DIW Graduate Course: Structural Econometrics in Labor and IO

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1 General information

Course objectives

• Covers statistical methods relevant for the analysis of data based on structural economic models
• Discuss advantages and limitations of structural econometric models. Give students an understanding of why and when adding structure is important.
• Focus on discrete choice methods for cross section and panel data
• Provide insights into strategy (especially, identification) in important papers in structural Labour, Public & IO literature. Give a feel of how one may go about establishing a structural model.
• Establish basic estimation techniques & numerical methods such as simulation, numerical integration and discretisation; coding best-practice using Matlab, such as loops vs. vectorisation, readability vs. speed, and sustainable coding for several projects.
• The aim is to equip students with skills allowing them to carry out independent empirical research

Course organization

• Part I is taught by Daniel Kemptner, Part II by Peter Haan, Luke Haywood, and Hannes Ullrich.
• Credit points: 12 ECTS. 5 sessions in Part I, 8 sessions in Part II. Both parts must be completed to gain credits.
• Prerequisites: skills in advanced econometric methods (Master or Ph.D. level)
• All sessions in this course take place at DIW.
• First session: 20.4.2017
• Final session: 20.7.2017 (Exam)

Grading

• The overall grade will be the weighted sum of final grades in Part I (40%) and Part II (60%).
• **Part I**: the final grade for this part of the course 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.
• **Part II**: the final grade for this part of the course will be determined by
  - 2 problem sets (to be completed in groups of max. 2 participants), weighted 1/3 each, and
  - a final exam, weighted 1/3.
2 Part I: Discrete Choice Methods with Simulation

2.1 Introduction to Structural Approaches (20.4., PH)


References


2.2 Introduction to choice models (27.4., DK)

- 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)

2.3 Logit model (4.5., DK)

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

2.4 Unobserved heterogeneity (11.5., DK)

- Train, K.E. (2009), chapters 4–6
- Probit model, taste variation and panel data
- Simulation of choice probabilities
2.5 Extensions (18.5., DK)

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

2.6 Simulation-based estimation (25.5. (to be rescheduled), DK)

- Train, K.E. (2009), chapters 8–10
- Numerical integration and drawing from densities
- MSL estimation, MSM estimation, and indirect inference
- Bootstrapping

2.7 Papers


2.8 Textbook


3 Part II: Advanced Topics in Structural Econometrics

3.1 Static discrete choice in IO (30.5., DIW - Room Friedensburg, HU)

- Estimating demand and supply parameters in markets with differentiated products using aggregate (product-level) data.
- Coding exercise: preliminaries.
References


3.2 Static discrete choice in IO (8.6., DIW - Room Schmoller, HU)

- Recap Berry et al. (1995).
- Coding exercise: Berry et al. (1995) nested fixed-point (NFP) algorithm.
- Discuss extensions and alternative estimation methods.

References


3.3 Dynamic discrete choice in IO (13.6., DIW - Room Friedensburg, HU)

- Introduction to dynamics.

References


3.4 Dynamic discrete choice in IO (20.6., DIW - Room Friedensburg, HU)

- Coding exercise: Rust (1987)
- Examples of more recent applications to demand estimation.
- Conditional choice probability (CCP) estimation.
References


3.5 Dynamic discrete choice in Labour (29.6., PH)

- Dynamic incentives to labour supply: investing in human capital
- More on Discretisation
- Interpolation

Reference


3.6 Partial and Equilibrium job search (6.7., LH)

- Contrast optimal stopping to equilibrium job search models
- Discuss how on-the-job search generates wage dispersion of observationally equivalent workers
- Identification and estimation using duration data
- Simulation using inverse probability sampling

References

McCall (1987)


3.7 Equilibrium search models (13.7., LH)

- Contrast equilibrium job search with and without firm competition
- Model of firm competition via counter-offers
- Identification and Estimation using duration data
- Inferring productivity dispersion from wage dispersion
3.8 Exam (20.7.)

3.9 Further reading

IO: Static demand


**IO: Dynamic discrete choice**


Bajari, Patrick, Chernozhukov, Victor, Hong, Han, and Denis Nekipelov (2009), “Nonparametric and semiparametric analysis of a dynamic discrete game,” working paper.


