Structural Econometrics: Discrete Choice Methods with Simulation

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Spring Semester 2018

1 General information

Course objectives
• This is the first course of a sequence of two courses on structural econometrics offered by the DIW Graduate Center
• Focuses on discrete choice models for cross section and panel data
• Covers simulation-based estimation techniques such as Maximum Simulated Likelihood (MSL), Method of Simulated Moments (MSM), and Indirect Inference
• Applied papers from the fields of labour economics, health economics, industrial organization, and behavioral economics will be discussed
• Exercises will include the use of a software package (Matlab)
• The aim is to equip students with skills allowing them to carry out independent empirical research

Course organization
• The course is taught by Daniel Kemptner
• Credit points: 6 ECTS. 6 sessions (4 hours)
• Prerequisites: skills in advanced econometric methods (Master or Ph.D. level)
• All sessions in this course take place at DIW
• First session: 18.4.2018; final session: 23.5.2018

Grading
• The overall grade will be determined by
  – 2 problem sets (to be completed in groups of max. 2 participants), weighted 1/4 each, and
  – a final exam, weighted 1/2.

Main textbook
• Train, K.E. (2009), Discrete Choice Methods with Simulation, 2nd ed., Cambridge University Press.
2 Introduction to choice models (18.4.)
- Train, K.E. (2009), chapters 1, 2
- Properties of choice models
- Binary choice models
- Non-linear models and panel data; Wooldridge, J.M. (2005); Akay, A. (2011)

3 Logit model (25.4.)
- Train, K.E. (2009), chapter 3
- Properties, power, limitations, and estimation

4 Unobserved heterogeneity (2.5.)
- Train, K.E. (2009), chapters 4–6
- Probit model, taste variation and panel data
- Simulation of choice probabilities

5 Extensions (9.5.)
- Train, K.E. (2009), chapter 7
- Stated- and revealed-preference data
- Ranked data and ordered responses

6 Estimation techniques (16.5. and 23.5.)
- Train, K.E. (2009), chapters 8–11, 14
- Numerical integration and drawing from densities
- MSL estimation, MSM estimation, and indirect inference
- Individual-level parameters
- Expectation-Maximization Algorithm
- Bootstrapping
7 Papers


