

Applications of econometrics I

Syllabus

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A Goals of the course

This course aims to provide students with an introduction in quantitative analysis providing the basic tools to reproduce papers published in different fields of applied econometrics as development economics, political economy, urban economics or economics of science. The course aims to improve the understanding of the key basic ingredients used in applied econometrics : statistical softwares, data and the implementation of the most simple estimators and identification strategies.

B Content of each session

Students have to prepare each session before 1) reading the required paper, 2) answering the questions sets . Students should bring their laptops and have python installed on their device.

C Course evaluation

- Students will be graded on
- 1 or 2 problem sets (50%)
 - a Final exam (50%)

D List of the sessions

Session I Data Management and econometrics packages with python, Stata and LaTeX

I.1 Goal of the session

This introductory aims at refreshing students with their knowledge of python and stata. . This session should provide students with the understanding that a research program requires : clean and commented code with well organised datasets to allow reproductibility

- **Skills developed** : Python programing, Stata Programing, object oriented programing, loops, functions, pandas, geopandas, numpy, statsmodel, SQL dataset , postgresql, Latex, Overleaf

I.2 Mandatory readings

- None

Session II Data Collection with Python

II.1 Problem Set

Introduction to Stata

II.2 Goal of the session

This sessions aims to provide the students with the knowlege of webscraping :

- introduction to pandas
- introduction to requests and beautifulsoup
- use of web API

II.3 Mandatory Readings

- Prottoy Akbar et Gilles Duranton. Measuring the cost of congestion in highly congested city : Bogotá. 2017

Session III Introduction to GIS

III.1 Problem Set

Webscraping

III.2 Goal of the session

This sessions aims to provide the students with the knowlege of GIS :

- introduction to QGIS
- introduction to geopandas

III.3 Mandatory Readings

- Walid Oueslati, Seraphim Alvanides et Guy Garrod. Determinants of urban sprawl in european cities. *Urban Studies*, 52(9):1594–1614, 2015

Session IV OLS and Randomized Controlled Trials

IV.1 Problem Set

Introduction to GIS

IV.2 Goal of the session

This sessions aims to provide the students with the basic knowledge of OLS and randomized Controlled Trials. After refreshing the basic principles of these methods , we will discuss and reproduce a paper of Duflo, Dupas and Kremer. This will allow us to learn how to :

- use cross sectional data
- Produce descriptive statistics
- Realize a balanced test
- Estimate Average Treatment effects with OLS

IV.3 Mandatory Readings

- Esther Duflo, Pascaline Dupas et Michael Kremer. Education, hiv, and early fertility : Experimental evidence from kenya. *American Economic Review*, 105(9):2757–97, 2015

Session V Hedonic regression

V.1 Problem Set

Randomized Controlled Trials

V.2 Goal of the session

This session aims at providing the basic insights of hedonic regression models to create price indices and perform real estate appraisal.

- **Concepts :** Hedonic regression , real estate market, OLS

V.3 Mandatory readings

- Christian Gouriéroux et Anne Laferrère. Managing hedonic housing price indexes : The french experience. *Journal of Housing Economics*, 18(3):206–213, 2009

Session VI Difference-in-Difference and Event Studies

VI.1 Problem Set

Hedonic Regressions

VI.2 Goal of the session

This session aims at introducing the use of OLS to estimate difference-in-difference and event studies. Using a paper investigating the link between austerity and Brexit, we will see

- How to use panel data
- How to estimate simple difference-in-difference estimator
- How to estimate and plot event-studies coefficients

VI.3 Mandatory readings

- Thiemo Fetzer. Did austerity cause brexit? *American Economic Review*

Session VII Conclusion

VII.1 Problem Set

Event Studies

VII.2 Goal of the session

Concluding remarks and QA before the final exam