MA-061: Applied Microeconometrics / Public Policy Evaluation / Applied Microeconometrics using STATA

Detailed Outline

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- **Audience:** This is a Master course taught in English. The lecture will be complemented by a second lecture/practical computer session where the estimators will be implemented using STATA (MA-061-2: Applied Microeconometrics using STATA).
- **Objectives:** The aim of this course is to provide participants with a deeper understanding of microeconometric estimation techniques. We will use the topic "Program Evaluation" to illustrate and discuss several methods, e.g., selection models, instrumental variables, difference-in-differences, panel data models, regression-discontinuity design and matching estimators. The course will be split in theoretical (Monday) and practical (Tuesday) sessions.
- **Location/Room/Time:** The course runs from October 24, 2011 to February 7, 2012.
  Monday sessions, 10am-12am (Room 3.01.165a)
  Tuesday sessions, 10am-12am (Room 3.01.150)
- **Resources:** Slides, exercises and additional material will be made available through MOODLE.
- **Requirements/Pre-Requisites:** Attendance and active participation in all sessions is required; coursework, term paper and at the end of the courses there will be a 90min exam.
  During the practical sessions we are going to implement the discussed estimators with STATA. Hence, a basic knowledge of STATA (data handling, running do-files, etc.) is a pre-requisite for the course. If you are not familiar with STATA you might want to check the online introduction (including lecture movies) from the UCLA Academic Technology Service http://www.ats.ucla.edu/stat/Stata/. The relevant estimation commands and ado-files will be explained during the course.

This is the detailed outline with a reading list. Even though the course will not presume knowledge of the reading list, it may be helpful for a better understanding to have read some of the papers. The papers which will be heavily discussed during the course are indicated with (*).

1. **Introduction in Program Evaluation**
   (a) The Evaluation Framework
   (b) Parameters of Interest and Selection Bias
   (c) Social Experiments
   (d) Linking the Potential-Outcome Framework to Textbook Econometrics
   (e) Selection on Observables and Unobservables
   (f) Effect Heterogeneity

   Blundell and Costa Dias (2002)
   Burtless (1995)
   Caliendo and Hujer (2006*)
   Holland (1986)
   Heckman, LaLonde, and Smith (1999)
   LaLonde (1986*)

2. **Basic Econometric Principles I: OLS**
   (a) The Classical Multiple Linear Regression Model
   (b) Least Squares Regression

(c) Goodness-of-Fit and Variance

(d) Inference and Hypothesis Testing

(e) Problems and Extensions

Wooldridge (2003, Chapter 2-4)
Gujarati (1995, easy accessible)
Greene (2003, more advanced)

3. **Basic Econometric Principles II: Limited Dependent Variables**

(a) Linear Probability Model

(b) Logit and Probit Models

(c) Truncation and Tobit Model

(d) Other Models

Wooldridge (2003, Chapter 17)
Wooldridge (2004, Chapter 15-16, more advanced)
Greene (2003, Chapter 19-20, more advanced)
Maddala (1999)

4. **The Principle of Unconfoundedness**

(a) Introduction

(b) The Basic Idea of Matching under Unconfoundedness

(c) Redefining Selection Bias

(d) How do Matching and Regression under UCF differ?

Imbens (2004*)
Heckman, Ichimura, Smith, and Todd (1998)
Heckman and Robb (1985)
Lechner (1999)
Rosenbaum and Rubin (1983)
Rosenbaum and Rubin (1985b)
Rubin (1974)

5. **The Implementation of Matching I**

(a) Introduction

(b) Exact or Cell Matching

(c) The Balancing Property of the Propensity Score

(d) Estimating the Propensity Score

(e) Overlap and Common Support

(f) Choosing a Matching Algorithm

Abadie and Imbens (2006)
Caliendo and Kopeinig (2008*)
Dehejia and Wahba (1999*)
Dehejia (2005)
Heckman, Ichimura, and Todd (1998)
Hirano, Imbens, and Ridder (2003)
Imbens (2000)
Lechner (2001)
Lechner (2002a)

Lechner (2002b)
Rosenbaum and Rubin (1985a)
Sianesi (2004)
Smith and Todd (2005a*)
Smith and Todd (2005b)
Zhao (2004)

6. **The Implementation of Matching II**
   (a) Assessing the Matching Quality
   (b) Effect Estimation
   (c) Combining Propensity Score Matching with Other Methods
   (d) Sensitivity Analysis
   (e) Programme Heterogeneity
   (f) Sequential Matching
   (g) Dynamic Treatment Assignment

   → Literature: see 'The Implementation of Matching I'

7. **Selection Models**
   (a) General Framework
   (b) Treatment Effects Framework
   (c) Summary and Comments
   (d) Which Estimator to Choose?

   Heckman (1978)
   Heckman (1979)
   Wooldridge (2004)
   Greene (2003)

8. **Instrumental Variables**
   (a) Basic Model
   (b) Multiple Instruments and 2SLS
   (c) IV in the Treatment Effect Notation
   (d) IV-Estimator with Heterogeneous Treatment Effects
   (e) Regression Discontinuity Design

   Angrist (1990)
   Angrist, Imbens, and Rubin (1996)
   Angrist and Krueger (1991)
   Card (1995)
   Imbens and Angrist (1994)
   Angrist and Lavy (1999)
   Hahn, Todd, and Van der Klaauw (2001)

9. **Additional Topics**
   (a) Difference-in-Differences
   (b) Regression Discontinuity Design
   (c) Panel Data Models
   (d) Dynamic Evaluations

References

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