



Advanced Research Design (ARD)

Seminar, 2nd term 2018-2019

Organised by Fabrizio Bernardi

Please register [online](#)

Contact: Jennifer.Dari@EUI.eu

Course Outline

This course is primarily meant for researchers who want to develop causal hypotheses in their prospectus and want to learn how to put them to the test. The course touches on a series of designs suitable for identifying causal relations rather than correlations, including natural experiments, regression discontinuity, Diff-in-Diff, instrumental variables and siblings and twins designs. The readings offer many applications of these designs aimed at spurring participants' imagination.

The reference texts for the seminar are:

- Firebaugh, G. (2007), *Seven Rules for Social Research*, Princeton: Princeton University Press. [1st chapter online: <http://assets.press.princeton.edu/chapters/s8593.pdf>]
- Thad Dunning, *Natural experiments in the social sciences. A design based approach*. CUP 2012 <http://biblio.eui.eu/record=b1759366~S5>

Classes and topics:

- o Week 1: introduction to cause seeking designs & practical arrangements [8 January]
- o Week 2: potential outcome framework and directed acyclic graphs [15 January, FB]
- o Week 3: Endogenous selection bias or the problem of colliders [22 January, FB]
- [from week for 4: presentations and response papers]*
- o Week 4: difference in difference [29 January]
- o Week 5: natural experiments [5 February]
- o Week 6: unexpected events during survey design [12 February]
- o Week 7: regression discontinuity [26 February]
- o Week 8: instrumental variables [5 March]
- o Week 9: twins and siblings [12 March]
- o Week 10: caveats and implication analysis [22 March]

Requirements

In order to obtain the 20 credits participants, in addition to attending regularly, are required:

- 1) to give a class presentation on an application of one of the research designs discussed in the course. Ideally this presentation is linked to your research. I expect a clear exposition of the research question, the challenges to causal identification and the core assumptions of the research

design and a preliminary discussion of the data. I do not expect results (that could come later in the form of a non compulsory term paper).

2) from Week 4 onward, to prepare brief comments (about 1 page) on at least two of the recommended readings for each session. These comments should contain ideas on how to apply the designs presented in each week's readings to your research questions or to research questions in your field of research *or* ideas on how to replicate the same designs to other data or settings. These comments should be posted on the course folder by the Sunday preceding the class. A selection of these comments will be discussed in class.

3) to make the short assignments for Week 1 and 3 and post them on the course folder by the Sunday preceding the class.

Schedule

The seminar takes place on **Tuesdays at 11:00-13:00**, in Seminar Room 4 in the Badia, and will run **from Tuesday 8 January to Tuesday 12 March** (note no class on the 19th of February). The full list of the seminar sessions is the following:

Session 1:	Tuesday 8 January	11:00 – 13:00	Seminar Room 4
Session 2:	Tuesday 15 January	11:00 – 13:00	Seminar Room 4
Session 3:	Tuesday 22 January	11:00 – 13:00	Seminar Room 4
Session 4:	Tuesday 29 January	11:00 – 13:00	Seminar Room 4
Session 5:	Tuesday 5 February	11:00 – 13:00	Seminar Room 4
Session 6:	Tuesday 12 February	11:00 – 13:00	Seminar Room 4
Session 7:	Tuesday 26 February	11:00 – 13:00	Seminar Room 4
Session 8:	Tuesday 5 March	11:00 – 13:00	Sala del Capitolo
Session 9:	Tuesday 12 March	11:00 – 13:00	Seminar Room 4
Session 10:	Friday 22 March	13:00 – 15:00	Seminar Room 2

SYLLABUS (please note that the reading list may still be subject to change)

Week 1. Introduction to cause seeking designs & practical arrangements (Tuesday 8 January 2019)

Compulsory readings

Joshua D. Angrist & Jörn-Steffen Pischke 2013. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press.

Chapter 1, which can be found here: <http://press.princeton.edu/chapters/s8769.pdf>

Freedman, D.A. 1991. Statistical models and Shoe Leather. *Sociological Methodology* 21: 291-313.

Elif Batuman. 2013. "Poisoned Land. On the trail of a mystery disease in the Balkans". *New Yorker*, August 12, 2013

Other readings

James Lind (1716-1794), a pioneer: http://en.wikipedia.org/wiki/James_Lind

Freedman, D.A. 2010. "On types of scientific enquiry: Nine success stories in medical research." in *The Oxford Handbook of Political Methodology* pp. 300–18. Janet M. Box-Steffensmeier, Henry E. Brady and David Collier, editors.

Luke Keele, The Statistics of Causal Inference: A View from Political Methodology. *Political Analysis* (2015) pp. 1–23 [esp introductory section and section 3]

Assignment

I expect you to do the compulsory readings in the syllabus for class 1 during the Christmas break, and to send Jennifer by the previous Sunday night a page or so presenting the research question of your dissertation (or one sub-question derived from it, or one new question you are interested in) and then following Angrist & Pischke fundamental prescription that you find in their chapter 1: imagining you are in a world with no constraints – ethical, financial, temporal etc, -- *can you conceive an ideal experiment that could answer that question?*"

Week 2. Potential outcome framework and - Fabrizio Bernardi (Tuesday 15 January 2019)
A whiteboard (old fashion presentation)

Compulsory reading

Morgan, Stephen L. and C. Winship. 2007. Counterfactuals and Causal Inference. Methods and principles for Social Research. Cambridge: Cambridge University Press. *Chapter 1 and 2*

Other readings (Optional)

Antonakis, J, Bendahan, S., Jacquart, P. and Lalive, R. . 2010. On making causal claims: A review and recommendations. *The Leadership Quarterly* 21:1086-1120.

Gangl, M. 2010. Causal Inference in Sociological Research. *Annual Review of Sociology* 36: 21-47.

Luke Keele, The Statistics of Causal Inference: A View from Political Methodology. *Political Analysis* (2015) pp. 1–23 [esp introductory section and section 3]

Ni Bhrolchain, M., and Dyson, T. 2007. On Causation in Demography: Issues and Illustrations. *Population and Development Review* 33 (1):1–36.

Week 3. Endogenous selection bias or the problem of colliders (Tuesday 22 January 2019)

Elwert, Felix and Christopher Winship. 2014. "Endogenous Selection Bias: The Problem of Conditioning on a Collider Variable." *Annual Review of Sociology* 40(1):31-53.

Morgan, Stephen L. and C. Winship. 2007. *Counterfactuals and Causal Inference. Methods and Principles for Social Research*. Cambridge: Cambridge University Press. Chapter 3 pp. 61-74

Other readings

Breen, Richard. 2018. "Some Methodological Problems in the Study of Multigenerational Mobility." *European Sociological Review* 34(6):603-11. doi: 10.1093/esr/jcy037.

Rohrer, Julia M. 2018. "Thinking Clearly About Correlations and Causation: Graphical Causal Models for Observational Data." *Advances in Methods and Practices in Psychological Science* 1(1):27-42. doi: 10.1177/2515245917745629.

Acharya, Avidit, Matthew Blackwell and Maya Sen. 2016. "Explaining Causal Findings without Bias: Detecting and Assessing Direct Effects." *American Political Science Review* 110(3):512-29.

Assignment

Read the two compulsory reading and one among other readings of your choice. Look for an example of an article in your research area that controls for a collider ("who is without sin cast the first stone" ..). Wrote a short comment (1 page) and represent the causal structure of the problem using a graphical causal model.

Week 4. Difference in difference and synthetic cohorts (Tuesday 29 January 2019)

Introduction

WHO-Impact Evaluation in Practice: Chapter 6.

http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact_Evaluation_in_Practice.pdf

Abadie, Alberto, Alexis Diamond and Jens Hainmueller. 2010. "Synthetic Control Methods for Comparative Case Studies: Estimating the Effect of California's Tobacco Control Program." *Journal of the American Statistical Association* 105(490):493-505.

Other readings (for comments)

David, C. and Krueger, A. 1994. [Minimum Wages and Employment: A Case Study of the Fast-Food Industry in New Jersey and Pennsylvania.](#) *The American Economic Review* Vol. 84, No. 4 (Sep., 1994): 772-793

Daniele, G., & Dipoppa, G. (2017). Mafia, elections and violence against politicians. *Journal of Public Economics*, 154, 10-33.

Bechtel, M. and Hainmueller, J. 2009. How Lasting is voter gratitude? An analysis of short- and long-term electoral returns to beneficial policy. *American Journal of Political Science* 5:851-867.

Montalvo, J. 2011. Voting after the bombings: a natural experiment on the effect of terrorist attacks on democratic elections. *The Review of Economics and Statistics* 93:1146-1154.

Guide to practice

<http://scunning.com/mixtape.html>

Week 5. Natural experiments (Tuesday 5 February 2019)

Thad Dunning, *Natural experiments in the social sciences. A design based approach*. CUP 2012
<http://biblio.eui.eu/record=b1759366~S5> Chapter 1 Introduction p.1-38

Sekhon, J. and Titiunik, R. 2012. When natural experiments are neither natural nor Experiments, *American Political Science Review*.

Keele, Luke and Rocío Titiunik. 2016. "Natural Experiments Based on Geography." *Political Science Research and Methods* 4(1):65-95.

<http://tompepinsky.com/2011/12/21/omfg-exogenous-variation-or-can-you-find-good-nails-when-you-find-an-indonesian-politics-hammer/>

Other readings (for comments)

Daron A., Cantoni, D. Johnson, S. and Robinson, J. 2011 From Ancien Régime to Capitalism: The Spread of the French Revolution as a Natural Experiment. In Jared Diamond and J. Robinson, *Natural experiments in history*. Harvard UP

Robinson, G., McNulty, J. and Krasno, J. 2009. Observing the Counterfactual? The Search for Political Experiments in Nature. *Political Analysis* 17:341-357.

Almond, Douglas, Lena Edlund, and Mårten Palme. 2009. "Chernobyl's Subclinical Legacy: Prenatal Exposure to Radioactive Fallout and School Outcomes in Sweden." *The Quarterly Journal of Economics* 124:1729-1772.

Torche, F. 2011. The Effect of Maternal Stress on Birth Outcomes: Exploiting a Natural Experiment. *Demography* 48:1473-1491.

Kirk, D. 2009. A Natural Experiment on Residential Change and Recidivism: Lessons from Hurricane Katrina. *American Sociological Review* 74:484-505.

Barone, G., D'Acunto, F., & Narciso, G. (2015). Telecracy: Testing for channels of persuasion. *American Economic Journal: Economic Policy*, 7(2), 30-60.

Week 6: Unexpected Event during survey design (Tuesday 12 February 2019)

Jordi Muñoz, Albert Falcó-Gimeno and Enrique Hernández (2018) , Unexpected Event during Surveys Design: Promise and Pitfalls for Causal Inference, unpublished manuscript

Other readings

Ares, Macarena and Enrique Hernández. 2017. "The Corrosive Effect of Corruption on Trust in Politicians: Evidence from a Natural Experiment." *Research & Politics* 4(2):2053168017714185. doi: 10.1177/2053168017714185.

Legewie, J. (2013). Terrorist events and attitudes toward immigrants: A natural experiment. *American Journal of Sociology*, 118(5), 1199-1245.

Balcells, Laia and Gerard Torrats-Espinosa. 2018. "Using a Natural Experiment to Estimate the Electoral Consequences of Terrorist Attacks." *Proceedings of the National Academy of Sciences* 115(42):10624-29.

Week 7. Regression discontinuity (Tuesday 26 February 2019)

WHO-Impact Evaluation in Practice: Chapter 6.

http://siteresources.worldbank.org/EXTHDOFFICE/Resources/5485726-1295455628620/Impact_Evaluation_in_Practice.pdf

Section 3 in Schlotter, Martin, Guido Schwerdt, and Ludger Woessmann. 2011. "Econometric methods for causal evaluation of education policies and practices: a non-technical guide." *Education Economics* 19:109-137.

Other readings (for comments)

Aksoy, Ozan and Francesco C. Billari. 2018. "Political Islam, Marriage, and Fertility: Evidence from a Natural Experiment." *American Journal of Sociology* 123(5):1296-340. doi: 10.1086/696193.

Bernardi, Fabrizio. 2014. "Compensatory Advantage as a Mechanism of Educational Inequality: A Regression Discontinuity Based on Month of Birth." *Sociology of Education* 87(2):74-88.

Cook, T. 2008. "Waiting for Life to arrive": A history of the Regression-discontinuity Design in Psychology, Statistics and Economics. *Journal of Econometrics*, 142 (2): 636-654.

Calcagno, J.C. and Long, T. 2008. [The Impact of Postsecondary Remediation Using a Regression Discontinuity Approach: Addressing Endogenous Sorting and Noncompliance](#). NBER working paper 14194.

Chen, M.K. and Shapiro, J. 2007 Do Harsher Prison Conditions Reduce Recidivism? A Discontinuity-based Approach. *American Law and Economics Review*

Croke, K., Grossman, G., Larreguy, H.A., & Marshall, J. (2016). Deliberate disengagement: How education can decrease political participation in electoral authoritarian regimes. *American Political Science Review*, 110(3), 579-600. [**discontinuity based on age**]

Dell, M. & Querubin, P. (forthcoming). Nation Building Through Foreign Intervention: Evidence from Discontinuities in Military Strategies, *The Quarterly Journal of Economics* [**discontinuity based on rounding threshold in the algorithm**]

McEachin, A., Domina, T. and Penner, A. 2017 Understanding the Effects of Middle School Algebra: A Regression Discontinuity Approach (September 19, 2017). *RAND Working Paper Series WR- 1209*. Available at SSRN: <https://ssrn.com/abstract=3055923>

Guide to practice

Imbens, G and Lemieux T. 2008. Regression Discontinuity Designs: A Guide to Practice. *Journal of Econometrics*. 142(2):615-635

Week 8: Instrumental variables (Tuesday 5 March 2019)

Firebaugh, G. p. 153-158

Section 3 in Schlotter, Martin, Guido Schwerdt, and Ludger Woessmann. 2011. "Econometric methods for causal evaluation of education policies and practices: a non-technical guide." *Education Economics* 19:109-137.

Thad Dunning, *Natural experiments in the social sciences. A design based approach*. CUP 2012
<http://biblio.eui.eu/record=b1759366~S5> Chapter 4 87-102

A cartoon (for fun)

<https://www.facebook.com/manucartoons/photos/a.272391142801786.66184.108300902544145/272391179468449/?type=3&theater>

Other readings (for comments)

Nunn, N., & Wantchekon, L. (2011). The slave trade and the origins of mistrust in Africa. *The American Economic Review*, 101(7), 3221-3252.

Conley, Dalton and Brian J. McCabe. 2012. Bribery or just desserts? Evidence on the influence of Congressional reproductive policy voting patterns on PAC contributions from exogenous variation in the sex mix of legislator offspring. *Social Science Research* 41:120-129.

Waldinger, F., Peer Effects in Science: Evidence from the Dismissal of Scientists in Nazi Germany. *Review of Economic Studies* (2011) xx, 1-24

Laitin, D. D., & Ramachandran, R. (2016). Language policy and human development. *American Political Science Review*, 110(3), 457-480.

Miguel, E. Satyanath, S. and Sergenti, E. 2004 Economic Shocks and Civil conflicts: An instrumental variable approach, *Journal of Political Economy*, V. 112, N. 4

Conley, D. and R. Glauber. 2006. Parental Educational Investment and Children's Academic Risk: Estimates of the Impact of Sibship Size and Birth Order from Exogenous Variation in Fertility. *Journal of Human Resources* 41:722-737.

Guide to practice

<http://scunning.com/mixtape.html>

Bollen, Kenneth A. 2012. Instrumental Variables in Sociology and the Social Sciences. *Annual Review of Sociology* 38:37-72.

Murray, M. 2006. Avoiding Invalid Instruments and Coping with weak instruments, *Journal of Economic Perspectives*, 20, N.4, 11-132.

Week 9. Twins and siblings (Tuesday 12 March 2019)

Firebaugh, G. 131-145

Sigle-Rushton, Wendy, Torkild Hovde Lyngstad, Patrick Lie Andersen and Øystein Kravdal. 2014. "Proceed with Caution? Parents' Union Dissolution and Children's Educational Achievement." *Journal of Marriage and Family* 76(1):161-74

Other readings (for comments)

McGue, M., Osler, M., and Christensen, K. (2010). Causal Inference and Observational Research: The Utility of Twins. *Perspectives on Psychological Science*, 5(5): 546–556

Levy, D. and G. Duncan. 2000. Using sibling samples to access the effect of childhood family income on completed schooling. *Working paper 186, joint centre for poverty research, Northwestern University and University of Chicago.*

Smith, K. B., & Hatemi, P. K. (2013). OLS is AOK for ACE: A regression-based approach to synthesizing political science and behavioral genetics models. *Political Behavior*, 35(2), 383-408.

Turkheimer, E., & Harden, K. P. (2014). Behavior genetic research methods: Testing quasi-causal hypotheses using multivariate twin data. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in personality and social psychology* (2nd ed., pp. 159-186). Cambridge, England: Cambridge University Press.

Week 10. Implication analysis (Friday 22 March 2019)

S. Lieberson 2002. Barking up the wrong tree. Scientific Alternatives to the Current Model of Sociological Research. *Annual. Review of Sociology* 28:1–19.

Lieberson, S. and Horwich, J. 2008. Implications analysis: a pragmatic proposal for linking theory and data in the social sciences. *Sociological Methodology* 38(1): 1-50.

[the article is discussed by several authors here:

<http://onlinelibrary.wiley.com/doi/10.1111/some.2008.38.issue-1/issuetoc>]

Other readings

Durkheim E. 1897. *Suicide*. [The whole book is a great read. It relies on implications which Durkheim derives from various conjectures on what might be causes of suicide; read especially chapter 4, on Imitation] [In the original French the book can be found here

<http://www.gutenberg.org/ebooks/40489>; in English here

<http://archive.org/details/suicidestudyinso00durk>]

Goldthorpe, John H. 2001. "Causation, Statistics, and Sociology." *European Sociological Review* 17(1):1-20.

Firebaugh, Glenn. 2008. "Comment: Implications of Implication Analysis." *Sociological Methodology* 38:51-58.

<http://themonkeycage.org/2013/06/14/is-theory-getting-lost-in-the-identification-revolution>

Last updated 12.03.2019