Course Description

Lecture: 9-1030 Tuesdays and Thursdays

Office Hours: Tuesday 1-2 (I will provide zoom link)
Class materials (notes etc.) will be made available through a PIAZZA webpage for the course.

This course considers parametric, nonparametric and semiparametric estimation techniques that are used in microeconomics. Topics covered will include GMM, classical discrete choice (or qualitative response) modeling, choice-based sampling, simulation estimators, models with censoring and truncation (limited dependent variable models), sample selection models, nonparametric density and regression estimation methods, semiparametric models, panel data and treatment effects models.

The first part of the course considers the econometric problems introduced when the dependent variable is discrete. We discuss the development of classical discrete choice models and their link to utility maximization. We consider cases where the dependent variable is truncated or censored, and cases where the measurement process for the dependent variable is not independent of the behavioral process (‘sample selection’). We will consider simulation methods for estimating these types of models. The second part of the course considers ways of relaxing parametric assumptions through nonparametric and semiparametric estimation, with a focus on local polynomial methods. We will first examine fully nonparametric methods and then a variety of semiparametric methods. The third part of the course examines techniques for estimating models that make use of panel data. The fourth part of the course considers program evaluation methods.

Course Requirements

There will be 4 problem sets and a final exam. Problem sets will include empirical assignments that require some programming. You can do the programming in a language of your choice. Matlab, R, FORTRAN or C are probably the most useful languages for the assignments. Group work (small groups of 2-4 students) is permitted (and encouraged!) on problem sets. The problem sets will count for 60% of the final grade and the final exam for 40%. The scheduled date for the final exam (assigned by the university, to be announced). The exam will be a timed take-at-home exam.
Recommended Readings

In addition to some course notes that will be made available on the PIAZZA website, I recommend the following textbooks and papers as outside readings.

General Reference Texts:

The chapters from the Manski and McFadden book which can be downloaded from Berkeley’s web site http://emlab.berkley.edu/users/mcfadden/discrete.html.

- **Horowitz, Joel.**, *Semiparametric Methods in Econometrics*, Springer-Verlag, 1998
- **Manski, C.F. and D.L. McFadden (eds)**, *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press, 1981. (selected chapters)
- **Lancaster, T.** *The Econometric Analysis of Transition Data*, Cambridge University Press.

Recommended Readings by Topic

(A) Classical Discrete Choice Models

General references:

- **Amemiya (Chapter 9)**
- **Greene (Chapter 20)**
- **Manski, C.F. and D.L. McFadden (eds)**, *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press, 1981. (Chapters 1 and 5)
Some related papers:

**BUNCH, DAVID S.** “Estimability in the Multinomial Probit Model” in *Transportation Research B*.


(B) CHOICE-BASED SAMPLING

**MANSKI, C.F. AND D.L. McFADDEN (EDS),** *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press, 1981. (Chapter 1, Chapter 2)


(C) SIMULATION ESTIMATORS

**MANSKI, C.F. AND D.L. McFADDEN (EDS),** *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press, 1981. (Chapter 7)


(D) Models with Censoring, Truncation


Amemiya, T., Chapter 10.

(F) Sample Selection


(F) Nonparametric Estimation Methods

General references:


Pagan, A. and A. Ullah Nonparametric Econometrics


Additional papers:


(G) SEMIPARAMETRIC MODELS


INDEX MODELS


PARTIAL LINEAR MODELS


DISCRETE CHOICE MODELS

General reference:

Amemiya, T., Chapter 9.

Some classic papers:


Tobit Models


(H) Panel Data Models


Bundell, Richard and Stephen Bond “Initial conditions and moment restrictions in dynamic panel data models” in Journal of Econometrics, Vol. 87, Issue 1,


(I) Topics in Program Evaluation

Mostly, see course slides.


