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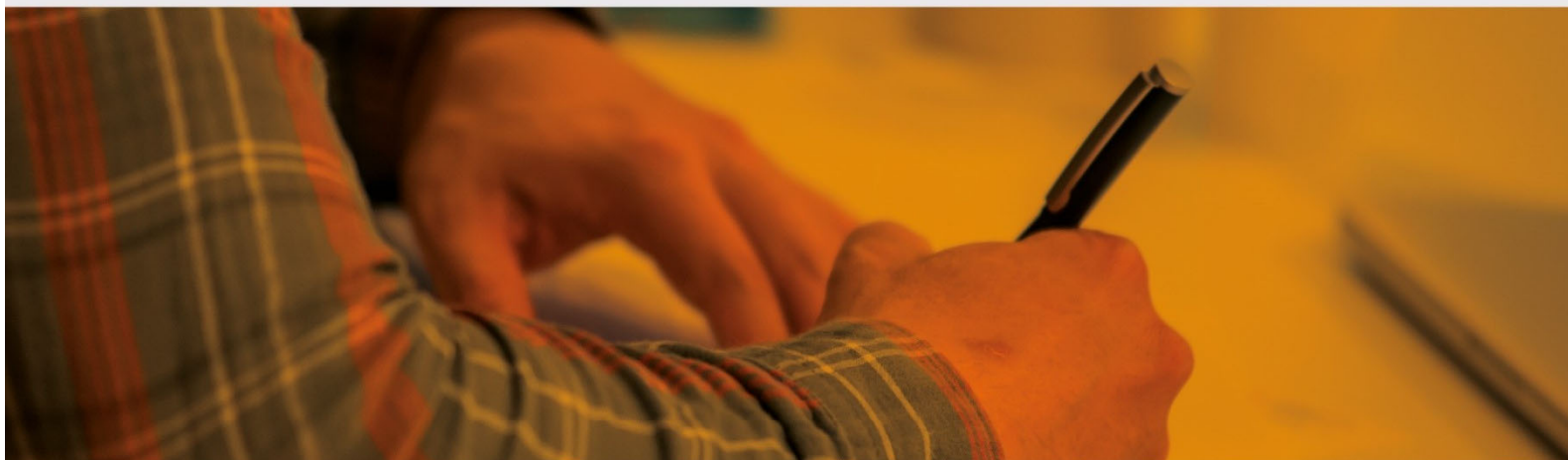
Maastricht University

Maastricht Graduate School of Governance



Impact Evaluation of Policies and Programs: Estimation and Analysis of Causal Impacts

Online course



- INTRODUCTION TO THE COURSE

Impact Evaluation of Policies and Programs: Estimation and Analysis of Causal Impacts

Overview

Impact evaluations have become routine elements of programme implementation due to their ability to build accountability and learning for policymakers, non-governmental organizations, donors and affected populations. Conducting impact evaluations in the real world can be a difficult process and may require a blend of techniques to obtain impact estimates. This course builds upon the introductory course on impact evaluation and provides a hands-on approach to estimating and analyzing causal impacts using various techniques. These include randomized control trials and designs, regression discontinuity design, difference in differences, propensity score matching and instrumental variables method. Students will learn how to conduct an in-depth econometric estimation/analysis of causal impacts.

Audio-visual lessons will be provided together with datasets and step-by-step analysis guides to using various impact evaluation techniques in Stata software. Lessons and case studies will give participants a knowledge base to help them understand the applicability of methods to a given set of circumstances. The final assignment/exam, will put the student's newly acquired skills to the test by presenting her/him with a dataset and the task to perform a mock impact evaluation. Interested students should have intermediate knowledge of statistical analyses or econometrics. For example, they should already know how to obtain descriptive statistics, conduct t-tests and basic regression analysis. They should also be familiar with the Stata data processing and data analysis software.

Key Concepts

- Estimation of causal impacts
- Conducting validity tests and sensitivity analyses
- Using Stata for analysis

Learning Goals

- Having knowledge of:
 - How to execute randomized and quasi-experimental impact estimations
 - Software code for data analysis
- Understanding:
 - How to identify causal estimates of impacts through various techniques
 - How to assess robustness and validity of each technique

- **COURSE OUTLINE**

1. Unit 1: Randomized methods
 - a. Randomized control trial
 - b. Randomized offer/promotion with instrumental variable approach
2. Unit 2: Regression Discontinuity Design
 - a. Sharp design
 - b. Fuzzy design with instrumental variable approach
3. Unit 3: Difference in Differences
4. Unit 4: Propensity score matching
5. Unit 5: Assignment/Exam

- **LEARNING MATERIALS**

1. **Lectures / Video Recordings**

- Lecture slides are provided online
- There are introductory video recordings for each Unit.

2. **Readings**

REQUIRED

All methods

Gertler, Paul J.; Martinez, Sebastian; Premand, Patrick; Rawlings, Laura B.; Vermeersch, Christel M. J.. 2016. *Impact Evaluation in Practice*, Second Edition. Washington, DC: Inter-American Development Bank and World Bank. © World Bank. <https://openknowledge.worldbank.org/handle/10986/2503>

Schlottter, Martin, Guido Schwerdt, and Ludger Woessmann. (2011). "Econometric methods for causal evaluation of education policies and practices: a non-technical guide." *Education Economics* 19(2): 109-137. <http://www.tandfonline.com/doi/abs/10.1080/09645292.2010.511821>

Randomized Methods

Glennerster, R., & Takavarasha, K. (2013). *Running randomized evaluations: A practical guide*. Princeton University Press. <http://runningres.com>

Huang, F. L. (2018). Using Instrumental Variable Estimation to Evaluate Randomized Experiments with Imperfect Compliance. *Practical Assessment, Research & Evaluation*, 23(2), 2.

Angrist, J. D. (2006). Instrumental variables methods in experimental criminological research: what, why and how. *Journal of Experimental Criminology*, 2(1), 23-44.

Abhijit Banerjee, Sharon Barnhardt, Esther Duflo, Can Iron-Fortified Salt Control

Anemia? Evidence from Two Experiments in Rural Bihar, *Journal of Development Economics*, December 18, 2017; <https://economics.mit.edu/files/11448>

Abhijit Banerjee, Esther Duflo, Nathanael Goldberg, Dean Karlan, Robert Osei, William Parienté, Jeremy Shapiro, Bram Thuysbaert, Christopher Udry. A multifaceted program causes lasting progress for the very poor: Evidence from six countries, *Science*, 15 May 2015; <https://science.sciencemag.org/content/348/6236/1260799.full>

Deaton and Cartwright, Understanding and misunderstanding randomized controlled trials, *Social Science & Medicine*, Volume 210, August 2018, Pages 2-21.

FURTHER READING

Guido W. Imbens and Jeffrey M. Wooldridge (2009) Recent Developments in the Econometrics of Program Evaluation. *Journal of Economic Literature* 47(1), pp. 5-86. https://www.jstor.org/stable/27647134?seq=1#page_scan_tab_contents

Chapter 5.2 on difference in differences; Chapter 6 on regression discontinuity:

Angrist, Joshua D. and Jörn-Steffen Pischke. (2008). *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Difference in Differences: DiTella, Rafael and Schargrotsky, Ernesto. Do Police Reduce Crime? Estimates Using the Allocation of Police Forces after a Terrorist Attack. *American Economic Review*. 2004.

<https://www.istor.org/stable/pdf/10.1086/426041.pdf?refreqid=excelsior%3A45a3262eedb4314996d656f4c8c93177>

David Card and Alan Kruege, Minimum Wages and Employment: A Case Study of the Fast Food Industry in New Jersey and Pennsylvania, *American Economic Review*, 1994;

<https://dataspace.princeton.edu/ispui/bitstream/88435/dsp017d278t020/1/315.pdf>

EDWARD MIGUEL AND MICHAEL KREMER, WORMS: IDENTIFYING IMPACTS ON EDUCATION AND HEALTH IN THE PRESENCE OF TREATMENT EXTERNALITIES, *Econometrica*, Vol. 72, No. 1 (January, 2004), 159–217;

http://cega.berkeley.edu/assets/cega_research_projects/1/Identifying-Impacts-on-Education-and-Health-in-the-Presence-of-Treatment-Externalities.pdf

Matching: Caliendo, Marco, and Sabine Kopeinig. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys* 22(1): 31-72. <http://onlinelibrary.wiley.com/doi/10.1111/j.1467-6419.2007.00527.x/pdf>

Regression Discontinuity: Jacob, Robin, Pei Zhu, Marie-Andrée Somers, and Howard Bloom (2012). A Practical Guide to Regression Discontinuity. MDRC.

https://www.mdrc.org/sites/default/files/regression_discontinuity_full.pdf

Ludwig, Jens, and Douglas L. Miller. (2007) Does Head Start improve children's life chances? Evidence from a regression discontinuity design. *Quarterly Journal of*

Economics 122(1): 159-208. <https://academic.oup.com/qje/article/122/1/159/1924719/Does-Head-Start-Improve-Children-s-Life-Chances>

Imbens, G. and Angrist, J. (1994). Identification and estimation of local average treatment effects. *Econometrica: Journal of the Econometric Society*, pages 467_475.

Imbens, G. and Lemieux, T. (2008). Regression discontinuity designs: A guide to practice. *Journal of Econometrics*, 142(2):615_635.

Lee, D. and Lemieux, T. (2010). Regression discontinuity designs in economics. *Journal of Economic Literature*, 48:281_355. Instrumental variables:

Angrist, Joshua and Alan Krueger. (2001). Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments. *Journal of Economic Perspectives* 15(4): 69-87. <https://www.aeaweb.org/articles?id=10.1257/jep.15.4.69>

Imbens, G. W., & Angrist, J. D. (1994). Identification and estimation of Local Average.

- **REQUIRED ACTIVITIES**

1. Introduction videos
 - You are required to watch the introductory video recording for each Unit
2. Discussion Forum
 - You are advised to interact with others on the discussion forum to share ideas and knowledge. Online tutors will also be available to help.
3. Assignments
 - There are four assignments for each Unit. They all contribute towards the overall grade.

- **GRADING PROCEDURE**

Four assignments will contribute 25% each towards the final grade.

- **SUPPORT STRUCTURE**

1. Academic Staff (who, when, how contact, discussion moments, online tutorials or office hours?)

- Francesco Iacoella, Online Instructor. Available afternoons 1600-1800hrs CET. iacoella@merit.unu.edu
- Alex Hunns, Online Instructor. Available afternoons 1600-1800hrs CET.. hunns@merit.unu.edu

2. ELEUM and IT (what to do if you have platform or login problems)

- Kirsten Haaland, Haaland@merit.unu.edu

• **TIMELINE**

The course content is designed as four weeks content, based on an average workload of 15 hours a week. The course registration will be for 8 weeks, and will be closed after this time period. During these 8 weeks, the time investment by the participant is flexible, and can be done at time convenient to the individual as long as each unit is completed within the dedicated unit week. Assignment deadlines will be clarified on the platform.

Week 1	Registration
Week 2	Unit 1 End of week: Submissions of answers to Unit 1 exercise
Week 3	Unit 2 End of week: Submissions of answers to Unit 2 exercise
Week 4	Unit 3 End of week: Submissions of answers to Unit 3 exercise
Week 5	Unit 4 End of week : Submissions of answers to Unit 4 exercise
Week 6	Final assignment submission and oral exam
Week 7	Recap the materials in case of failed exam
Week 8	Resit assignment deadline and oral exam

In 2020 the course will be offered during the following time periods

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
02/03/2020	09/03/2020	16/03/2020	23/03/2020	30/03/2020	06/04/2020
04/05/2020	11/05/2020	18/05/2020	25/05/2020	01/06/2020	08/06/2020
08/06/2020	15/06/2020	22/06/2020	29/06/2020	06/07/2020	13/07/2020
10/08/2020	17/08/2020	24/08/2020	31/08/2020	07/09/2020	14/09/2020
26/10/2020	02/11/2020	09/11/2020	16/11/2020	23/11/2020	30/11/2020

• **CONTACT DETAILS**

1. Course Coordinator
 Francesco Iacoella. iacoella@merit.unu.edu
 Alex Hunns hunns@merit.unu.edu

2. Facilitators/Instructors
Lorena Guiberti: giuberti@merit.unu.edu
3. ELEUM Coordinator
Kirsten Haaland. Haaland@merit.unu.edu
4. Student Affairs
Mieke Drossaert. drossaert@merit.unu.edu
5. Online Course programme manager
Mindel van de Laar. Mindel.vandelaar@maastrichtuniversity.nl