Syllabus: Advanced Research Methods I

Master in Social Sciences - IC3JM - A.Y. 2022/23

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Course Description

The main aim of the course is to learn how statistical methods can help us drawing causal claims regarding real-life phenomena. Students will be introduced to a widely-used theoretical framework, *i.e.*, the "potential outcomes" one, which will be employed to contextualise those methodologies aimed at overcoming the challenge researchers face in establishing unidirectionality. The course will cover four widely-used designs to make causal claims using observational data — Matching, Difference-in-Differences, Instrumental Variables, and Regression Discontinuity Design — and (if time allows) provide some insight on recently-adopted methodologies, *e.g.*, Unexpected Event During Survey Design. By the end of the module, students will be in a position to critically assess the soundness of claims about causal relationships in the social sciences literature, and to apply firsthand a variety of design-based methods in their own research, by identifying potential causal relationships in observational data and critically assessing the robustness of these links.

Schedule

Thursdays, 10-13h, Aula 18.1.A01. *Note:* no classes on December 1 and December 8.

Throughout the course, there will be four 1.5h **Lab Sessions**, taught by **Fernando De la Cuesta Serrano** (fecuesta@pa.uc3m.es).

Pre-Requisites

Econometrics: properties of estimators, fundamentals of regression analysis.

Software: basic knowledge of Stata and R.

Textbooks

(Core) Angrist, Joshua D., and Jörn-Steffen Pischke. Mostly harmless econometrics: An empiricist's companion. Princeton university press, 2009.

(Extra) Cunningham, Scott. "Causal inference." Causal Inference. Yale University Press, 2021. Available online.

(Extra) Gertler, Paul J., Sebastian Martinez, Patrick Premand, Laura B. Rawlings, and Christel MJ Vermeersch. (2016). Impact evaluation in practice. Second Edition. Available online.

The course will build extensively on the discussion of recent, published and unpublished research papers (listed below, and **subject to change**). Papers in bold are to be considered as "core" readings: students are strongly encouraged to read them in advance of each class, in order to facilitate the discussion. The remaining readings present interesting applications of the methodologies under scrutiny and/or extend the theoretical/econometric discussion, and can be considered as optional.

Software

During classes and lab sessions will use Stata and R to present examples from published and unpublished articles for each methodology.

Students are expected to bring their laptop to classes and lab sessions, ***and should have R, R-studio and Stata installed on their laptop by the beginning of the course.***

Course Outline

1. 15/09/2022: The evaluation problem: finding a counterfactual

   - **Angrist, Joshua D., and Jörn-Steffen Pischke. Mostly harmless econometrics: An empiricist's companion. Princeton university press, 2009. Chapters 1 & 2.**

2. 22/09/2022: Regressions and causal effects

   - **Dale, S. B., & Krueger, A. B. (2002). Estimating the payoff to attending a more**

selective college: An application of selection on observables and unobservables. The Quarterly Journal of Economics, 117(4), 1491-1527.

- Diaz, J. J., & Handa, S. (2006). An assessment of propensity score matching as a nonexperimental impact estimator evidence from Mexico's PROGRESA program. Journal of human resources, 41(2), 319-345.

- **Jones, B. F., & Olken, B. A. (2009). Hit or miss? The effect of assassinations on institutions and war. American Economic Journal: Macroeconomics, 1(2), 55-87.**

- LaLonde, R. J. (1986). Evaluating the econometric evaluations of training programs with experimental data. The American economic review, 604-620.

3. 29/09/2022: Matching Models pt. 1

- **Angrist, Joshua D. "Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants." Econometrica 66.2 (1998): 249-288.**

- **Dehejia, R. H., & Wahba, S. (1999). Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs. Journal of the American statistical Association, 94(448), 1053-1062.**

- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. Biometrika, 70(1), 41-55.

4. 06/10/2022: Matching Models pt. 2 and Synthetic Controls **+ Lab Session 1**

- Abadie, A., & Gardeazabal, J. (2003). The economic costs of conflict: A case study of the Basque Country. American economic review, 93(1), 113-132.

- Abadie, A., Diamond, A., Hainmueller, J. (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.

- **Abadie, A., Diamond, A., Hainmueller, J. (2015). Comparative politics and the synthetic control method. American Journal of Political Science, 59(2), 495-510.**

- Dinas, E., Hartman, E., & Van Spanje, J. (2016). Dead man walking: The affective roots of issue proximity between voters and parties. Political Behavior, 38(3), 659-687.

- **Eggers, A. C.,& Hainmueller, J. (2009). MPs for sale? Returns to office in postwar British politics. American Political Science Review, 103(4), 513-533.**

5. 13/10/2022: Differences-in-Differences pt. 1

- Autor, D. H. (2003). Outsourcing at will: The contribution of unjust dismissal doctrine to the growth of employment outsourcing. Journal of labor economics, 21(1), 1-42.

- **Besley, T., & Burgess, R. (2004). Can labor regulation hinder economic performance? Evidence from India. The Quarterly journal of economics, 119(1), 91-134.**

- Card, D. (1992). Using regional variation in wages to measure the effects of the federal minimum wage. Ilr Review, 46(1), 22-37.

- **Card, D., & Krueger, A. B. (1994). Minimum wages and employment: A case study of the fast-food industry in New Jersey and Pennsylvania. The American Economic Review, 84(4), 772.**

- Card, D., & Krueger, A. B. (2000). Minimum wages and employment: a case study of the fast-food industry in New Jersey and Pennsylvania: reply. American Economic Review, 90(5), 1397-1420.

6. 20/10/2022: Differences-in-Differences pt. 2 + **Lab session 2**

- Acemoglu, D., & Angrist, J. D. (2001). Consequences of employment protection? The case of the Americans with Disabilities Act. Journal of Political Economy, 109(5), 915-957.

- Acemoglu, D., Cantoni, D., Johnson, S., & Robinson, J. A. (2011). The consequences of radical reform: The French Revolution. American economic review, 101(7), 3286-3307.

- **Bechtel, M. M., & Hainmueller, J. (2011). How lasting is voter gratitude? An analysis of the short-and long-term electoral returns to beneficial policy. American Journal of Political Science, 55(4), 852-868.**

- Martinez-Bravo, M., Miquel, G. P. I., Qian, N., & Yao, Y. (2017). The rise and fall of local elections in China: theory and empirical evidence on the autocrat's trade-off (No. w24032). National Bureau of Economic Research.

- **Montalvo, J. G. (2011). Voting after the bombings: A natural experiment on the effect of terrorist attacks on democratic elections. Review of Economics and Statistics, 93(4), 1146-1154.**

- Selb, P., & Munzert, S. (2018). Examining a most likely case for strong campaign effects: Hitler's speeches and the rise of the Nazi party, 1927–1933. American Political Science Review, 112(4), 1050-1066.

7. 27/10/2022: Natural Experiments and Instrumental Variables

- Angrist, J. D., Chen, S. H., & Song, J. (2011). Long-term consequences of Vietnam-era conscription: New estimates using social security data. American Economic Review, 101(3), 334-38.

- Angrist, J. D., & Evans, W. N. (1998). Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size. American Economic Review, 450-477.

- **Angrist, J., & Krueger, A. B. (1992). Estimating the payoff to schooling using the Vietnam-era draft lottery.**

- Angrist, J. D., Imbens, G. W., & Rubin, D. B. (1996). Identification of causal effects using instrumental variables. Journal of the American statistical Association, 91(434), 444-455.

- Bound, J., Jaeger, D. A., & Baker, R. M. (1995). Problems with instrumental variables estimation when the correlation between the instruments and the endogenous explanatory variable is weak. Journal of the American statistical association, 90(430), 443-450.

- **Kern, H. L., & Hainmueller, J. (2009). Opium for the masses: How foreign media can stabilize authoritarian regimes. Political Analysis, 17(4), 377-399.**

- Lee, D. S., McCrary, J., Moreira, M. J., & Porter, J. R. (2021). Valid t-ratio Inference for IV (No. w29124). National Bureau of Economic Research.

- Stock, J. H., Wright, J. H., & Yogo, M. (2002). A survey of weak instruments and weak identification in generalized method of moments. Journal of Business & Economic Statistics, 20(4), 518-529.

8. 03/11/2022: Instrumental Variables pt. 2 & Geographical IV + **Lab session 3**

- **Angrist, J. D., & Keueger, A. B. (1991). Does compulsory school attendance affect schooling and earnings?. The Quarterly Journal of Economics, 106(4), 979-1014.**

- Artés, J. (2014). The rain in Spain: Turnout and partisan voting in Spanish elections. European Journal of Political Economy, 34, 126-141.

- **Dinas, E. (2014). Does choice bring loyalty? Electoral participation and the development of party identification. American Journal of Political Science, 58(2), 449-465.**

- Durante, R., Pinotti, P., & Tesei, A. (2019). The political legacy of entertainment TV. American Economic Review, 109(7), 2497-2530.

- Hangartner, D., Dinas, E., Marbach, M., Matakos, K., & Xefteris, D. (2019). Does exposure to the refugee crisis make natives more hostile?. American political science review, 113(2), 442-455.

9. 10/11/2022: Regression Discontinuity Design pt. 1

- **Angrist, J. D., & Lavy, V. (1999). Using Maimonides' rule to estimate the effect of class size on scholastic achievement. The Quarterly journal of economics, 114(2), 533-575.**

- Calonico, S., Cattaneo, M. D., & Titiunik, R. (2014). Robust nonparametric confidence intervals for regression-discontinuity designs. Econometrica, 82(6), 2295-2326.

- Calonico, S., Cattaneo, M. D., Farrell, M. H., & Titiunik, R. (2017). rdrobust: Software for regression-discontinuity designs. The Stata Journal, 17(2), 372-404.

- Dinas, E., & Foos, F. (2017). The national effects of subnational representation: access to regional parliaments and national electoral performance. Quarterly Journal of Political Science, 12(1), 1-35.

- Eggers, A. C. (2015). Proportionality and turnout: Evidence from French municipalities. Comparative Political Studies, 48(2), 135-167.

- Eggers, A. C., Fowler, A., Hainmueller, J., Hall, A. B., & Snyder Jr, J. M. (2015). On the validity of the regression discontinuity design for estimating electoral effects: New evidence from over 40,000 close races. American Journal of Political Science, 59(1), 259-274.

- **Ferwerda, J., & Miller, N. L. (2014). Political devolution and resistance to foreign rule: A natural experiment. American Political Science Review, 108(3), 642-660.**

- Lee, D. S. (2008). Randomized experiments from non-random selection in US House elections. Journal of Econometrics, 142(2), 675-697.

- Kocher, M. A., & Monteiro, N. P. (2016). Lines of demarcation: Causation, design-based inference, and historical research. Perspectives on Politics, 14(4), 952-975.

- Morduch, J. (1999). The role of subsidies in microfinance: evidence from the Grameen Bank. Journal of development economics, 60(1), 229-248.

- Pitt, M. M., & Khandker, S. R. (1998). The impact of group-based credit programs on poor households in Bangladesh: Does the gender of participants matter?. Journal of political economy, 106(5), 958-996.

- Steiner, P. M., Cook, T. D., Shadish, W. R., & Clark, M. H. (2010). The importance of covariate selection in controlling for selection bias in observational studies. Psychological

methods, 15(3), 250.

10. 17/11/2022: Regression Discontinuity Design pt. 2 + **Lab Session 4**

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

- Bove, V., Di Leo, R., & Giani, M. (2022). Military Culture and Institutional Trust: Evidence from Conscription Reforms in Europe. American Journal of Political Science, *forthcoming*.

- **Cavaille, C., & Marshall, J. (2019). Education and anti-immigration attitudes: Evidence from compulsory schooling reforms across Western Europe. American Political Science Review, 113(1), 254-263.**

- **Dell, M. (2015). Trafficking networks and the Mexican drug war. American Economic Review, 105(6), 1738-79.**

- Dinas, E., Riera, P., & Roussias, N. (2015). Staying in the first league: Parliamentary representation and the electoral success of small parties. Political Science Research and Methods, 3(2), 187-204.

- Marshall, J. (2016). Education and voting Conservative: Evidence from a major schooling reform in Great Britain. The Journal of Politics, 78(2), 382-395.

11. 24/11/2022: New Trends in Causal Inference + **Students' Presentations**

- Bol, D., Giani, M., Blais, A., & Loewen, P. J. (2021). The effect of COVID-19 lockdowns on political support: Some good news for democracy?. European Journal of Political Research, 60(2), 497-505.

- **Falcó-Gimeno, A., Muñoz, J., & Pannico, R. (2022). Double-Edged Bullets: The Conditional Effect of Terrorism on Vote for the Incumbent. British Journal of Political Science, 1-21.**

- Giani, M., Epifanio, M., & Ivandic, R. (2022). Wait and see? Public opinion dynamics after terrorist attacks. Journal of Politics, *Forthcoming*

- Giani, M., & Méon, P. G. (2021). Global racist contagion following Donald Trump's election. British Journal of Political Science, 51(3), 1332-1339.

- Holman, M. R., Merolla, J. L., & Zechmeister, E. J. (2022). The curious case of Theresa May and the public that did not rally: Gendered reactions to terrorist attacks can cause slumps not Bumps. American Political Science Review, 116(1), 249-264.

- **Muñoz, J., Falcó-Gimeno, A., & Hernández, E. (2020). Unexpected event during survey design: Promise and pitfalls for causal inference. Political Analysis, 28(2), 186-206.**

- Schwartz, C., Simon, M., Hudson, D., & van-Heerde-Hudson, J. (2021). A populist paradox? How Brexit softened anti-immigrant attitudes. British journal of political science, 51(3), 1160-1180.

12. 15/12/2022: **Students' Presentations**

Grading Policy

- 30% of the final mark will be determined by a group presentation of a published paper, to be delivered on the last day(s) of the course (details TBC).

- 70%: take-home essay: **strictly no more than 3,000 words** (excluding bibliography, figures and tables), to be submitted **individually** (deadline TBC). Students can choose **one** these options:

a. Employing **one** of the methodologies discussed in class — **between DID, IV and RDD** — to address an original research question. Students will have to retrieve the data autonomously: from publicly available surveys (*e.g.*, ESS, Understanding Society, Afrobarometer, WVS...); administrative records (*e.g.*, electoral results, socio-economic statistics; or any alternative source (*e.g.*, social media, archival, historical or geocoded data). The essay will be in the shape of a research note: introduction, *(extremely concise)* literature review, illustration of the data, empirical strategy, findings (and, if possible, mechanisms), robustness tests, conclusions. In the essay, students will have to: (a) illustrate their research question and working hypotheses

in a clear manner; (b) briefly describe the data used (*e.g.*, by means of descriptive statistics); (c) discuss the empirical strategy (*i.e.*, estimating equation, any potential threat to identification...); (d) perform the necessary robustness tests to defend the validity of the methodological choice (*note:* if some of the identification assumptions turn out not to hold in the case under scrutiny, students should address this critically, discuss the likely direction of the estimates' bias, and, possibly, present some alternative routes to be explored in future research); (e) present their findings by means of self-contained tables and figures, adequately labelled and commented.

b. Replicating a recently (*i.e.*, **after 2015**) published paper **not included in the syllabus**, using the data uploaded on the journal/authors' websites — see *e.g.*, the AJPS repository — but employing **(at least) one** alternative methodology among those discussed in class, and which is **not** utilized in the original article. For the replication, students can choose one between the following methodologies: **DID, IV, and RDD** (*e.g.*, if the paper relies on a DID, students would have to think of a potential instrument, or identify a running variable to employ in an RDD fashion, as they deem appropriate). The essay should be roughly divided in two parts. In the first - *shorter* - one, students should briefly summarise and critically assess the paper, *i.e.* as a discussant would do in a seminar presentation, focusing in particular on the empirical section, and on potential confounders impairing the causality claim. In the second part, students should present their proposed identification strategy at length, with particular attention to the estimating equation, and to any potential threat to identification. They should then perform in detail the necessary robustness tests to defend the validity of their methodological choice (*note:* if some of the identification assumptions turn out not to hold in the case under scrutiny, students should address this critically, discuss the likely direction of the estimates' bias, and, possibly, present some alternative routes to be explored in future research), and present their findings by means of self-contained tables and figures, adequately labelled and commented.

Note: in either case, the evaluation of the essay will place particular weight on the methodological aspects, rather than on the "goodness" of the results.