

Empirical Development Economics

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Prerequisites

ECON BC3035 or ECON BC3033 and Econometrics, or permission of the instructor.

Course Description

The global economy is rapidly changing, and is facing many challenges ranging from unequal distribution of income, poor institutions, health epidemics and natural disasters. How can we quantify and understand these challenges? What tools do we have to evaluate the efficiency of policies aiming to solve these challenges? This class will help students learn how to access and analyze data, both real time and historic, to deepen their understanding of the contemporary global economy. The students will learn how to use state-of-the-art applied econometric techniques to historic data, census data, household surveys, experimental data and big data, such as web scraped data and satellite data, and discuss methodological issues such as causal inference, experimental techniques, replicability, preanalysis plans and publication bias.

Literature

- Banerjee, Abhijit V., and Esther Duflo. *Poor economics: A radical rethinking of the way to fight global poverty*. Public Affairs, 2011. Chapters 1-5.
- Glennerster, Rachel, and Kudzai Takavarasha. *Running randomized evaluations: A practical guide*. Princeton University Press, 2013.
- Casey, Katherine, Rachel Glennerster, and Edward Miguel. "Reshaping institutions: Evidence on aid impacts using a preanalysis plan." *The Quarterly Journal of Economics* 127.4 (2012): 1755-1812.
- Miguel, Edward, et al. "Promoting transparency in social science research." *Science* 343.6166 (2014): 30-31.
- Ashraf, Nava, et al. *Bride price and female education*. No. w22417. National Bureau of Economic Research, 2016.
- Duflo, Esther. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." *American Economic Review* 91.4 (2001): 795-813.
- Baird, Sarah J., et al. *Girl Power: Cash transfers and adolescent welfare. Evidence from a cluster-randomized experiment in Malawi*. No. w19479. National Bureau of Economic Research, 2013. (For replication assignment)
- Faria, Nuno R., et al. "The early spread and epidemic ignition of HIV-1 in human populations." *Science* 346.6205 (2014): 56-61.
- Hoff, Karla, and Priyanka Pandey. "Discrimination, social identity, and durable inequalities." *The American Economic Review* 96.2 (2006): 206-211.

- Haushofer, Johannes, and Jeremy Shapiro. "The short-term impact of unconditional cash transfers to the poor: Experimental Evidence from Kenya." *The Quarterly Journal of Economics* 131.4 (2016): 1973-2042.

Learning Outcomes

Students completing this course will:

- Develop empirical and analytical skills that can be applied to current development issues in a global context.
- Have insight into available data sources including household surveys, national statistics, experimental data, satellite product data and data scraping.
- Be familiar with empirical approaches to evaluating development practices, including randomized control trials, regression discontinuity and difference-in-difference techniques.
- Be familiar with software for analysis of economic and geographic data, including STATA, R, R studio, and QGIS, and scientific editing software Latex.
- Understand the role of randomization, transparency, replicability and preregistration of research projects within empirical development economics.

Evaluation

In-class participation (5%)

Assignments (50%)

Final take home exam (45%)

Empirical assignments

There will be several empirical assignments. The empirical assignments will be introduced in class assignments and completed at home if necessary.

Assignments (50%):

- **A1:** Online data sources and World Development Indicators (5%), January 30, 10AM
- **A2:** Analyzing Fertility Data in STATA (5%), February 6, 10AM
- **A3:** Design Dream Randomized Control Trial (Presentation 10%), March 6 or 8
- **A4:** Girl Power: Cash Transfers and Adolescent Welfare. Evidence from A Cluster-Randomized Experiment in Malawi (Replication) (10%), April 10, 10AM
- **A5:** Mapping spread of a disease with QGIS (10%), April 17, 10AM
- **A6:** Mexican Cash Transfer: Create a questionnaire and an experimental protocol (written 5%, presentation 5%), April 24, 10AM

Course Outline (preliminary)

Lecture 1: Introduction (18 January)

Lecture 2: Global patterns of development (23 January)

- Banerjee, Abhijit V., and Esther Duflo. *Poor economics: A radical rethinking of the way to fight global poverty*. Public Affairs, 2011. Foreword, Chapter 1-2.
- **Assignment:** Online data sources and WDI (Assign. 5%) (Needs excel)

Lecture 3: Help session. Introduction to STATA (25 January)

STATA with the Empirical Reasoning Center (the ERC)

- Please bring your own laptop with STATA if possible, but not necessary.

- How to use logs and do-files to save your work
- How to clean data and run regressions in STATA

Lecture 4: Global patterns of development (30 January)

- Banerjee, Abhijit V., and Esther Duflo. *Poor economics: A radical rethinking of the way to fight global poverty*. Public Affairs, 2011. Chapter 5
- **Assignment:** Population structure and fertility (Assign. 5%) (Needs STATA)

Lecture 5. Gender (session 1) in the Middle East (February 1)

- Guest lecture by Dr. Alessandra Gonzales, University of Chicago

Lecture 6. Gender (session 2) (February 6)

- Reading: Ashraf, Nava, et al. *Bride price and female education*. No. w22417. National Bureau of Economic Research, 2016. Focus on Figures 1-2, Tables 2, 4, 6, 8, 10. Skip Section 5 (The Model), and Appendix.
- Seminar style discussion:
 - What is their empirical strategy to understand how bride price affects investment in girls' education? Discuss the internal validity of the results
 - What countries do the authors research? Why would the researchers choose to research two such different countries?
 - Bride price tradition is prevalent in different parts of the world. The authors study both Zambia and Indonesia. These are two very different countries, and as the authors exploit, also have significant cultural differences within the countries. Do you believe that the results are externally valid?
 - What is the role of culture for economic development? Should development policies try to leverage cultural expressions like the bride price to increase education? When? When not?

Lecture 7. Transparency in Social Science: The Need for Transparency (February 8)

- Reading: Promoting Transparency in Social Science Research (Miguel et al., published in Science, 2014)
- Seminar style discussion:
 - What issues do randomized trials and quasi-experimental research design aim to solve?
 - RCTs increase the internal validity. What transparency and validity issues does the RCT method not solve?
 - What is the external validity of a result from an RCT? Discuss strengths and weaknesses.
 - Why do you think the authors argue that the current way of publishing leads to “a distorted body of evidence with too few null effects and many false positives”
 - What is publication bias?
 - What is the role of study registration within the social sciences? What is a pre-specified analysis plan?
 - Why is data sharing important?

If you brought some material with you today, feel free to bring it into the discussion at any point. Discuss with your neighbors for 15 minutes. I will call you out at random during the class discussion. Even if you are not called, you are expected to talk.

Lecture 8. R (February 13) ERC workshop R, session 1

- How to use R and R studio
- How to use R Markdown to generate a replicable research from data to code to final draft

Lecture 9. Transparency in Social Science (session 2): The Experimental Approach (February 15)

- Glennerster, Rachel, and Kudzai Takavarasha. *Running randomized evaluations: A practical guide*. Princeton University Press, 2013.
 - Chapter 1 The experimental approach
 - Chapter 2 Why randomize
 - Chapter 3 Asking the right questions

Lecture 10. Transparency in Social Science (session 3) (February 20)

- Casey, Katherine, Rachel Glennerster, and Edward Miguel. "Reshaping institutions: Evidence on aid impacts using a preanalysis plan." *The Quarterly Journal of Economics* 127.4 (2012): 1755-1812.
- Seminar style discussion:
 - What is the main research question?
 - What is the main empirical issue the authors face in trying to answer the research question?
 - What are the "researcher temptations" that the authors refer to?
 - What is the "methodological innovation" of the paper? What is the purpose of this methodological innovation? What role do you think it will play within social science research? How do the authors demonstrate the need for the innovation?

Lecture 11. R (Session 2) (February 22)

- ERC workshop R, session 2
 - Advanced topics in R
 - How to produce reproducible and replicable research in R
 - How to generate Latex code in R

Lecture 12. Causal Inference: Applications to Human Capital (Session 2) (February 27)

- Duflo, Esther. "Schooling and Labor Market Consequences of School Construction in Indonesia: Evidence from an Unusual Policy Experiment." *American Economic Review* 91.4 (2001): 795-813.
- Assignment: Design the Dream Randomized Control Trial (Presentation 10%)
 - Identifying an original research question
 - Designing an intervention that can be evaluated using rigorous evaluation techniques
 - How to use a preanalysis plan and do power calculations

Lecture 13. Causal Inference: Applications to Human Capital (Session 3) (March 1)

- Glennerster, Rachel, and Kudzai Takavarasha. *Running randomized evaluations: A practical guide*. Princeton University Press, 2013.
 - Chapter 4: Randomizing
 - Chapter 6: Statistical Power
 - Chapter 7: Threats

Lecture 14 & 15. Student Presentations (2 Sessions) (March 6 and 8)

- Student in class presentations of the assignment Dream Randomized Control Trial (10%)

SPRING BREAK (March 11 – 19)

Lecture 16. QGIS with ERC (March 20)

- Bring laptop with QGIS installed (free software)
- How to map geographic data and employ it in economics research

Lecture 17. LaTeX with ERC (March 22)

- Bring laptop with TexShop installed (free software)
- How to produce results in R and STATA and automatically update your research paper
- How to write mathematical expressions using LaTeX

Lecture 18. Human Capital and Causal Inference (Session 4) (March 27)

- Banerjee, Abhijit V., and Esther Duflo. *Poor economics: A radical rethinking of the way to fight global poverty*. Public Affairs, 2011. Chapter 4.
- Data Geeks Are Taking Over Economics (article)

Lecture 18. Health (session 1) (March 29)

- Banerjee, Abhijit V., and Esther Duflo. *Poor economics: A radical rethinking of the way to fight global poverty*. Public Affairs, 2011. Chapter 3.
- Baird, Sarah J., et al. *Girl Power: Cash transfers and adolescent welfare. Evidence from a cluster-randomized experiment in Malawi*. No. w19479. National Bureau of Economic Research, 2013.
- Topics:
 - Randomized Control Trials
 - What role can research play in development policy?
 - Why do we need replication in social science research?
 - How to access and use replication files from published research
- **Assignment:** Replicate the analysis from *Girl Power: Cash transfers and adolescent welfare. Evidence from a cluster-randomized experiment in Malawi*.

Lecture 19. Health (session 2) (April 3)

- Reading: Can We Talk In Private (About Family Planning)? (JPAL policy brief).
- Seminar style discussion:
 - Question: What is the main research question? Why is the main research question important?
 - Methods: How do they test it? (Explain the intervention and identification strategy)
 - Findings: What is the main finding?
 - Policy: Given the finding, what policy recommendations would you make?
 - Extensions:
 - Identify four remaining policy questions from the research context. Search google scholar for answers to your questions. Judge the quality of the research you have identified
 - Specify what remaining questions would need to be answered, and suggest ways to answer them

Lecture 20. Health (session 3) (April 5)

- Guest Lecture: Karla Hoff, the World Bank
- Read: <https://www.brookings.edu/blog/future-development/2017/03/13/kenneth-arrow-and-the-promise-of-behavioral-development-economics/>

Lecture 21. Health (session 4) (April 10): The geographic spread of disease

- Reading: Faria, Nuno R., et al. "The early spread and epidemic ignition of HIV-1 in human populations." *Science* 346.6205 (2014): 56-61.
- **Assignment:** Mapping the spread of HIV, Ebola, and Zika

Lecture 22. Experimental Development Economics (session 5) (April 12)

- Reading: Hoff, Karla, and Priyanka Pandey. "Discrimination, social identity, and durable inequalities." *The American economic review* 96.2 (2006): 206-211.
- Prof. Tolonen's RCT regarding PROSPERA in Mexico
- **Assignment:** Create an experimental game/questionnaire to test a specific hypothesis to add to the randomized control trial (Assign. 5%, Presentation on April 24 and 26)

Lecture 23. April 17

- *No class*

Lecture 24. Experimental Development Economics (session 1) April 19

- Reading: Haushofer, Johannes, and Jeremy Shapiro. "The short-term impact of unconditional cash transfers to the poor: Experimental Evidence from Kenya." *The Quarterly Journal of Economics* 131.4 (2016): 1973-2042.
- **Seminar style discussion:**
 - a. The authors study a randomized control trial. At what levels were the randomization done? Why? What are the different treatment arms? What outcome variables are analyzed?
 - b. The authors collect data on subjective psychological well-being as well as on the stress hormone cortisol.
 - i. What are the advantages with collecting data on cortisol levels?
 - ii. What are the drawbacks with the same measure?
 - iii. How is it collected?
 - iv. How do the authors address ethical concerns?
 - c. What are the main findings of the paper?
 - d. Discuss program eligibility, compliance and attrition
 - e. Discuss what the authors do in the section of Minimum Detectable Effect Sizes
 - f. The authors argue that they make important methodological contributions (see page 1977). What are these contributions? How would you value these contributions?

Lecture 25. Experimental Development Economics (session 3) (April 24)

- Presentation questionnaire for field experiment (Assign. 5%)

Lecture 26. Experimental Development Economics (session 3) (April 26)

- Presentation questionnaire for field experiment (5%)

May 1: Review session

Motivation for take-home exam

The final exam will be a take home exam. The exam will be designed according to the criteria stated in the faculty guide. The take home exam will not be the only written assignment in the course. It will serve to allow students to be examined on the learning outcomes defined in the course, such as aptitude in analyzing different types of data sources using statistical software, to understand processes of economic development.