Applications of econometrics II
Syllabus

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A   Goals of the course

This course aims to provide students with a training in quantitative analysis reproducing papers published in different fields of applied econometrics as development economics, political economy, urban economics, economics of science or economics of education. The course aims to improve the understanding of the methods used in applied econometrics with a strong focus on identification and an introduction to non linear models.

B   Content of each session

The course is composed of two blocks. The first 12 Hours are about identification and are given by Maelys de la Rupelle, the 15 hours are about IV, duration analysis, non linear models, machine learning and times series and are given by Fanny Landaud. Each session will include a lecture, a presentation of research papers, or/and a problem set.

C   Course evaluation

Students will be graded on

- 2 presentations (1 for each block) (50%)

- A research project on Public Policy Evaluation (50%)

Students presentation

Groups of 2 students will be assigned a presentation in each block. They will have to read and present a paper in 15 minutes. The other students should also read the introduction of the required papers. For the first block : students have to solve the tutorial and hand in their homework by Wednesdays.

A research project on public policy

Half of the assessment will be based on a research project designed to initiate students to the conduct of an empirical investigation. To simplify the formulation of the research question, this exercise will be focused on a public policy evaluation. You will have to choose a public policy to evaluate and progressively conduct their research project

performing the steps described in Table 1 providing regular written feedback to their teachers following the calendar. Reports must be written with LateX. You have to hand in intermediate reports by Thursdays.

Step	To hand in	date
1 - The research topic	Identification of a public policy and list of potential outcomes	12-01
2 - Data	List relevant dataset and discuss alternative datasets if availability is uncertain	19-01
3 - Literature review	Identify important papers, discuss endogeneity concerns and propose an identification strategy	26-01
4- Collective brain storming	pick up and discuss two proposals (mini referee report)	02-02
5- Descriptive statistics	provide a description of the datasets	09-02
6 - Analysis	Perform the main analysis	16-02
7 - Robustness checks	Perform robustness checks	9-03
8 - Intermediate report	Hand in the intermediate report	16-03
9 - Final report	Hand in the final report	23-03

Table 1: Calendar of the research project

1. In the first step, you will have to identify a public policy they would like to analyse and think about potential outcomes to look at.
   You should identify this policy and describe its goals and its implementation (timing, conditions etc...). Any policy can be chosen (Subsidies and benefits, Taxation, Health Policies, Educational Policies, Transport Policies, Macro economic policies, Development programs ....). However you should have some confidence in your capacity to evaluate this policy gathering the appropriate data sets available to describe this interventions and its consequences. (half a page max)

2. In the second step, you should identify the relevant data sets publicly available, describe the various data you need. If some data-sets are available to researchers only, do not hesitate to ask your professor whether they can access this data set. Data constraints may lead you to slightly modify your research question. Your report should be in two part, the first should describe the policy, its goal, its implementation, its relevance and the dimensions that could be evaluated. The second part should present the datasets (potentially) easily available to evaluate this policy (half a page max)

3. In the third step, students should (i) provide an overview of the literature and (ii) propose an identification strategy to answer the question of interest. (i) They should identify the main applied papers that evaluated this policy, summarize their main findings in a table (outcome variable, result, in a very concise way) and discuss their identification strategy. Note that you do not need to read everything : to complete the table you may only need to read abstracts + to have a glance at introductions (1 or 2 pages max). (ii) Students should propose the identification strategy you think you could estimate (including the equation to estimate) and its underlying assumptions.

4. In the fourth step we will gather all research ideas together and circulate the document in the classroom. You will pick up two proposals (excluding yours) and discuss them. The idea is to be critical and constructive : what are the challenges and caveats of the propose identification strategy? would you see an alternative way to solve endogeneity concerns? (1 page max).

5. In the fifth step, you should create the data set required to implement your estimations and provide the methodology to gather these datasets. Once the data set is built, you should provide descriptive statistics (Tables, charts, maps...) on your variables of interest. (4 to 5 pages max)

6. In the sixth step , you should perform your main analysis and present your first results (2 pages max)

7. In the seventh step, you should perform robustness checks usually required in the literature (4 pages max).

8. In the eighth step, you should write an intermediate report following the standard structure of a public policy analysis paper (Introduction/Literature review/Identification strategy/ Data / Results / Conclusion / Appendix with robustness checks) . Provide also a clean repository allowing to reproduce your results. (create the dataset, cleaning the data set and analysis)

9. Using the feedbacks provided by your professor write the final report

D   References

Textbooks

- Wooldridge, 2010, *Econometric Analysis of Cross Section and Panel Data*, MIT Press, 2nd Edition

- Angrist and Pischke, *Mostly Harmless Econometrics*

- Wooldrigde, *Introductory Econometrics : a Modern Approach* (also available in French : Introduction à l'Econométrie)

Online references

- Scott Cunningham, Causal Inference : the Mixtape.

- Gertler et al, 2016, Impact Evaluation in Practice A good read if you have a limited background in econometrics/maths and struggle to understand what the various methods do.

- Abadie, Cattaneo, 2018, Econometric Methods for Program Evaluation, *Annual Review of Economics*

Block I: Maëlys de la Rupelle

Session I   Introduction

Goal of the session

Introduction and overview of different ways to tackle endogeneity issues

Material

Slides

Related readings

- Chen Yi, Fan Ziying, Gu Xiaomin, and Li-An Zhou, 2020, Arrival of Young Talent : the Send-Down Movement and Rural Education in China, *American Economic Review*

- Gordon B. Dahl, Christina Felfe, Paul Frijters, & Helmut Rainer, 2022, Caught between Cultures: Unintended Consequences of Improving Opportunity for Immigrant Girls, *Review of Economic Studies*

Session II   Regression Discontinuity Design I

Goal of the session

Understand how to implement a regression discontinuity design

Material

Slides
Tutorial

Related readings

- David S. Lee & Thomas Lemieux, 2010. Regression Discontinuity Designs in Economics, *Journal of Economic Literature*,American Economic Association, vol. 48(2), **pages 281 to 335**

- Cattaneo, Idrobo and Titiunik (2019): A Practical Introduction to Regression Discontinuity Designs: Foundations. Cambridge Elements: Quantitative and Computational Methods for Social Science, Cambridge University Press. **p 40 to p50 and p88 to p107**

Additional references

- Andrew C. Eggers, Ronny Freier, Veronica Grembi and Tommaso Nannicini, 2018. Regression Discontinuity Designs Based on Population Thresholds: Pitfalls and Solutions, *American Journal of Political Science*, vol. 62(1), pages 210-229, January.

- Guido Imbens & Karthik Kalyanaraman, 2012, Optimal Bandwith Choice, *Review of Economic Studies*

- Justin McCrary, 2008, Manipulation of the running variable in the regression discontinuity design : A density test, *Journal of Econometrics*

Session III   Regression Discontinuity Design II

Goal of the session

Understand the Fuzzy Design and the Kink Design

Material

Slides
Tutorial

Related readings

- Sam Asher, Paul Novosad, 2020, Rural Roads and Local Economic Development, *American Economic Review* 110:3

- Landais, Camille. 2015, Assessing the Welfare Effects of Unemployment Benefits Using the Regression Kink Design, *American Economic Journal: Economic Policy*, 7 (4): 243-78.

Session IV Propensity Score Matching and Inverse Probability Weighting

Material

Slides

Tutorial

References

- Marco Caliendo and Sabine Kopeinig, 2008. Some Practical Guidance for the Implementation of Propensity Score Matching. *Journal of Economic Surveys*, 22 (1): 31-72.

Related readings

- Rajeev H. Dehejia and Sadek Wahba, 1999, Causal Effects in Nonexperimental Studies:Reevaluating the Evaluation of Training Programs. *Journal of the American Statistical Association* 94(448): 1053-1062.

- Toke Aidt and Raphaël Franck, 2015, Democratization Under the Threat of Revolution: Evidence From the Great Reform Act of 1832. *Econometrica*, Volume: 83 Issue 2

- David McKenzie, John Gibson and Steve Stillman, 2010. How Important Is Selection? Experimental vs. Non-experimental Measures of the Income Gains from Migration, *Journal of the European Economic Association* Volume: 8 Issue 4, ISSN: 1542-4766

Session V Grouped Patterns of Heterogeneity in Panel Data

V.1 Material

Slides

References

- Stephane Bonhomme and Elena Manresa, 2015, Grouped Patterns of Heterogeneity in Panel Data, *Econometrica*

Session VI Diff-in-Diff with Heterogenous Treatment Effects

- de Chaisemartin d'Haultfoeuille, forthcoming,Two-Way Fixed Effects and Differences-in-Differences with Heterogeneous Treatment Effects: A Survey *Econometrics Journal*

- de Chaisemartin d'Haultfoeuille, 2020, Two-way fixed effects estimators with heterogeneous treatment effects, *American Economic Review*, vol. 110, no. 9,(pp. 2964-96).

Block II: Fanny Landaud

Topic VII Instrumental Variables (Session n°1)

VII.1 References

- Angrist, Joshua D., and Alan B. Krueger. 1991. "Does compulsory school attendance affect schooling and earnings?" *The Quarterly Journal of Economics*, 106 (4): 979-1014.

- Stevenson, Megan T. 2018. "Distortion of Justice: How the Inability to Pay Bail Affects Case Outcomes." *The Journal of Law, Economics, and Organization*, 34 (4): 511–542.

VII.2 Papers for Students' Presentations

- Jackson, C. Kirabo, and Henry S. Schneider. 2011. "Do Social Connections Reduce Moral Hazard? Evidence from the New York City Taxi Industry." *American Economic Journal: Applied Economics*, 3 (3): 244-67.

- Kearney, Melissa S., and Phillip B. Levine. 2015. "Media Influences on Social Outcomes: The Impact of MTV's 16 and Pregnant on Teen Childbearing." *American Economic Review*, 105 (12): 3597-3632.

- Wolfram Schlenker, and W. Reed Walker. 2016. "Airports, Air Pollution, and Contemporaneous Health." *The Review of Economic Studies*, 83 (2): 768–809.

- Aizer, Anna, Janet Currie, Peter Simon, and Patrick Vivier. 2018. "Do Low Levels of Blood Lead Reduce Children's Future Test Scores?" *American Economic Journal: Applied Economics*, 10 (1): 307-41.

Topic VIII Non linear models (Session n°3)

VIII.1 References

- Angrist, Joshua, and Victor Lavy. 2009. "The Effects of High Stakes High School Achievement Awards: Evidence from a Randomized Trial." *American Economic Review*, 99(4): 1384-1414.

- Azoulay, Pierre, Christian Fons-Rosen, and Joshua S. Graff Zivin. 2019. "Does Science Advance One Funeral at a Time?" *American Economic Review*, 109(8): 2889-2920.

VIII.2 Papers for Students' Presentations

- Babcock, Linda, Maria P. Recalde, Lise Vesterlund, and Laurie Weingart. 2017. "Gender Differences in Accepting and Receiving Requests for Tasks with Low Promotability." *American Economic Review*, 107(3): 714-47.

- Abdulkadiroğlu, Atila, Parag A. Pathak, Jonathan Schellenberg, and Christopher R. Walters. 2020. "Do Parents Value School Effectiveness?" *American Economic Review*, 110(5): 1502-39.

- Bostwick, Valerie K., and Bruce A. Weinberg. 2022. "Nevertheless She Persisted? Gender Peer Effects in Doctoral STEM Programs." *Journal of Labor Economics*, 40(2): 397-436.

- Goñi, Marc. 2022. "Assortative Matching at the Top of the Distribution: Evidence from the World's Most Exclusive Marriage Market." *American Economic Journal: Applied Economics*, 14(3): 445-87.

Topic IX Duration Analysis (Sessions n°3 & n°4)

IX.1 References

- Landaud, Fanny. 2021. "From Employment to Engagement? Stable Jobs, Temporary Jobs, and Cohabiting Relationships." *Labour Economics*, 73(C).

IX.2 Papers for Students' Presentations

- Abbring, Jaap H., Gerard J. van den Berg, and Jan C. van Ours. 2005. "The Effect of Unemployment Insurance Sanctions on the Transition Rate from Unemployment to Employment." *Economic Journal*, 115(505): 602-30.

- van Ours, Jan C. 2006. "Cannabis, Cocaine and Jobs." *Journal of Applied Econometrics*, 21(7): 897-917.

- de Graaf-Zijl, Marloes, Gerard J. van den Berg, and Arjan Heyma. 2011. "Stepping Stones for the Unemployed: The Effect of Temporary Jobs on the Duration until (Regular) Work." *Journal of Population Economics*, 24(1): 107-39.

- Moschion, Julie, and Jan C. van Ours. 2022. "Do Early Episodes of Depression and Anxiety Make Homelessness More Likely?" *Journal of Economic Behavior and Organization*, 202(October): 654-74.

Topic X Machine Learning (Session n°4)

X.1 References

- Belloni, Alexandre, Victor Chernozhukov, and Christian Hansen. 2014. "High-Dimensional Methods and Inference on Structural and Treatment Effects." Journal of Economic Perspectives, 28(2): 29-50.

- Mullainathan, Sendhil, and Jann Spiess. 2017. "Machine Learning: An Applied Econometric Approach." *Journal of Economic Perspectives*, 31(2): 87-106.

X.2 Papers for Students' Presentations

- Gilchrist, D. Sheppard, and Emily G. Sands. 2016. "Something to Talk About: Social Spillovers in Movie Consumption" *Journal of Political Economy*, 124(5).

- Davis, Jonathan M. V., and Sara B. Heller. 2017. "Using Causal Forests to Predict Treatment Heterogeneity: An Application to Summer Jobs." *American Economic Review*, 107(5): 546–50.

- Oster, Emily. 2018. "Diabetes and Diet: Purchasing Behavior Change in Response to Health Information." *American Economic Journal: Applied Economics*, 10(4): 308-48.

- Deryugina, Tatyana, Garth Heutel, Nolan H. Miller, David Molitor, and Julian Reif. 2019. "The Mortality and Medical Costs of Air Pollution: Evidence from Changes in Wind Direction." *American Economic Review*, 109(12): 4178-4219.

Topic XI   Introduction to Time Series (Session n°5)

XI.1   Papers for Students' Presentations

- Jayachandran, Seema, Adriana Lleras-Muney, and Kimberly V. Smith. 2010. "Modern Medicine and the Twentieth Century Decline in Mortality: Evidence on the Impact of Sulfa Drugs." *American Economic Journal: Applied Economics*, 2(2): 118–46.

- Mertens, Karel, and Jose Luis Montiel Olea. 2018. "Marginal Tax Rates and Income: New Time Series Evidence." *Quarterly Journal of Economics*, 133(4): 1803–84.

- Baltussen, Guido, Sjoerd van Bekkum, and Zhi Da. 2019. "Indexing and Stock Market Serial Dependence around the World." *Journal of Financial Economics*, 132(1): 26–48.

- Kim, Dongwoo, and Young Jun Lee. 2022. "Vaccination Strategies and Transmission of COVID-19: Evidence across Advanced Countries." *Journal of Health Economics*, 82(March).