Universitat Pompeu Fabra
Kurt Schmidheiny/Vasco Carvalho

Introduction

Version: September 21, 2010, 16:33

Your Teachers

Kurt Schmidheiny

Universitat Pompeu Fabra

Jaume I, 20.145

kurt.schmidheiny@upf.edu

Vasco Carvalho

CREi

Mercè Rodoreda, 23.309

vcarvalho@crei.cat

Class Schedule

Lecture:

Tuesday 3:10pm - 6:00pm

Wednesday 9:10am - 12:00pm

Practica:

Friday 9:10am - 10am (Economics Groups A and B)

Friday 10:10am - 11:00am (Finance)

▸ Google Calendar

Course Homepage

There is a course homepage with slides, handouts and additional readings:

- *http://www.schmidheiny.name/teaching/upf/econometrics/*
  (username: upf, password:)

Please send emails directly to

kurt.schmidheiny@upf.edu
vcarvalho@crei.cat

and not through the intranet.

What this course is about

- Basic micro-econometric tools
- Basic panel data tools
- Basic time series tools

Challenge of this course: Heterogeneity

This is a large class with students from very different backgrounds and with very different goals.

Heterogenous Backgrounds

Some of you ...

... have studied econometrics on a advanced level

... have never studied econometrics

... have strong formal training

... have weak formal training

... have performed sophisticated own empirical projects

... have never run a regression

Heterogenous Goals

Some of you ...

- ... want to do empirical research in their PhD
- ... want to a purely theoretical PhD

- ... want to use quantitative analysis in their work
- ... want to become deciders

- $\Rightarrow$ Some disappointment is inevitable.
- $\Rightarrow$ We are positive that each of you will be challenged in some dimension.

What you can expect from this course

- Applied Econometrics
- Critically read empirical research papers
- Do empirical research in your work or in your PhD
- Have a clear intuition about identification strategies
- A good preparation for the follow-up econometrics courses

What you cannot expect from this course

- This course is *not* an introduction to *theoretical econometrics*

$\Rightarrow$ You will not be able to develop new econometric methods.

- This course is *not* an introduction to a *statistical software*

$\Rightarrow$ We will not show you how to click on sophisticated econometric methods which you don't understand.

Part I: Microeconometrics (40 hours)

1. Causal effects and the logic of randomized experiments
2. Linear regression:
   - estimation
   - small and large sample properties
   - hypothesis testing
   - omitted and irrelevant variables
   - functional form
   - heteroscedasticity
   - clustering

4. Instrumental variable estimation:
    - estimation
    - identification
    - weak instruments
5. Panel data:
    - fixed effects
    - random effects
6. Maximum likelihood estimation
7. Binary choice: probit and logit

Module 1: Monte Carlo simulation

Module 2: The bootstrap

Part II: Time Series Econometrics (20 hours)

1. Stationary and Non-stationary Processes
2. Autoregressive and Moving Average Processes
3. Likelihood Methods for ARMA Processes: Estimation, Asymptotics and Hypothesis Testing
4. Vector Autoregressions: Definition, Impulse response functions, Variance decompositions and Estimation
5. Generalized Method of Moments

Level of the course

The level of this course is *between introductory and advanced* textbooks.

It is introductory concerning ...

- ... its topics
- ... its mathematical rigor (most of the times)

It is advanced concerning ...

- ... matrix notation
- ... its mathematical rigor (in some few cases)

It is almost perfectly the level of Greene (2007), *Econometric Analysis*, Pearson. A textbook that we do NOT recommend.

Introductory textbooks

- Stock, James H. and Mark W. Watson (2007)
  Introduction to Econometrics, 2nd ed.
  Pearson Addison-Wesley
- Wooldridge, Jeffrey M. (2009)
  Econometrics: A Modern Approach, 4th ed.
  South-Western Cengage Learning
- Harvey, Andrew C. (1993)
  Time Series Models, 2nd ed.
  MIT Press

Advanced textbooks (Microeconometrics)

- Cameron, A. Colin and Pravin K. Trivedi (2005)
  Microeconometrics: Methods and Applications
  Cambridge University Press
- Davidson, Russell and James G. MacKinnon (2004)
  Econometric Theory and Methods
  Oxford University Press
- Hayashi, Fumio (2000)
  Econometrics
  Princeton University Press
- Wooldridge, Jeffrey M. (2002)
  Econometric Analysis of Cross Section and Panel Data
  MIT Press

Advanced textbooks (Time Series)

- Enders, Walter (2003)
  Applied Econometric Time Serie
  Wiley.
- Hamilton, James (1994)
  Time Series Analysis
  Princeton University Press.

Companion textbooks

- Angrist, Joshua D. and Jörn-Steffen Pischke (2009)
  Mostly Harmless Econometrics: An Empiricist's Companion
  Princeton University Press
- Kennedy, Peter (2008)
  A Guide to Econometrics, 6th ed.
  Blackwell Publishing

Handouts

There are handouts for all topics of the course.

These handouts are ...

- ... very brief
- ... not self-contained
- ... intended to be a useful companion for your life after this course

$\Rightarrow$ You will *absolutely need* to work with one or more textbooks

Statistical Software

- I will use *STATA 11*
- There is a "A Quick Guide to Stata for Windows" on the course homepage
- Stata 10 is available in the LEEX computer lab
- Older versions are available in the other computer labs

Two alternatives:

- Use another statistical package. Please check with us if it covers all methods we use. For example, *R* yes, *SPSS* no
- Program all econometric methods in a matrix algebra language. We will support you using *Matlab* or *Stata Mata*.

Problem Sets

There will be 9 problem sets.

- They will be graded
- You may work in groups
- Hand-in individually
- They will be discussed with your TA in the "practica" class
- There will not be solutions
- They count for 25% of the final grade

Practica

There is a weekly 1 hour practica class.

There are three groups: 1 MSc Finance, 2 MSc Economics

Problem Sets will typically be distributed on Wednesday, are due for Tuesday next week at 3pm and will be discussed the following Friday.

Your TAs:

Francesco Amodio
Jaume I, 20.157
francesco.amodio@upf.edu

Bruno Caprettini
Jaume I, 20.158
bruno.caprettini@upf.edu

Exam

There will be a written final exam in December

- Counts for 75% of final grade
- Some theoretical questions
- Many applied questions: interpretation of Stata output