

# Empirical Methods for Development Economics

Master in Public Policy and Development  
Toulouse School of Economics

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## Instructor

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## Description

This course features a broad overview of randomized experiments as a key tool in empirical research. The first part of the course discusses the rationale behind the experimental approach through the lens of prominent empirical methods. The second part covers econometric aspects as well as a variety of implementation issues that arise when running RCTs in practice. The third part is aimed at illustrating the diverse use of randomized experiments in the most recent research practice through the exposition and discussion of leading academic articles.

## Outline

1. Why randomize? (week 1 to week 3)
  - Endogeneity and causality in economics
  - The causal inference approach
  - The structural econometrics approach
2. Designing and implementing RCTs (week 4 to week 6)
  - Econometrics of RCTs
  - Practical design and implementation issues
  - Sample size and the power of experiments
  - Additional topics (externalities, attrition, etc..)
3. RCTs applications (week 7 to week 10)
  - Policy evaluation
  - Field experiments
  - Structural models

## Pre-requisites and Background Readings

The course is meant to be self-containing. However, basic knowledge of statistics and econometrics at the level of, say, the M1 Program Evaluation course offered at TSE will be assumed during the exposition. Two (somehow complementary) introductory econometrics textbooks that you may want to consult to either refresh or enhance your knowledge and empirical skills are

- “Introductory Econometrics. A Modern Approach”, Wooldridge, Jeffrey M. *Cengage Learning*.
- “Mostly Harmless Econometrics. An Empiricist’s Companion”, Angrist, Joshua D. and Jorn-Stephen Pischke. *Princeton University Press*.

Most closely related to the core topic of the course, these books provide a non-technical overview of randomized experiments and their applications in developing countries

- “Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty”, Abhijit V. Banerjee and Esther Duflo. *Public Affairs*.
- “More Than Good Intentions: Improving the Ways the World’s Poor Borrow, Save, Farm, Learn, and Stay Healthy”, Dean Karlan and Jacob Appel. *Penguin Group*
- Glennerster, Rachel and Kudzai Takavarasha (2013). “Running Randomized Evaluations. A Practical Guide”, *Princeton University Press*.

I will also make use of basic programming tools and commands within the environment of the STATA software. Beyond the official manuals and the several existing online resources, a good introduction on how to do microeconomic research using STATA is

- “Microeconometrics Using Stata”, Cameron Colin A. and Pravin K. Trivedi. *Stata Press*.

## Course Evaluation

The learning objective of the course is twofold. First, students should be able to critically assess existing empirical research that employs the experimental approach. Second, students should be able to originally think about an experimental design of a research question of their choice. Students will be asked to form small groups in order to work on the assignments. Groups are voluntary but each student is required to work with different classmates under different assignments. Group size is approximately 2-3 but will ultimately depend on the total number of students enrolled in the course and it will possibly vary between assignments. The requirements of the course [relative weight] are

### 1. Detailed pre-analysis plan of a mock RCT [40%]

A pre-analysis plan outlines the hypotheses to be tested and specifications to be used in the analysis of a randomized experiment *before* collecting the data generated by the random treatment assignment. In your case, you should use an existing dataset of your choice (survey or administrative data) as the baseline of your hypothetical experiment. You should write it in the form of a draft of a paper of maximum 20 pages (including bibliography, tables, etc). Final drafts are due at the end of the Fall semester - the exact due date will be communicated later during the course. Some examples of pre-analysis plans are made available in the course’s Moodle.

### 2. Oral presentation of one of the papers listed in sections 3 to 5 of the reading list [40%]

I will soon circulate a doodle in which each group is required to select one paper (and the associated pre-specified date) on a first-come first-serve basis. Students are required to critically assess the motivation, findings and contribution of the paper, with special emphasis on how the experimental design is used and the relative pros and cons of the empirical approach. Oral presentations should last about 20 minutes and should be accompanied by slides. Some examples of presentation slides are made available in the course’s Moodle.

### 3. Homework [10%]

You will be required to manipulate some STATA codes with related datasets and hand in the associated output/log files.

### 4. Active participation during others' paper presentation [10%]

All students are expected to read before each class the papers to be presented by their classmates in order to actively participate in the discussion at the end of each paper presentation.

## Reading List

All papers listed below are mandatory reading and they will be made available to the students through the course's Moodle page. The following list may be subject to minor changes during the course. Please check the Moodle regularly for any update.

### 1. Why Randomize?

- Banerjee Abhijit V. and Esther Duflo (2009). "The Experimental Approach to Development Economics," *Annual Review of Economics*, vol. 1(1), pages 151-178, 05.
- Deaton Angus (2010). "Instruments, Randomization, and Learning about Development," *Journal of Economic Literature*, vol. 48(2), pages 424-55, June.
- Duflo, Esther, Glennerster, Rachel and Kremer, Michael (2008). "Using Randomization in Development Economics Research: A Toolkit (Chapter 2)," *Handbook of Development Economics*, Elsevier.
- Todd Petra E. and Kenneth I. Wolpin (2007). "Ex Ante Evaluation of Social Programs.? *Annales D'Economie Et De Statistique*, no. 91/92, 2008, pp. 263-291.

### 2. Designing and implementing RCTs

- Duflo, Esther, Glennerster, Rachel and Kremer, Michael (2008). "Using Randomization in Development Economics Research: A Toolkit (chapters 3-8)," *Handbook of Development Economics*, Elsevier.
- Imbens Guido and Susan Athey (2016). "The Econometrics of Randomized Experiments", *Handbook of Field Experiments*, Elsevier.
- Baird Sarah, A. Bohern, C. McIntosh, and B. Ozler (forthcoming). "Optimal Design of Experiments in the Presence of Interference", *Review of Economics and Statistics*

### 3. Policy evaluation

- Haushofer, J., and Shapiro, J. (2016). "The Short-Term Impact of Unconditional Cash Transfers to the Poor: Experimental Evidence from Kenya," *The Quarterly Journal of Economics* 131(4), 1973-2042.
- Corno Lucia, Martina Bjorkman-Nyqvist, Damien de Walque, and Jakob Svensson (2018). "Incentivizing safer sexual behaviour: Evidence from a randomized control trial on HIV prevention", *American Economic Journal: Applied Economics*, 10 (3), pp.287-314.
- Blattman Christopher, Nathan Fiala and Sebastian Martinez (2014). "Generating Skilled Self-Employment in Developing Countries: Experimental Evidence from Uganda," *The Quarterly Journal of Economics*, vol. 129(2), pages 697-752.
- Dupas Pascaline, Dean Karlan, Jonathan Robinson and Diego Ubfal (2018), "Banking the Unbanked? Evidence from three countries", *American Economic Journal: Applied Economics* 10(2): 257-297, 2018.
- Miguel Edward and Michael Kremer (2004). "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities," *Econometrica*, vol. 72(1), pages 159-217, 01.

- Bold Tessa, Mwangi Kimenyi, Germano Mwabu, Alice Ng'ang'a and Justin Sandefu (forthcoming). "Experimental Evidence on Scaling Up Education Reforms in Kenya", *Journal of Public Economics*.

#### 4. Field experiments

- Andrabi Tahir, Jishnu Das and Asim Ijaz Khwaja (2017). "Report Cards: The Impact of Providing School and Child Test Scores on Educational Markets," *American Economic Review*, vol. 107(6), pages 1535-63, June.
- Behrman, Jere R., Susan W. Parker, Petra E. Todd, Kenneth I. Wolpin (2015). "Aligning Learning Incentives of Students and Teachers: Results from a Social Experiment in Mexican High Schools," *Journal of Political Economy*, vol. 123(2), pages 325 - 64.
- Dal Bo Ernesto, Federico Finan and Martin A. Rossi (2013). "Strengthening State Capabilities: The Role of Financial Incentives in the Call to Public Service," *The Quarterly Journal of Economics*, vol. 128(3), pages 1169-1218.
- Bryan Gharad, S. Chowdhury and A. M. Mobarak (2014). "Under-Investment in a Profitable Technology: The Case of Seasonal Migration in Bangladesh," *Econometrica*, 82(5): 1671-1748.
- Atkin David, Azam Chaudhry, Shamilya Chaudhry, Amit Khandelwal and Eric Verhoogen (2017). "Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan", *Quarterly Journal of Economics: Vol. 132 No. 3*
- Bandiera Oriana, Robin Burgess, Narayan Das, Selim Gulesci, Imran Rasul and Munshi Sulaiman (2017). "Labor Markets and Poverty in Village Economies", *Quarterly Journal of Economics*, Vol. 132(2): 811-870.

#### 5. Structural models

- Attanasio, Orazio, Cattan, Sarah, Fitzsimons, Emla, Meghir, Costas and Rubio-Codina, Marta (2018). "Estimating the Production Function for Human Capital: Results from a Randomized Control Trial in Colombia," *NBER Working Paper N. 20965*.
- Duflo Esther, Michael Greenstone, Rohini Pande and Nicholas Ryan (forthcoming). "The Value of Regulatory Discretion: Estimates from Environmental Inspections in India," *Econometrica*.
- Duflo Esther, Rema Hanna and Stephen P. Ryan (2012). "Incentives Work: Getting Teachers to Come to School," *American Economic Review*, vol. 102(4), pages 1241-78, June.
- Galiani Sebastian, Alwyn Murphy and Juan Pantano (2015). "Estimating Neighborhood Choice Models: Lessons from a Housing Assistance Experiment." *American Economic Review*, 105 (11): 3385-3415.
- Gautier, Pieter A., Muller, Paul, van der Klaauw, Bas, Rosholm, Michael and Svarer, Michael (forthcoming). "Estimating Equilibrium Effects of Job Search Assistance," *Journal of Labor Economics*.
- Bobba Matteo, and Veronica Frisancho (2018). "Perceived Ability and High School Track Choice". *TSE Working Paper, n. 16-660*.