Advanced Econometrics: Panel Data
Arthur van Soest, Tilburg University

Objectives
The aim of the course is to give a broad overview of empirical models used to analyse panel data, with a focus on applications in micro, explaining the agents’ economic decisions or outcomes. The main econometric models and methods for panel data are discussed, and the students will do hands on exercises learning how to apply the techniques in empirical applications such as, possibly, their own research.

Content
Economic agents often make similar decisions repeatedly over time, taking account of changes in prices and other factors driving preferences, opportunities, or expected outcomes. Examples are consumption expenditures, savings and portfolio choice, or investment decisions in housing of private households; labour force participation and labour supply decisions, decisions on smoking, drinking and other kinds of health related behaviour of individuals, etc. Similarly, firms have to decide on hiring and firing, investing in human capital (by training their workers) or physical capital and in research and development, etc.

To analyse how economic agents make these decisions and the consequences of these decisions, empirical researchers make more and more use of panel data techniques. Panel data are data in which decisions of many economic agents are observed several times, usually at different points in time. For example, many socio-economic household surveys have data on wealth and household assets for a number of consecutive years, allowing for an analysis of the determinants of decisions to buy life insurances or other specific retirement plans, stocks and bonds, etc. Panel data techniques are also useful for the analysis of economic experiments where the same subjects make a number of consecutive decisions in the same experiment.

This course presents theory and applications of panel data models, focusing on models that explain decision making by individuals, households, or firms. Students will learn the main econometric models and techniques for estimation, testing and model selection. They will study articles that apply these models and techniques to a variety of micro-economic issues. In addition, they will learn how to apply these models and techniques themselves by doing exercises and assignments using STATA. Applications will come from labour economics, economics of consumer behaviour, development economics, environmental economics, and health economics.
Recommended Reading

- A selection of applied articles (see the provisional list at the end).

More Advanced Reading for Interested Students:


Prerequisites

A solid introductory course in econometrics; preferably some basic knowledge of Stata

Schedule

There will be a short welcome meeting at 19:00 on Sunday 19th, followed by dinner.

The daily schedule will be:

Monday – Thursday:                Friday:

9:00 - 10:35  First session      9:00 - 10:35  First session
10:55 - 12:30  Second session   10:55 - 12:30  Second session
12:30 - 13:45  Lunch break      12:30 - 13:45  Lunch
13:45 - 15:20  Third session    15:00 - 17:05  Fourth session
15:20 - 15:30  Coffee break     17:05 - 19:00  Free time
15:30 - 17:05  Fourth session   19:00        Dinner

19:00        Dinner
Overview
The morning sessions will be devoted to the econometric models and techniques, with some applications to illustrate these. In the afternoon sessions, students will use Stata to do their own empirical analysis using case studies.

Note: Participants should bring their own laptop with Stata installed. If this is not possible, please indicate this upon registration and we will arrange something.

Day 1: Static linear panel data models with random effects or fixed effects; GLS, WG and FE-IV estimation; Hausman test

Day 2: Dynamic linear panel data models; GMM and the Arellano-Bond and Blundell-Bond estimators

Day 3: Static and dynamic binary choice models with random and fixed effects; ML and Conditional ML estimation

Day 4: Censored regression models; ML estimation for random effects models and Honoré’s estimators for fixed effects models

Day 5: Discrete choice models for panel data (Multinomial choice, ordered choice, count data); ML and Conditional ML estimation
Applications in Journal Articles (to be updated)

Day 1:

Day 2:

Day 3:


**Day 4:**


**Day 5:**


