

Using Data to Solve Economic and Social Problems

Instructor: Robert Östling

Course Description

To tackle economic and social challenges, we need to understand how individuals and firms behave and how they respond to policy changes. Economic theory provide ways to think about how agents act. Data allow us to quantify these relationships and test competing hypotheses. This course teaches how economic theory can be used to deepen our understanding economic and social problems, and how data can be used to test the predictions derived from theory. The core part of the course covers the most common methods economists use in empirical research, with a particular focus on causal inference. The empirical methods will be organized around a number of economic and social problems. For each problem, the basic theoretical apparatus required to form testable hypotheses are introduced followed by the econometric techniques used to test the hypotheses. Seminars will focus on applying the theory and econometric techniques using real data.

The empirical methods taught in this course are also widely applicable in other settings, essentially whenever we want to make causal inference from existing data, or when collecting own data (for example by conducting a survey or running an experiment), and is therefore a useful preparation for writing an empirical quantitative thesis. At a more general level, the course will deepen participants critical thinking about what data and analyses are required to establish an empirical fact.

Intended learning outcomes

At the end of the course, students should:

- Be able to apply microeconomic theory to derive empirically testable hypotheses.
- Be able to perform and evaluate cross-sectional and panel data analysis.

- Be able to perform and evaluate methods for causal inference.
- Be able to evaluate the validity of empirical methods used in the social sciences.

Course structure

The course consists of approximately 18 lectures and 8 seminars. The aim of the lectures is to introduce selected economic and social problems and to teach the theoretical and econometric tools required to study these problems. The aim of the seminars is primarily to give students an opportunity to apply empirical methods to economic problems using the statistical software R. Some of the seminars will be devoted to discussing research papers in applied microeconomics in order to introduce students to empirical research in economics and develop their skills to critically evaluate empirical research. Neither lectures or seminars are mandatory, but discussion seminars will give course credits.

Literature

The course literature consists of lecture notes, an introductory textbook in econometrics and selected research articles. The textbook that will be used is Stock & Watson, *Introduction to Econometrics*, 4th Edition, ISBN 9781292264455.

Examination

The main part of the examination consists of a written exam that constitutes 75% of the grade. The remaining part of the grade will be based on graded home assignments, participation in discussion seminars and a mid-term exam. The grades will be based on the sum of the grades obtained from all parts of the course and the SSE's standard grading criteria will be applied to the course total.