength of the approach and the importance of the results. Students also critically discuss the approach and present ideas for alternative applications.

## 5. Seminar dates

The seminar will be held in *June 2017*.

## Requirements

The seminar will be taught completely in English. Seminar papers and presentations also have to be in English. A good command of English is hence an indispensable prerequisite of the course. The seminar will discuss econometric methods that go beyond - but build on - the methods taught in *Empirische Ökonomie I* and *Empirische Ökonomie II*. Students are expected to have very good knowledge of the empirical methods taught in these courses. There will be no possibility to provide students with the necessary background during the preparation of the papers. Students are also expected to study a set of articles as background literature. Details will be given during the introductory meeting.

## References

- ATHEY, S. and IMBENS, G. (2016). The State of Applied Econometrics - Causality and Policy Evaluation. *Working Paper*.
- EINAV, L. and LEVIN, J. (2014). Economics in the Age of Big Data. *Science*, **346** (6210), 1243089.
- VARIAN, H. (2014). Big Data: New Tricks for Econometrics. *The Journal of Economic Perspectives*, **28** (June 2013), 1–36.