Advanced Econometric Topics
ECO-R003 - Fall 2015

School *of* Economics
University of East Anglia

Outline and Syllabus

Lectures:	3pm-5pm (in JSC 1.01)	Instructor:	Farasat A.S. Bokhari
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Rationale and Aims

The course is designed to complement other PhD courses in the program, thereby meeting a perceived demand for increased quantitative skills in the area of economic modeling. Such skills are increasingly necessary where researchers are required to provide evidence based policy recommendations based on cutting edge methodologies on complex data sets. The purpose of this course is to prepare students to understand, and to apply, structural econometric methods from industrial organization to their research. Structural econometrics uses economic theory and statistical methods to derive underlying unknown primitives of economic models, which are then often used to guide policy. This module helps advanced students (second year or above) gain hands-on skills when carrying out such research.

Learning Outcomes

By the end of this course, students will be able to: (1) estimate demand systems using aggregate sales data on a set of differentiated products via a number of techniques including, nested AIDS and random coefficients logit models; and (2) master general programming in SAS and MATLAB.

Computer Exercises

There will also some computer exercises in SAS/MATLAB. I will distribute data sets and share codes (SAS and Matlab) and ask you to estimate some demand models. I will explain these further in class.

Schedule

Lectures will take place over a span of 5 weeks ($\sim$ 2 hrs per lecture with a short break in between). The schedule is as given below.

	Date	Time	Location
1.	November 6 2014	3-4.50pm	JSC 1.01
2.	November 13, 2014	3-4.50pm	JSC 1.01
3.	November 20, 2014	3-4.50pm	JSC 1.01
4.	November 27, 2014	3-4.50pm	JSC 1.01
5.	Deccember 4, 2014	3.4.50pm	JSC 1.01

Introduction to SAS: In addition to these classes, you are encouraged to register and attend my 'Introduction to SAS' session as some of the exercises in this module will use SAS code. The Introductory SAS class is on **Monday November 16 from 10-12** (PPD Lecture title: Using SAS for Statistical Analysis).

Course Content and Outline

We will develop a general framework for structural econometrics, but primarily focus on differentiated products competition. Demand estimation forms the bedrock of much of research, and this short course will look at several papers related to the estimation problem and application of estimates to economic questions. There will be an emphasis on empirical (data-related) work, although theoretical work will also be presented and discussed. We will consider both, product space and characteristics space approaches to demand estimation. Topics covered will be AIDS models, logit estimation, overview of the BLP method, and estimation of nested and random coefficients logit models. The class presentations will be a mixture of lectures, discussions of empirical papers, some of which will be student led, and demonstration of computer code using SAS and MATLAB for estimating these models.

Topics

The following is an approximate outline of main topics covered during this course.

- Overview
  (1) Typical problems in estimation
  (2) Product vs. characteristics space approach
- Estimation in Product Space
  (1) Homotheticity, Gorman Polar Forms and Aggregation
  (2) Separability and Multistage Budgeting
  (3) AIDS Model
  (4) Estimation Details
- Estimation in Characteristics Space
  (1) Random Utility Model and BLP
  (2) Logit and Nested Logit
  (3) Random Coefficients Logit
  (4) Estimation Details

Readings

There is no single text for this course. I will provide lecture notes as we go along but they draw heavily from several sources. Some of these are required readings and are listed below.

- General Background Readings
  - Reiss, P. C. and Wolak, F. A. (2007). Structural econometric modeling: rationales and examples from industrial organization. In Heckman, J. J. and Leamer, E. E., editors, *Handbook of Econometrics*, volume 6A, chapter 64, pages 4277–4415. Elsevier.
  - Cameron, A. C. and Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications*. Cambridge University Press, Cambridge – Chapter 6.
  - Train, K. E. (2003). *Discrete choice methods with simulation*. Cambridge University Press, Cambridge – Chapters 3 & 9.
  - Deaton, A. and Muellbauer, J. (1980b). *Economics and consumer behavior*. Cambridge University Press, Cambridge, UK – Chapters 3 & 5.
- Required Readings
  - Deaton, A. and Muellbauer, J. (1980a). An almost ideal demand system. *American Economic Review*, 70(3):312–326.
  - Hausman, J. A., Leonard, G., and Zona, J. (1994). Competitive analysis with differentiated products. *Annales d'Economie et de Statistique*, 34:159–180.
  - Berry, S. T. (1994). Estimating discrete-choice models of product differentiation. *RAND Journal of Economics*, 25(2):242–262.
  - Nevo, A. (2000). A practitioner's guide to estimation of random-coefficients logit models of demand. *Journal of Economics and Management Strategy*, 9(4):513–548.
- Further Readings for Discussions/Presentations (Student Led)
  - Ellison, S. F., Cockburn, I., Griliches, Z., and Hausman, J. A. (1997). Characteristics of demand for pharmaceutical products: an examination of four cephalosporins. *RAND Journal of Economics*, 28(3):426–446.
  - Chaudhuri, S., Goldberg, P. K., and Jia, P. (2006). Estimating the effects of global patent protection in pharmaceuticals: a case study of quinolones in India. *American Economic Review*, 96(5):1477–1514.
  - Bokhari, F. A. S. and Fournier, G. M. (2013). Entry in the ADHD drugs market: Welfare impact of generics and me-toos. *Journal of Industrial Economics*, 61(2):340–393.
  - Petrin, A. (2002). Quantifying the benefits of new products: The case of the minivan. *Journal of Political Economy*, 110(4):705–729.
  - Berry, S., Levinsohn, J., and Pakes, A. (1995). Automobile prices in market equilibrium. *Econometrica*, 63(4):841–890.
  - Goldberg, P. K. (1995). Product differentiation and oligopoly in international markets: the case of the U.S. automobile industry. *Econometrica*, 63(4):pp. 891–951.
  - Nevo, A. (2001). Measuring market power in the ready-to-eat cereal industry. *Econometrica*, 69(2):307–342.

References

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Train, K. E. (2003). *Discrete choice methods with simulation*. Cambridge University Press, Cambridge.