

## **Bavarian Graduate Program in Economics (BGPE)**

### **FIELD EXPERIMENTS IN DEVELOPMENT ECONOMICS**

**JULY 23-27**

**Instructor:**

**Alessandro Tarozzi**

**(Universitat Pompeu Fabra and Barcelona GSE)**

The purpose of this one-week course is to review the key methodological issues and econometric techniques that are essential to conduct and interpret the results of randomized controlled trials (RCTs), with a special emphasis on recent work in Development Economics. Most of the econometric issues that are relevant for RCTs are also more broadly relevant for applied work with cross section and panel data, and so we will also discuss such extensions.

The requirements for this course are, first, a solid knowledge of basic cross-section and panel data econometrics (at a minimum, at the level of Stock & Watson, *Introduction to Econometrics*) and, second, a good working knowledge of the statistical software Stata.

Classes will be largely based on lecture notes, but here are some useful general references:

Angrist and Pischke (2009). *Mostly Harmless Econometrics, An Empiricist's Companion*, Princeton University Press.

Banerjee and Duflo (2009). "The Experimental Approach to Development Economics", *Annual Review of Economics* 1(1), 151-178.

Banerjee, Abhijit and Esther Duflo (2011). *Poor Economics*. Public Affairs, NY.

Deaton, Angus (2010). "Instruments, randomization, and learning about development", *Journal of Economic Literature*, 48(2): 424-455.

Deaton, Angus, and Nancy Cartwright (2017). "Understanding and Misunderstanding Randomized Controlled Trials." NBER Working Paper, no. 22595.

Duflo, Esther, Rachel Glennerster, and Michael Kremer. (2006). "Using Randomization in Development Economics Research: A Toolkit", NBER Technical Working Paper #333 [<http://www.nber.org/papers/t0333>], also in *Handbook of Development Economics*, Vol. 4, ed. T Schultz, J Strauss, Ch. 61, Amsterdam: Elsevier Sci. Ltd. North Holland.

Wooldridge, J. M. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA.

### **Class 1 - Estimation of Treatment Effects & Randomization of Treatment**

Wooldridge, J. M. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT Press, Cambridge MA.

Angrist and Pischke (2009). *Mostly Harmless Econometrics, An Empiricist's Companion*, Princeton University Press.

### **Class 2 - The basic econometric framework of RCTs, Differences-in-Differences (and Triple Differences)**

Thomas, Duncan, Frankenberg, Elizabeth, Friedman, Jed, Habicht, Jean-Pierre, Ingwersen, Nicholas, McKelvey, Christopher, Hakimi, Mohammed, Jaswadi, Peltó, Gretel, Sikoki, Bondan, Seeman, Teresa, Smith, James P., Sumantri, Cecep, Suriastini, Wayan and Wilopo, Siswanto (2006). "Causal effect of health on labor market outcomes: Experimental evidence", Working Paper.

### **Classes 3 and 4 - Level of randomization, standard errors and power calculations**

Bertrand, M., E. Duflo, and S. Mullainathan. (2004). How much should we trust differences-in-differences estimates? *Quarterly Journal of Economics* 119, 249–276.

Bruhn, M. and D. McKenzie (2009). In pursuit of balance: Randomization in practice in development field experiments. *American Economic Journal: Applied Economics*, 1(4), 200-232.

Cohen, Jessica and Pascaline Dupas (2010). "Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment." *Quarterly Journal of Economics*, 125(1), 1-45.

Hoddinott, Maluccio, Behrman, Flores and Martorell (2008). "Effect of a nutrition intervention during early childhood on economic productivity in Guatemalan adults". *Lancet*. 371, 411-416.

### **Class 5 - Estimation and inference with multiple outcomes**

Hochberg, Yosef. 1988. "A sharper Bonferroni procedure for multiple tests of significance." *Biometrika*, 75 (4): 800–802.

Tarozzi, Alessandro, Jaikishan Desai, and Kristin Johnson (2015). "The Impacts of Microcredit: Evidence from Ethiopia." *American Economic Journal: Applied Economics*, 7(1): 54-89.

### **Class 6 – Externalities**

Manuela Angelucci and Giacomo De Giorgi (2009). "Indirect Effects of an Aid Program: How Do Liquidity Injections Affect Non-eligibles' Consumption?" *American Economic Review*, 99, 486-508.

Miguel, Edward and Michael Kremer (2004). "Worms: Identifying Impacts on Education and Health in the Presence of Treatment Externalities", *Econometrica*, 72(1), 159-217.

### **Class 7 and 8 - Heterogeneity in treatment effects, imperfect compliance and the Local Average Treatment Effect (LATE)**

Imbens, G. and J. D. Angrist (1994), "Identification and Estimation of Local Average Treatment Effects," *Econometrica* 62 (2), 467-475.

Tarozzi, Alessandro, Jaikishan Desai, and Kristin Johnson (2015). “The Impacts of Microcredit: Evidence from Ethiopia.” *American Economic Journal: Applied Economics*, 7(1): 54-89.

**Class 9 – RCTs, drawbacks, extensions.**

Casey, Katherine, Rachel Glennerster, and Edward Miguel (2012). “Reshaping Institutions: Evidence on Aid Impacts Using a Preanalysis Plan.” *Quarterly Journal of Economics* 127(4): 1755–1812.

Cohen, Jessica and Pascaline Dupas (2010). “Free Distribution or Cost-Sharing? Evidence from a Randomized Malaria Prevention Experiment.” *Quarterly Journal of Economics*, 125(1), 1-45.

Deaton, Angus (2010). “Instruments, randomization, and learning about development”, *Journal of Economic Literature*, 48(2): 424-455.

Karlan D, Zinman J. (2009). “Observing unobservables: identifying information asymmetries with a consumer credit field experiment.” *Econometrica*, 77(6).

Olken B (2015). “Promises and perils of Pre-analysis plans.” *Journal of Economic Literature*, 29(3), 61-80.

## Agenda

	<b>MONDAY July 23</b>	<b>TUESDAY July 24</b>	<b>WEDNESDAY July 25</b>	<b>THURSDAY July 26</b>	<b>FRIDAY July 27</b>
9:00 - 10:30	<b>Class 1 - Estimation of Treatment Effects and Randomization of Treatment</b>	<b>Class 3 - Level of randomization and standard errors</b>	<b>Class 5 - Estimation and inference with multiple outcomes</b>	<b>Class 7 - Heterogeneity in treatment effects, imperfect compliance and the Local Average Treatment Effect (LATE)</b>	<b>Class 9 - RCTs, Drawbacks, Extensions</b>
10:30 - 11:00	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break
11:00 - 12:30	<b>Class 2 - The basic econometric framework of RCTs, Differences-in-Differences</b>	<b>Class 4 - RCT Design: Standard errors and power calculations</b>	<b>Class 6 - Externalities</b>	<b>Class 8: LATE (continued)</b>	<b>Class 9 - RCTs, Drawbacks, Extensions (continued)</b>
12:30 - 14:00	Lunch	Lunch	Lunch	Lunch	Lunch
14:00 - 15:30	<b>Problem set - Causal inference</b>	<b>Problem set- Power calculations</b>	<b>Problem set - Estimation with multiple outcomes</b>	<b>Problem set - Heterogeneity of treatment</b>	
15:30 - 16:00	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	Coffee/Tea Break	
16:00 - 17:30	<b>Discussion of problem sets</b>	<b>Discussion of problem sets</b>	<b>Discussion of problem sets</b>	<b>Discussion of problem sets</b>	
19:00	Dinner	Dinner	Dinner	Dinner	