Structural Econometrics
Fall 2023
Ciprian Domnisoru

OVERVIEW

After completing this course, students will develop an understanding of the identification of structural econometric models in relation to economic and econometric theory. Students will also learn the theory and estimation strategies behind dynamic discrete choice models. This course covers structural estimation methods, with applications primarily in industrial organization, public, behavioral, and labor economics. It is open to any interested students, particularly PhD students who wish to develop their econometric toolbox and use structural estimation in their work.

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PREREQUISITES

Students are required to have already taken Advanced Econometrics I, II and IV at the Helsinki GSE or similar courses. Students who do not have this background should at least be familiar with maximum likelihood estimation, GMM, and multinomial choice models.

1. **ASSESSMENT AND GRADING**

Students are expected to pick a paper in their field of interest, ideally a recent one that provides a replication package in the student's preferred software. Not all of the paper needs to be replicated, but at least the main results and welfare/counterfactual analysis. Not all attempts need to be successful, but the difficulties in replicating should be documented.

- Three assignments (30%)
- Paper presentation (40%)
- Paper replication summary (30%)

2. **GUIDELINES FOR PAPER PRESENTATION AND REPLICATION SUMMARIES**

Paper presentation- slide deck

- Motivation and research question
- Data and institutional background
- Stylized facts that inform the economic model
- Economic model
- (Link between economic model and) Econometric model
- Assumptions and simplifications between the economic and econometric model (Computational challenges)
- Model fit: targeted vs. non-targeted moments.
- Counterfactuals and Welfare analysis
- Evaluation: strengths/ weaknesses, etc.

Paper replication summary

- Provide log files.
- Describe challenges/problems in replicating paper.
- Provide a modification (ideally meaningful) and show its impact.

3. COURSE SCHEDULE. LECTURES HELD IN SH 3-4 IN ECONOMICUM.

		Assignments due date
Wed Oct 25	Lecture 1. Toolbox/review: simulation methods, SML, GMM, SMM, indirect inference	
Thu Oct 26	Lecture 2. Toolbox/review: simulation methods, SML, GMM, SMM, indirect inference	
Wed Nov 1	Lecture 3. Estimation of structural models using experimental data from the lab and the field (Lecturer: Erik Wengström)	
Thu Nov 2	Lecture 4. Toolbox/review: simulation methods, SML, GMM, SMM, indirect inference	
Wed Nov 8	Lecture 5. Heterogeneity and the EM algorithm	
Thu Nov 9	Lecture 6. Full solution approaches to solving dynamic structural models	Assignment 1 due Fri Nov 10- submit on Mycourses

Wed Nov 15	Lecture 7. Full solution approaches to solving dynamic structural models	
Thu Nov 16	Lecture 8. Conditional choice probability methods and applications	
Wed Nov 22	Lecture 9. Conditional choice probability methods and applications	
Thu Nov 23	Lecture 10. Conditional choice probability methods and applications	Assignment 2 due Fri Nov 24- submit on Mycourses
Wed Nov 29	Student presentations	
Thu Nov 30	Student presentations	Assignment 3 due Fri Dec 1- Mycourses

Paper replication summary due Dec 12