Syllabus

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Microeconometrics
IDEA PhD Program

Chapter 1: A Brief Review of Maximum Likelihood, Generalized Method of Moments (GMM), and Numerical Tools

I. Maximum Likelihood

    A. The Likelihood Principle

    B. The Maximum Likelihood Estimator (MLE)

    C. Asymptotic Properties of the MLE

        Identification

        Regularity conditions

        Consistency

        Asymptotic distribution

II. Generalized Method of Moments (GMM)

    A. General Formulation

    B. Estimation

    C. Asymptotic Properties

        Consistency

        Asymptotic distribution

        Optimal weighting matrix

III. Numerical Methods

    A. Differentiation

    B. Newton-Raphson Optimization

    C. Integration

Chapter 2: 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

Chapter 3: 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)

Chapter 6: Policy Evaluation Methods: Treatment Effects

References

(These are core references. References for applications will be given in class)

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Grading

50% Final Exam. 25% Problem sets. 25% Paper presentation.