Econ 2416 Syllabus

Professor Gabriel Chodorow-Reich

Harvard University

Spring 2021

Course overview

Logistics

Meeting time: Thursday 3:00pm-5:45pm

Location: zoom

Course website: https://canvas.harvard.edu/courses/84799

Instructor: Gabriel Chodorow-Reich

Office hours: Tu 3-4pm (Zoom). Please sign-up ahead at https://docs.google.com/spreadsheets/d/1QE6zaSLV9ON4xTw7bs1texR444ZQnroJ2ggNN1Oe8kI/edit?usp=sharing.

Email: chodorowreich@fas.harvard.edu. Please include "econ 2416" in the subject line.

TA: Armando Miano

Office hours: W 3-4 (Zoom). You may sign-up ahead at https://docs.google.com/spreadsheets/d/1tF7W7Kww2znqiKbWPrqyuYm82yOBaXnu_J411j_ybWU/edit?usp=sharing.

Email: amiano@g.harvard.edu.

Prerequisites

Completion of the first year Ph.D sequence, or permission of instructor.

Requirements in brief

Weekly readings, preliminary "fact" presentation, two problem sets, and a final project and presentation.

Grade

Final project (50%), other homeworks (25%), class participation (25%)

Requirements details

Weekly readings

Much of the class will revolve around discussion of assigned readings. This makes it essential that you read the starred papers before lecture and come prepared to discuss and critique them.

Homework I

For your first homework assignment, you will present one empirical result from a published or working paper. Your selected paper must satisfy two criteria:

- It is discussed in one of the February 4 readings.
- It is not on this syllabus.

You will make an in-class, 5 minute presentation for which you should prepare one or two slides (no more!). Your slides should describe relevant background (context, data, methodology) and present the result. IMPORTANT: you are not meant to present an entire paper. Just one result you found intriguing. Provide enough context for us to understand the result (what data was used? empirical specification?). Do NOT try to contextualize the result within the full paper. No two students may present results from the same paper. Students may claim papers by signing up on Canvas on a first-come, first-claimed basis. You must email me your slides by 2pm on February 4.

Homework II

The second homework will be a problem set. You may work together, but each student must submit his/her own independent write up.

Homework III

The third homework will be a problem set. You may work together, but each student must submit his/her own independent write up.

Final Project

This will be your main project for the course. The purpose of making the assignment a virtual paper is that I would rather you get 50% of the way toward a project you are excited to continue after the semester finishes than you complete a project in the timeframe of the course to which you will never return. You will formulate an original research idea, develop a practical plan for executing the idea, and take initial steps in the execution. The paper may take the following form:

1. Introduction: What is the question and why is the question of interest?
2. Literature Review: How does your paper fit into the broader literature?

3. Theoretical Motivation: This could be actual theory or just a sketch of the relevant theory that underlies your question.

4. Data: What data would you use to answer/address this question? Why are the data well suited to the question?

5. Empirical Methodology: How would you use the data to answer your question? Be explicit about causal identification, keeping in mind that the same set of empirical facts can often support many theories. Depending on the nature of your question and the ease of accessing and using the data, I may ask you to make significant progress in the actual implementation of your proposed empirical work.

6. Falsification Tests: What other specifications, tests and investigations could either bolster or cast doubt upon the primary tests of your hypotheses?

7. Preliminary Results: The extent of the results provided will differ across students based on the project and discussions with me.

Deadlines for the virtual paper:

- **February 18**: Email me a two page write up of proposed idea. Please include "econ 2416" in the subject line.
- **March 25**: Meet with me to receive feedback on proposed idea.
- **April 8/15 and 22**: Class presentations, 25 minutes per student.
- **May 7**: Papers due via email. Please include "econ 2416" in the subject line.

You may request approval from me to work jointly on the virtual paper. You may also develop an idea you started in another course or independently. Of course the bar for sufficient progress will be higher in these circumstances.

Audit policy

If you are a 3rd year or above and wish to audit the course, send me an email introducing yourself and so you can be added to the class list (as always, please include "econ 2416" in the subject line). Auditors are not required to complete the written assignments, but are expected to do the starred readings and participate in class.

Course outline

1. January 28: Overview and structural models

Jesus Fernandez-Villaverde, Juan Fabio Rubio-Ramirez, and Frank Schorfheide (2016). "Solution and Estimation Methods for DSGE Models". *Handbook of Macroeconomics* 2, pp. 527–724

2. February 4: Empirical macroeconomics

Homework I due

*Lawrence H. Summers (1991). "The Scientific Illusion in Empirical Macroeconomics". *The Scandinavian Journal of Economics* 93(2), pp. 129–148. URL: http://www.jstor.org/stable/3440321

*Paul Romer (Forthcoming). "The Trouble With Macroeconomics". *The American Economist*. URL: https://paulromer.net/wp-content/uploads/2016/09/WP-Trouble.pdf

*V.A. Ramey (2016). "Chapter 2 - Macroeconomic Shocks and Their Propagation". In: ed. by John B. Taylor and Harald Uhlig. Vol. 2. Handbook of Macroeconomics. Elsevier, pp. 71–162. URL: http://www.sciencedirect.com/science/article/pii/S1574004816000045 (sections 1 and 2 only)

*Lawrence J. Christiano, Martin S. Eichenbaum, and Mathias Trabandt (2018). "On DSGE Models". *Journal of Economic Perspectives* 32(3), pp. 113–40. URL: http://www.aeaweb.org/articles?id=10.1257/jep.32.3.113

*Emi Nakamura and Jón Steinsson (2018). "Identification in Macroeconomics". *Journal of Economic Perspectives* 32(3), pp. 59–86. URL: http://www.aeaweb.org/articles?id=10.1257/jep.32.3.59

3. February 11: Applied time series I

James D. Hamilton (1994). *Time Series Analysis*. Princeton University Press, Chapters 10 and 11

Oscar Jorda (2005). "Estimation and Inference of Impulse Responses by Local Projections". *American Economic Review* 95(1), pp. 161–182. URL: http://www.aeaweb.org/articles.php?doi=10.1257/0002828053828518

Alan J. Auerbach and Yuriy Gorodnichenko (2013). "Fiscal Multipliers in Recession and Expansion". In: *Fiscal Policy after the Financial Crisis*. Ed. by Alberto Alesina and Francesco

Giavazzi. The University of Chicago Press. URL: http://www.nber.org/papers/w17447.pdf

James Stock and Mark Watson (2016). "Factor Models and Structural Vector Autoregressions in Macroeconomics". *Handbook of Macroeconomics*, Section 4

4. February 18: Applied time series II

James D. Hamilton (1994). *Time Series Analysis*. Princeton University Press, Chapters 10 and 11

Oscar Jorda (2005). "Estimation and Inference of Impulse Responses by Local Projections". *American Economic Review* 95(1), pp. 161–182. URL: http://www.aeaweb.org/articles.php?doi=10.1257/0002828053828518

Alan J. Auerbach and Yuriy Gorodnichenko (2013). "Fiscal Multipliers in Recession and Expansion". In: *Fiscal Policy after the Financial Crisis*. Ed. by Alberto Alesina and Francesco Giavazzi. The University of Chicago Press. URL: http://www.nber.org/papers/w17447.pdf

James Stock and Mark Watson (2016). "Factor Models and Structural Vector Autoregressions in Macroeconomics". *Handbook of Macroeconomics*, Section 4

5. February 25: VAR Applications

Homework II due.

Ben S. Bernanke and Ilian Mihov (1998). "Measuring Monetary Policy". *The Quarterly Journal of Economics* 113(3), pp. 869–902. URL: http://qje.oxfordjournals.org/content/113/3/869

Lawrence J. Christiano, Martin Eichenbaum, and Charles L. Evans (1999). "Chapter 2 Monetary policy shocks: What have we learned and to what end?" In: ed. by John B. Taylor and Michael Woodford. Vol. 1, Part A. Handbook of Macroeconomics. Elsevier, pp. 65–148. URL: http://www.sciencedirect.com/science/article/pii/S1574004899010058

*Olivier Blanchard and Roberto Perotti (2002). "An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output". *The Quarterly Journal of Economics* 117(4), pp. 1329–1368. URL: http://qje.oxfordjournals.org/content/117/4/1329

*Ben S. Bernanke, Jean Boivin, and Piotr Eliasz (2005). "Measuring the Effects of Monetary Policy: A Factor-Augmented Vector Autoregressive (FAVAR) Approach". *The Quarterly Journal of Economics* 120(1), pp. 387–422. URL: http://qje.oxfordjournals.org/content/120/1/387.abstract

Andrew Mountford and Harald Uhlig (2009). "What are the effects of fiscal policy shocks?" *Journal of Applied Econometrics* 24(6), pp. 960–992. URL: http://dx.doi.org/10.1002/jae.1079
Christiane Baumeister and James D. Hamilton (2015). "Sign Restrictions, Structural Vector Autoregressions, and Useful Prior Information". *Econometrica* 83(5), pp. 1963–1999. URL: http://dx.doi.org/10.3982/ECTA12356
Christiane Baumeister and James Hamilton (2020). *Drawing Conclusions from Structural Vector Autoregressions Identified on the Basis of Sign Restrictions*. Working Paper 26606. National Bureau of Economic Research. URL: http://www.nber.org/papers/w26606

*Christiane Baumeister and James D. Hamilton (2019). "Structural Interpretation of Vector Autoregressions with Incomplete Identification: Revisiting the Role of Oil Supply and Demand Shocks". *American Economic Review* 109(5), pp. 1873–1910. URL: http://www.aeaweb.org/articles?id=10.1257/aer.20151569

Christian Wolf (Forthcoming). "SVAR (Mis-)Identification and the Real Effects of Monetary Policy Shocks". *American Economic Journal: Macroeconomics*

Mark Gertler and Peter Karadi (2015). "Monetary Policy Surprises, Credit Costs, and Economic Activity". *American Economic Journal: Macroeconomics* 7(1), pp. 44–76. URL: https://www.aeaweb.org/articles?id=10.1257/mac.20130329

James H. Stock and Mark W. Watson (2018). "Identification and Estimation of Dynamic Causal Effects in Macroeconomics Using External Instruments". *The Economic Journal* 128(610), pp. 917–948. URL: https://onlinelibrary.wiley.com/doi/abs/10.1111/ecoj.12593

6. March 4: Narrative approach

*Christina D. Romer and David H. Romer (1989). "Does Monetary Policy Matter? A New Test in the Spirit of Friedman and Schwartz". In: *NBER Macroeconomics Annual*. Ed. by Olivier Jean Blanchard and Stanley Fischer. Vol. 4. MIT Press, pp. 121–184. URL: http://emlab.berkeley.edu/users/cromer/MacroAnnual1989.pdf
François R. Velde (2009). "Chronicle of a Deflation Unforetold". *Journal of Political Economy* 117(4), pp. 591–634. URL: http://dx.doi.org/10.1086/605130
*Christina D. Romer and David H. Romer (2010). "The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks". *American Economic Review* 100(3), pp. 763–801. URL: http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.3.763
Valerie A. Ramey (2011). "Identifying Government Spending Shocks: It's all in the Timing". *The Quarterly Journal of Economics* 126(1), pp. 1–50. URL: http://qje.oxfordjournals.

org/content/126/1/1
*Karel Mertens and Morten O. Ravn (2013). "The Dynamic Effects of Personal and Corporate Income Tax Changes in the United States". *American Economic Review* 103(4), pp. 1212–47. URL: http://www.aeaweb.org/articles.php?doi=10.1257/aer.103.4.1212
*Juan Antolín-Díaz and Juan F. Rubio-Ramírez (2018). "Narrative Sign Restrictions for SVARs". *American Economic Review* 108(10), pp. 2802–29. URL: http://www.aeaweb.org/articles?id=10.1257/aer.20161852
Sydney C Ludvigson, Sai Ma, and Serena Ng (2017). *Shock Restricted Structural Vector-Autoregressions*. Working Paper 23225. National Bureau of Economic Research. URL: http://www.nber.org/papers/w23225

Michael Bauer and Eric Swanson (2020). *The Fed's Response to Economic News Explains the "Fed Information Effect"*. Working Paper 27013. National Bureau of Economic Research. URL: http://www.nber.org/papers/w27013

7. March 11: Shift-share designs

Homework III due.

Timothy J. Bartik (1991). *Who Benefits from State and Local Development Policies?* W.E. Upjohn Institute for Employment Research
*Gabriel Chodorow-Reich (2014). "The Employment Effects of Credit Market Disruptions: Firm-level Evidence from the 2008-9 Financial Crisis". *The Quarterly Journal of Economics* 129(1), pp. 1–59. URL: http://qje.oxfordjournals.org/content/129/1/1.abstract
Gabriel Chodorow-Reich and Johannes Wieland (2020). "Secular Labor Reallocation and Business Cycles". *Journal of Political Economy* 128(6), pp. 2245–2287. URL: https://doi.org/10.1086/705717
Emi Nakamura and Jón Steinsson (2014). "Fiscal Stimulus in a Monetary Union: Evidence from US Regions". *American Economic Review* 104(3), pp. 753–92. URL: http://www.aeaweb.org/articles.php?doi=10.1257/aer.104.3.753
*Paul Goldsmith-Pinkham, Isaac Sorkin, and Henry Swift (2018). *Bartik Instruments: What, When, Why, and How*. Working Paper 24408. National Bureau of Economic Research. URL: http://www.nber.org/papers/w24408
*Kirill Borusyak, Peter Hull, and Xavier Jaravel (2018). *Quasi-Experimental Shift-Share Research Designs*. Working Paper 24997. National Bureau of Economic Research. URL: http://www.nber.org/papers/w24997
Rodrigo Adão, Michal Kolesár, and Eduardo Morales (2019). "Shift-Share Designs: Theory and Inference". *The Quarterly Journal of Economics* 134(4), pp. 1949–2010. URL: https://doi.org/10.1093/qje/qjz025

8. March 18: Cross-section and aggregation

Gabriel Chodorow-Reich, Laura Feiveson, et al. (2012). "Does State Fiscal Relief during Recessions Increase Employment? Evidence from the American Recovery and Reinvestment Act". *American Economic Journal: Economic Policy* 4(3), pp. 118–45. URL: http://www.aeaweb.org/articles.php?doi=10.1257/pol.4.3.118

*Atif Mian and Amir Sufi (2014). "What Explains the 2007-2009 Drop in Employment?" *Econometrica* 82(6), pp. 2197–2223. URL: http://dx.doi.org/10.3982/ECTA10451

Emmanuel Farhi and Ivan Werning (2016). "Fiscal Multipliers". *Handbook of Macroeconomics* 2, pp. 2417–2492. URL: http://www.sciencedirect.com/science/article/pii/S1574004816300192

*Martin Beraja, Erik Hurst, and Juan Ospina (2019). "The Aggregate Implications of Regional Business Cycles". *Econometrica* 87(6), pp. 1789–1833. URL: https://onlinelibrary.wiley.com/doi/abs/10.3982/ECTA14243

*Gabriel Chodorow-Reich (2019). "Geographic Cross-Sectional Fiscal Spending Multipliers: What Have We Learned?" *American Economic Journal: Economic Policy* 11(2), pp. 1–34. URL: http://www.aeaweb.org/articles?id=10.1257/pol.20160465

Kilian Huber (2018). "Disentangling the Effects of a Banking Crisis: Evidence from German Firms and Counties". *American Economic Review* 108(3), pp. 868–98. URL: http://www.aeaweb.org/articles?id=10.1257/aer.20161534

Gabriel Chodorow-Reich, Gita Gopinath, et al. (2020). "Cash and the Economy: Evidence from India's Demonetization". *Quarterly Journal of Economics* 135(1), pp. 57–103. URL: https://doi.org/10.1093/qje/qjz027

Gabriel Chodorow-Reich (2020). "Regional Data in Macroeconomics: Some Advice for Practitioners". *Journal of Economic Dynamics and Control* 115. URL: http://www.sciencedirect.com/science/article/pii/S0165188920300440

9. March 25: individual project meetings

10. April 1: Measurement: unemployment

Christopher A. Pissarides (2000). *Equilibrium Unemployment Theory*. The MIT Press. URL: http://mitpress.mit.edu/books/equilibrium-unemployment-theory

Richard Rogerson, Robert Shimer, and Randall Wright (2005). "Search-Theoretic Models of the Labor Market: A Survey". *Journal of Economic Literature* 43(4), pp. 959–988. URL: http://www.aeaweb.org/articles.php?doi=10.1257/002205105775362014

Robert Shimer (2005). "The Cyclical Behavior of Equilibrium Unemployment and Vacancies". *The American Economic Review* 95(1), pp. 25–49. URL: http://www.jstor.org/stable/

4132669

Marcus Hagedorn and Iourii Manovskii (2008). "The Cyclical Behavior of Equilibrium Unemployment and Vacancies Revisited". *American Economic Review* 98(4), pp. 1692–706. URL: http://www.aeaweb.org/articles.php?doi=10.1257/aer.98.4.1692

Christopher A. Pissarides (2009). "The Unemployment Volatility Puzzle: Is Wage Stickiness the Answer?" *Econometrica* 77(5), pp. 1339–69. URL: http://dx.doi.org/10.3982/ECTA7562

Gabriel Chodorow-Reich and Loukas Karabarbounis (2016). "The Cyclicality of the Opportunity Cost of Employment". *Journal of Political Economy* 124(6), pp. 1563–1618. URL: http://dx.doi.org/10.1086/688876

John Grigsby, Erik Hurst, and Ahu Yildirmaz (forthcoming). "Aggregate Nominal Wage Adjustments: New Evidence from Administrative Payroll Data"

11. April 8: Wellness day

12. April 15: Student presentations

13. April 22: Student presentations