

Advanced Econometrics Methods II

Outline of the Course

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Advanced Econometric Methods II
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Chapter 1: Panel Data

I. Introduction

II. Static Models

- A. The Fixed Effects Model. Within Groups Estimation
- B. The Random Effects Model. Error Components
- C. Testing for Correlated Individual Effects

III. Dynamic Models

- A. Autoregressive Models with Individual Effects
- B. Difference GMM Estimation
- C. System GMM Estimation
- D. Specification Tests

References: Sargan (1958), Balestra and Nerlove (1966), Hausman (1978), Chamberlain (1984), Amemiya (1985), Anderson and Hsiao (1981, 1982), Hansen (1982), Arellano and Bond (1991), Arellano and Bover (1995), Arellano and Honoré (2001), Wooldridge (2002), Arellano (2003), Cameron and Trivedi (2005), Windmeijer (2005)

Chapter 2: Discrete Choice

I. Binary Outcome Models

- A. Introduction
- B. The Linear Probability Model
- C. The General Binary Outcome Model
 - Maximum Likelihood Estimation
 - Asymptotic properties
 - Marginal effects
- D. The Logit Model

- E. The Probit Model
- F. Latent Variable Representation
 - Index function model
 - (Additive) Random utility model

II. Multinomial Models

- A. Multinomial Outcomes
- B. The General Multinomial Model
 - Maximum Likelihood estimation
 - Asymptotic properties
 - Marginal effects
- C. The Logit Model
 - The Multinomial Logit (MNL)
 - The Conditional Logit (CL)
- D. Latent Variable Representation
- E. Relaxing the Independence of Irrelevant Alternatives Assumption
 - The Nested Logit (NL)
 - Random Parameters Logit (RPL)
 - Multinomial Probit (MNP)
- F. Ordered Outcomes

III. Endogenous Variables

- A. Probit with Continuous Endogenous Regressor
- B. Probit with Binary Endogenous Regressor
- C. Moment Estimation

IV. Binary Models for Panel Datas

References: McFadden (1973, 1974, 1984), Manski and McFadden (1981), Amemiya (1985), Wooldridge (2002), Cameron and Trivedi (2005), Arellano and Bonhomme (2011)

Chapter 3: Dynamic Discrete Choice Models I: Full Solution Approaches

I. Introduction

II. General framework

- A. Model primitives and decision problem

- B. Baseline assumptions
- C. Value functions, conditional choice probabilities, and log-likelihood
- III. Motivational example: Rust's engine replacement model*
- IV. Estimation using full solution techniques*
- V. Extensions: unobserved heterogeneity and equilibrium*
 - A. Unobserved permanent heterogeneity
 - B. Estimation of competitive equilibrium models
 - C. Using randomized experimental data to validate structural models
- VI. Application: Llull (2018)*

References: Berndt, Hall, Hall and Hausman (1974), Miller (1984), Wolpin (1984), Heckman and Singer (1984), Pakes (1986), Rust (1987), Eckstein and Wolpin (1989), Hotz and Miller (1993), Rust (1994), Keane and Wolpin (1994, 1997), Judd (1998), Miller (1999), Adda and Cooper (2003), Lee and Wolpin (2006), Todd and Wolpin (2006), Aguirregabiria and Mira (2010), Keane, Todd and Wolpin (2011), Llull (2018)

Chapter 4. Dynamic Discrete Choice Models II: Conditional Choice Probability (CCP) Estimation

- I. Introduction*
- II. Conditional choice probability (CCP) representation*
 - A. Models requiring only one-period-ahead choice probabilities
 - B. Finite dependence
 - C. Infinite-horizon stationary settings
- III. Estimation methods*
 - A. CCPs and transition functions
 - B. Estimating the structural parameters
 - C. Forward simulation methods
 - D. Aguirregabiria and Mira's iterative approach
- IV. Extensions: unobserved heterogeneity and competitive equilibrium models*
 - A. Unobserved heterogeneity
 - B. Competitive equilibrium models and aggregate shocks
- V. Application: Llull (2020)*

References: Dempster, Laird and Rubin (1977), Heckman and Singer (1984), Hotz and Miller (1993), Hotz, Miller, Sanders and Smith (1994), Altuğ and Miller (1998), Miller (1999), Aguirregabiria and Mira (2002, 2010), Arcidiacono and Jones (2003), Arcidiacono and Ellickson (2011), Arcidiacono and Miller (2011), Keane, Todd and Wolpin (2011), Lull (2020)

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