ECO 3450H1F
Methods for Empirical Microeconomics

University of Toronto

Department of Economics
Fall 2024

Course Description

This course is directed at graduate students conducting research in the applied micro fields, especially (but not exclusively) labour, development, and public economics. While it has a labour course number, this is not purely a labour economics course: it is a course in empirical and applied econometrics. The tools covered in the course, however are central to those used in empirical labour economics, as well as other applied microeconomics fields like development and public economics. The focus will be on the identification of casual relationships using regression-based analysis. Empirical examples will be drawn from recent work in labour economics.

Instructor

Instructor: Carolina Arteaga
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Office: 150 St. George Street, #300

Office Hours: By appointment after class

Meetings

Lectures are Monday 3:10pm to 5pm
Location: GE 100

The course website (on Quercus).

I will post the slides from my lectures on the Quercus website.

Email Policy

Please feel free to email me questions or comments pertaining to the course, with the following caveat:

The answer requires a one or two-line response. It is my experience that email is an inefficient way to discuss economics. Questions that require more than one or two-line answers are more appropriate for office hours.

I will normally reply to emails within 24 hours, except on weekends.

Evaluation

A solid understanding of the various empirical strategies, and how they are implemented in real research is a key objective of the course. As such, a detailed understanding of important/illustrative papers in the field is an excellent way to acquire this understanding. There are two main components to the graded course work:

- **Class participation (15%)**

This is a very interactive class. I expect you to engage in discussion constantly. All types of questions are welcomed and encouraged.

- **Research Presentation 1 (10%)**

Prepare a 15-minute presentation for **October 21st** where you will present a sketch of your term paper. This will help you receive early feedback for your future presentation and final paper. It should include your research question, motivation, basic lit-review and future plan. We will have a 5 min group discussion on what it would take to make this a great paper.

- **Method and Paper presentation (20%)**

You will choose a paper to replicate and present in front of the class. You will present the paper (Motivation/Data/Method/Coding struggles/Results/Opinion) and share with your classmates a do file that replicate one of the main results in the paper. Plan for 30-minute class presentation. Spend most of your time discussing the identification strategy. If the paper is not very recent, discuss whether it passes the most recent tests for that method. Regarding, the replication part, the idea is not to copy paste a posted code! But to use the coding struggles section to explain to your classmates what was particularly hard/new when replicating the paper.

https://docs.google.com/spreadsheets/d/1Y2Wk16TN-915yGglVUqyeQn8tVXFV-ovs2CtIn8E30s/edit?usp=sharing
We will all read the paper and we will all have a discussion about it.

- **Research Presentation 2 (20%)**

Research Project Proposal – a 25-minute class presentation (allow time for questions / discussion) with slides.

The presentation will:
- establish a research question;
- briefly survey an existing literature in applied microeconomics that addresses it;
- describe a planned research project to address the question (data; design);
- potentially conduct preliminary data analysis (descriptive work, background work to show the validity of the strategy, etc.)
    - how preliminary the analysis is, depends on when the presentation takes place – presentations earlier in the term will have a lower bar. The tradeoff is that while presentations later in the year should be more developed, fewer revisions will be expected for the paper submission.

This presentation will occur during the last 2 classes of the term (Nov 27th, Dec 4th).

• **Peer feedback (15%)**
You will provide detailed feedback to your classmates on their research presentation. Literature suggestions, data, methods, scope of the question, framing, robustness checks are the type of comments expected. Suggestion on what would make this a great JMP. Feedback is due on the Friday of the week of the presentation. Email me your report.

• **Paper (20%)** - students will hand in a research paper that will:
  • establish a research question;
  • briefly survey an existing literature in Applied Microeconomics that addresses it;
  • describe a planned research project to address the question (data; design);
  • conduct data analysis.

Look to papers published in *AER: Insights* or *AER: Papers and Proceedings* (both journals publish short papers) for an example of structure, length, etc.

• The due date for the paper is **December 10th at 1:00pm**. Details of the assignment itself will be provided early in the semester. Submissions will be by email.

• The goal is to replicate the process academics go through when putting together a research project. Part of the grade will include your ability to take-on comments or concerns that are brought up during the presentation, and revise the analysis/discussion accordingly.

Planned Coverage

We will follow the material outlined in Angrist & Pischke closely, with some recent innovations:

1. Introduction to the "Experimental Ideal" (Chapters 1 and 2);
2. Detailed review of Ordinary Least Squares and Regression analysis (Chapter 3);
3. Instrumental Variables (Chapter 4);
4. Differences-in-Differences (Chapter 5);
Event Studies
5. Regression Discontinuity (Chapter 6);

Preliminary List of Readings

The following is a list of the key parts of the text, and associated journal articles that we will be (mostly) covering in class (or that are discussed in some detail in Angrist and Pischke). The articles that form the basis of the assignment will be ADDED to this list (and they are required readings for the entire class).

In addition to the presentation in Angrist and Pischke, a denser, but clear and comprehensive discussion of the course material is provided by:

Guido Imbens and Jeffrey Wooldridge (2009): "Recent Developments in the Econometrics of Program Evaluation," *Journal of Economic Literature*, 47:1, pages 5-86.

Introductory Material (**Lectures 1 and 2**)

Angrist and Pischke, Chapters 1 and 2

Brodeur, Abel, Nikolai Cook, and Anthony Heyes. "Methods matter: P-hacking and publication bias in causal analysis in economics." American Economic Review 110.11 (2020): 3634-60.

Heckman, James J., and Edward J. Vytlacil. "Local instrumental variables and latent variable models for identifying and bounding treatment effects." Proceedings of the national Academy of Sciences 96.8 (1999): 4730-4734.

Lecture 3: Instrumental Variables & LATE theorem

Angrist and Pischke, Chapter 4

Imbens, Guido, and Joshua Angrist (1994): “Identification and Estimation of Local Average Treatment Effects,” *Econometrica*, Vol. 62, No. 2, pp. 467-475.

Angrist, Joshua (1990): “Lifetime Earnings and the Vietnam Era Draft Lottery: Evidence from Social Security Administrative Records,” *American Economic Review*.

Angrist, Joshua (1998): “Estimating the Labor Market Impact of Voluntary Military Service Using Social Security Data on Military Applicants,” *Econometrica*.

Lecture 4: MTE & Judge Instrument

Bhuller, Manudeep, Gordon B. Dahl, Katrine V. Løken, and Magne Mogstad. "Incarceration, recidivism, and employment." Journal of Political Economy 128, no. 4 (2020): 1269-1324.

Arteaga, Carolina. Parental Incarceration and Children's Educational Attainment. No. tecipa-703. 2021.

Lectures 5: Weak Instruments, Bartik and compliance

Angrist, Joshua, and Alan Krueger (1991): “Does Compulsory Schooling Attendance Affect Schooling and Earnings?” *Quarterly Journal of Economics* 106.

Bound, John, David Jaeger, and Regina Baker (1995): “Problems with Instrumental Variables when the Correlation Between the Instruments and Endogenous Variable is Weak,” *Journal of the American Statistical Association*.

Lee, David L., Justin McCrary, Marcelo J. Moreira, and Jack Porter. 2020. “Valid t-ratio Inference for IV.” arXiv preprint arXiv:2010.05058.

Andrews, I., Stock, J. H., & Sun, L. (2019). Weak instruments in instrumental variables regression: Theory and practice. *Annual Review of Economics*, *11*, 727-753.

Goldsmith-Pinkham, Paul, Isaac Sorkin, and Henry Swift. "Bartik instruments: What, when, why, and how." *American Economic Review* 110.8 (2020): 2586-2624.

4. Differences-in-Differences

Bertrand, M., Duflo, E., & Mullainathan, S. (2004). How much should we trust differences-in-differences estimates?. The Quarterly journal of economics, 119(1), 249-275.

Stevenson, Betsey, and Justin Wolfers. 2006. "Bargaining in the Shadow of the Law: Divorce Laws and Family Distress." The Quarterly Journal of Economics 121 (1):267-288.

de Chaisemartin, C., & d'Haultfoeuille, X. (2019). Two-way fixed effects estimators with heterogeneous treatment effects (No. w25904). National Bureau of Economic Research.

De Chaisemartin, Clément, and Xavier d’Haultfoeuille. "Fuzzy differences-in-differences." *The Review of Economic Studies* 85, no. 2 (2018): 999-1028.

Angrist and Pischke, Chapter 5

Card, David (1990): “The Impact of the Mariel Boatlift on the Miami Labor Market,” *Industrial and Labor Relations Review*, 1990.

Ashenfelter, Orley, and Alan B. Krueger (1994): “Estimates of the economic returns to schooling from a new sample of twins,” *American Economic Review* 84, (5) (December 1994): 1157-73.

Duflo, Esther (2001): “Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment,” *American Economic Review*, 91(4), 795-813.

4.1 Event Studies

Callaway, B., & Sant’Anna, P. H. (2021). Difference-in-differences with multiple time periods. *Journal of Econometrics*, *225*(2), 200-230.

Sun, Liyang, and Sarah Abraham. "Estimating dynamic treatment effects in event studies with heterogeneous treatment effects." *Journal of Econometrics* 225.2 (2021): 175-199.

5. Regression Discontinuity

Angrist and Pischke, Chapter 6

RDD

Lee, David, and Thomas Lemieux (2010): “Regression Discontinuity Designs In Economics,” *Journal of Economic Literature*, 48, pages 281-355.

Angrist, Joshua, and Victor Lavy (1999): “Using Maimonides' Rule to Estimate the Effect of Class Size on Scholastic Achievement,” *Quarterly Journal of Economics*, pp. 533-575.

Lee, David (2008): “Randomized experiments from non-random selection in U.S. House elections,” *Journal of Econometrics*.

Lemieux, Thomas, and Kevin Milligan (2008): “Incentive effects of social assistance: A regression discontinuity approach,” *Journal of Econometrics*.

Imbens, Guido W., and Karthik Kalyanaraman (2012). “Optimal Bandwidth Choice for the Regression Discontinuity Estimator.” Review of Economic Studies, 79(3), 933-959.

''Nation Building Through Foreign Intervention: Evidence from Discontinuities in Military Strategies'' (with Melissa Dell), Quarterly Journal of Economics, 133(2), pp. 701-764, 2018.

Dell, M. “The Persistent Effects of Peru's Mining Mita.” Econometrica 78, no. 6 (2010): 1863-1903