Syllabus

[cmcd.economia@fgv.br]

Course: Econometrics I
Professor:
TA:

2027 FIRST SEMESTER

PROGRAM

1) Introduction: in this class, everything we will do will be related to one of these three questions. (1) What do we want to estimate?; (2) How can we estimate what we want?; (3) How can we test hypotheses?

2) The populations OLS:
   a. Conditional expectation function and correlations: an "assumption-free" justification for using OLS.
   b. Potential outcomes and causality: under which conditions OLS gives us a causal effect?

3) Properties of the OLS estimator.
   a. Algebraic results (projection matrices, partitioned regressions, Frisch-Waugh-Lovel theorem, and so on).
   b. Finite-sample properties and results (distribution, Gauss-Markov theorem, hypotheses testing, and so on).
   c. Large-sample properties and results (asymptotic distribution, hypotheses testing, and so on).

4) Instrumental Variables.
   a. Homogeneous treatment effects (identification, asymptotic distribution, hypotheses testing, and so on).
   b. Heterogeneous treatment effects (identification, asymptotic distribution, hypotheses testing, and so on).

5) Maximum likelihood estimator.

6) Static panel data.

BIBLIOGRAPHY

I will not closely follow any book in particular. In addition to my slides and the notes from class, you might find useful to look at:

- Bruce Hansen's Econometrics textbook (https://www.ssc.wisc.edu/~bhansen/econometrics/).
- Greene, *Econometric Analysis*
- Angrist, Joshua D. and Jörn-Steffen Pischke. *Mostly Harmless Econometrics*.
- Wooldridge, *Econometric Analysis of Cross Section and Panel Data*.

The problem sets solutions will also provide valuable references for the content of the course.

GRADING

10% Problem sets
20% Statistics class
20% Empirical work
50% Final Exam

Grade 60 or more: approved
Grade between 40 and 60: re-evaluation exam
Grade lower than 40: fail

The re-evaluation exam will take place between April 19th and 27th. The final grade in this case will be 60 if the student scores 60 or more in the re-evaluation exam.

PROFESSOR - EMAIL