



Course: **Microeconometrics**

Faculty: Joan Llull

Term: 1st semester

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Hours: upon request

Description:

This course introduces the students to some econometric methods for the analysis of cross-sectional and panel micro-data. The course explores different techniques that are used in the analysis of discrete, continuous, and limited dependent outcomes.

Objective:

The main goal of this course is to provide students with a frontier econometric toolbox that allows them to produce high level empirical analyses. This course is suitable for any second year student, including those with empirical interests, but also for macro- and micro-oriented students who aim at providing empirical micro-foundations to their research. The course devotes a special emphasis in the implementation of the different techniques, with an array of problem sets in which students are expected to use each of the techniques presented in class in the analysis of real data.

Outline:

1. Introduction and a brief review of relevant tools
 - a. Overview
 - b. Maximum likelihood
 - c. Generalized Method of Moments (GMM)
 - d. Numerical methods
2. Panel data
 - a. Introduction
 - b. Static models
 - c. Dynamic model
3. Discrete choice
 - a. Binary outcome models
 - b. Multinomial models
 - c. Endogenous variables
 - d. Binary models for panel data
4. Censoring, truncation, and selection
 - a. Introduction
 - b. Censoring and truncation. The Tobit model
 - c. Selection
5. Duration models
 - a. Introduction
 - b. The hazard function
 - c. Conditional hazard functions: the proportional hazard model
 - d. Likelihood functions
 - e. Unobserved heterogeneity
 - f. Multiple exit discrete duration models
6. Dynamic discrete choice structural models
 - a. Introduction
 - b. General framework
 - c. Motivational example: Rust's engine replacement model
 - d. Estimation
 - e. Extensions

References:

(These are core references. References for applications to be given during the course)

General references

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Cameron, A. C. and P. K. Triverdi (2005), *Microeconometrics: Methods and Applications*, Cambridge University Press

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Numerical Methods

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Panel data

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Discrete choice

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Manski, C. F., and D. McFadden Eds. (1981), *Structural Analysis of Discrete Data with Econometric Applications*, MIT Press.

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Models with censored variables

- Heckman J. (1979), "Sample Selection Bias and Specification Error", *Econometrica*, 47: 153-161
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- Tobin, J. (1958), "Estimation of Relationships for Limited Dependent Variables," *Econometrica*, 26, 24-36.

Duration

- Cox, D. R. (1972), "Regression Models and Life Tables (with Discussion)," *Journal of the Royal Statistical Society, B*, 34, 187-220.
- Lancaster, T. (1979), "Econometric Models for the Duration of Unemployment", *Econometrica*, 47: 939-956
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Dynamic discrete choice structural models

- Adda, J. and R. W. Cooper (2003), *Dynamic Economics: Quantitative Methods and Applications*. The MIT Press.
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Grading:

50% Final Exam. 20% Problem sets. 30% Replication exercise.

