Structural Estimation in Economics  
ECON 6100Z Summer 2017

Lecture Room: Rm 1010, LSK  
Instructor: Dr. Xiang Ma
Time: Tuesday & Friday 02:00PM - 05:20PM  
Office: IAS 2026
Start: June 20th  
Office hour: open-door policy
End: July 14th  
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Course Description

Economics differs from other social sciences in that it not only provides a coherent theoretical framework to explain phenomena in the world, but also develops a tool to measure its theoretical framework. This tool is Econometrics. Econometrics, by definition, should be the bridge connecting “econo” with “metrics”, where “econo” means economic theory, and “metrics” means measurement. The theory part, such as consumer theory, firm theory, and general equilibrium, is covered in today’s microeconomics or macroeconomics class. The theory provides important insight on what matters, but leaving the question of measurement unanswered. For example, Econ 101 tells us that the deadweight loss of a property tax depends on the price elasticities of supply and demand, but pure theory cannot measure the value of these elasticities.

The measurement part, especially various estimation methods, is covered in today’s econometrics class. There an equation or multiple equations are posed, and the focus is how to estimate the parameters in the equation(s). Where the equation(s) to be measured come from is typically ignored.

This course tries to bridge the gap between economic theory and measurement. In particular, this course presents an introduction to structural estimation in economics. “Structural” means STRUCTURE derived from economic theory, and “estimation” corresponds to various estimation methods already covered in today’s econometric class. The focus of this course is how to derive econometric equations from economic theory and then use suitable procedures for estimation and inference. This course would first introduce the concept of structural estimation and also the concept of causality, the very focus of today’s empirical work. After introduction, you would learn through examples from labor economics and development economics about these issues: what a complete structure is? To what do error terms in econometric equations correspond? How does structural estimation deal with unobserved heterogeneity, one important type of error terms? Then we would go back to the conceptual part and discuss identification, which one can better appreciate after understanding the basic ideas of structural estimation. Here I would introduce the concept of identification and different identification approaches. Finally, I would discuss how to combine structural estimation methods and experimental (reduced-form) methods, which are prevalent in today’s empirical work, especially in development economics.
Intended Learning Outcomes

- Analyze economic problems in a structural way
- Build own economic models
- Tell good structure from bad structure

Prerequisite

MATH 2023 Multivariable Calculus OR ECON 2174 Math for Economists & ECON 3334 Introduction to Econometrics OR ECON 5280 Applied Econometrics

Assessment Scheme

- Class Participation: 5%
- Paper Presentation: 45
  - Slides 20%
  - Presentation 20%
  - Q&A in class 5%
- Final Exam: 50%

Arrangement

June 20: Introduction
June 23: Examples from Labor Economics
June 27: Examples from Development Economics & Student Presentation 1
June 30: Heterogeneity in Structural Equations
July 4: Discrete Choices & Presentation 2
July 7: Identification, Control Function and Propensity Score
July 11: Structural Equations and Experimental Methods & Presentation 3
July 14: Review Session and Final Exam

References

1. Introduction
   1.1 Philosophies underlying Structural Modelling
   1.2 Is There a Consumption Function?
   1.3 Where does Mincer Equation Come?

2. Examples from Labor Economics
   2.1 Static

2.2 Dynamic


3. Examples from Development Economics


4. Heterogeneity in Structural Equations


5. Discrete Choices Methods


6. Identification, Control Function and Propensity Score

6.1 Alternative Definitions of Causality

6.2 The Concept of Identification


6.3 Control Function


6.4 Propensity Score

7. Structural Equations and Experimental (Reduced-form) Methods
