

## Economics 753: Applied Econometrics – Fall 2021

Tue/Thurs 1–2:30 (Gordon 3rd Fl.) & Lab Tuesday 11:30–12:45 (Crotty 114)

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### SYLLABUS

*“There is no royal road to science, and only those who do not dread the fatiguing climb of its steep paths have a chance of gaining its luminous summits.”—Karl Marx*

The purpose of this course is to help you become comfortable and creative as empirical economic researchers. We will therefore introduce a series of econometric techniques and models by observing life in the trenches, i.e., working through how practitioners have approached econometric problems and built models as vehicles for addressing substantive questions. We also put stress on communicating econometric results and descriptive statistics in ways that are illuminating, persuasive, and rigorous. But we will also ask the question: what does it mean to be rigorous with econometrics and statistics in general? Indeed, early in the course, we will even address the fundamental question raised by John Maynard Keynes himself in the infancy of econometrics—is the entire enterprise worth pursuing? Finally, in the course of your studying and then doing real-world econometrics, we aim to get you to become comfortable programming a software package and manipulating datasets.

### TEXTBOOKS AND READINGS

Readings for the course are available from the course Moodle site. Scanned chapters of *The Practice of Econometrics* (Ernst M. Berndt) are available from <http://courses.umass.edu/econ753/berndt.poe/Ch01.pdf> (substituting other chapter numbers for 01). We also recommend *Introduction to Econometrics* (James Stock and Mark Watson) and *A Guide to Econometrics* (Peter Kennedy). Please have current readings available during class.

### REQUIREMENTS

There are two sets of requirements for the course:

1. **Problem sets.** We will assign six problem sets. You are required to complete all six, and the lowest grade will be dropped. We will not assign any exercises in the first week. After the first week, we will assign exercises every two weeks up to the last week of the course. The six exercises you turn in will collectively count for 50 percent of your final grade.
2. **Term paper.** The term paper assignment can be in one of two forms: a replication of an empirical econometric paper that interests you; or an original piece of econometric research. Given other demands over the course of the semester, we *strongly recommend* that you opt for the replication option, which should generally be less demanding than coming up with, researching, and writing an original research paper. Replication can be an illuminating experience, especially if you choose a paper that fascinates you. Having said that, we will not stop anyone who is just burning with an original idea to get it down on paper. The term paper will count for the other 50 percent of the grade. Some of the homework assignments will involve providing us with preliminary materials and updates on the term paper. Finally, we require all students to make oral presentations of their

term paper on the last week of class. *We emphasize now, and will continue to do so during the term, the need to work steadily throughout the semester on this project.*

## COMPUTER/DATA/SOFTWARE SUPPORT

Throughout the term we will conduct lab sessions to assist people in getting comfortable using a statistical application and related tools to manage and analyze data. We will focus on R, and advice on Stata and EViews is available. The instructors and TA will lead lab sessions and hold regular office hours throughout the course to assist people further with their data and software needs and concerns.

## COURSE STRUCTURE

### I. Methodological Issues, Descriptive Statistics, and Visualization (3 classes)

#### Methodology

J.M. Keynes, "Professor Tinbergen's Method," *Economic Journal*, September 1939, <http://www.jstor.org/stable/2224838>. The Keynes piece is also reprinted in Keynes's collected works, Volume 14, pp. 306-317. Volume 14 of the collected works also contains other, more informal (and thus, in some ways, even more illuminating) writings by Keynes on his critique of Tinbergen.

Jan Tinbergen, "On a Method of Statistical Business-Cycle Research. A Reply." *Economic Journal*, March 1940, <http://www.jstor.org/stable/2225763>.

J.M. Keynes, "On a Method of Statistical Business-Cycle Research. A Comment," *Economic Journal*, March 1940, <http://www.jstor.org/stable/2225764>.

Lawrence H. Summers, "The Scientific Illusion in Empirical Macroeconomics," *Scandinavian Journal of Economics*, 1991, <http://www.jstor.org/stable/3440321>.

#### Descriptive Statistics and Visualization

Emmanuel Saez, "Striking it Richer: The Evolution of Top Incomes in the U.S. (Updated estimates)," UC Berkeley, <https://eml.berkeley.edu/~saez/>.

Robert Pollin, James Heintz, Peter Arno, Jeannette Wicks-Lim and Michael Ash, 2018, PERI - Economic Analysis of Medicare for All, Chapter 2 and Appendix 7.

Robert Pollin, Jeannette Wicks-Lim, Shouvik Chakraborty, Caitlin Kline, and Gregor Semieniuk 2021, A Program for Economic Recovery and Clean Energy Transition for California, <https://peri.umass.edu/economists/gregor123/item/1466-a-program-for-economic-recovery-and-clean-energy-transition-in-california>

Anne Case and Angus Deaton. "Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century,". PNAS December 8, 2015 112 (49) 15078-15083; first published November 2, 2015; <https://doi.org/10.1073/pnas.1518393112>

Bridget Diana, Michael Ash, and James K. Boyce. Green for All <https://peri.umass.edu/publication/item/1408-green-for-all-integrating-air-quality-and-environmental-justice-into-the-clean-energy-transition> (see also Top 100 Polluter Indexes).

Edward R. Tufte. The Visual Display of Quantitative Information, Chapter 1: "Graphical Excellence." Cheshire, Connecticut: Graphics Press, 1983.

Fortin, Nicole M., and Thomas Lemieux. "Institutional changes and rising wage inequality: is there a linkage?" *Journal of Economic Perspectives* 11, no. 2 (1997): 75-96.

## **II. Critical Replication**

King, Gary. "Publication, Publication," *PS: Political Science and Politics*, Vol. XXXIX, No. 1 (January, 2006), 119-125,.

Carmen Reinhart and Kenneth Rogoff "Growth in a Time of Debt," *American Economic Review* 100(2) May 2010, pp. 573 – 78.

<http://www.aeaweb.org/articles.php?doi=10.1257/aer.100.2.573>

Thomas Herndon, Michael Ash, and Robert Pollin, "Does High Public Debt Consistently Stifle Economic Growth? A Critique of Reinhart and Rogoff," *Cambridge Journal of Economics*, 2014

Michael Wachter, Barry Hirsch and James Gillula, 2016 "Wage Comparability of U.S. Postal Service Clerks with the Private Sector, USPS-APWU Interest Arbitration, Exhibit L3, 2016.

Robert Pollin, Jeannette Wicks-Lim and Michael Ash, 2019, "An Analysis of Wage-Setting Patterns for U.S. Postal Workers," manuscript, September.

## **III. Price Indexes: Construction and Issues**

Berndt, Chapter 4

David Wasshausen and Brent Moulton "The Role of Hedonic methods in Measuring Real GDP in the United States," [https://www.bea.gov/system/files/papers/P2006-6\\_0.pdf](https://www.bea.gov/system/files/papers/P2006-6_0.pdf),

David S. Johnson, Stephen B. Reed, and Kenneth J. Stewart, "Price Measurement in the United States: A Decade after the Boskin Commission," *Monthly Labor Review*, May 2006, <http://www.bls.gov/opub/mlr/2006/05/art2full.pdf>

Robert Pollin and James Heintz, "Expanding Decent Employment in Kenya: The Role of Monetary Policy, Inflation Control and the Exchange Rate," *UNDP International Poverty Centre, Country Study #6*, 2007, pp. 11-15 and 34-37,

Marshall Reinsdorf and Jack Triplett, "A Review of Reviews: Ninety Years of Professional Thinking about the Consumer Price Index, 2008, *Price Index Concepts and Measurement*.

Brook Fox et al. "How the Virus Disrupted Inflation Statistics," *Financial Times*, 6/4/21

Josh Bivens and Stuart Thompson, "179 Reasons You Probably Don't Need to Panic about Inflation," *NY Times*, 8/18/21,

<https://www.nytimes.com/interactive/2021/08/18/opinion/inflation-economy-transitory.html>

## **IV. Economic Effects: Comparisons, Controls, Causality, and Inference**

### **Disparities and Discrimination, Premiums and Penalties**

Berndt, Chapter 5, "Analyzing Determinants of Wages and Measuring Wage Discrimination: Dummy Variables in Regression Models."

Francine D. Blau and Lawrence M. Kahn. *The Gender Wage Gap: Extent, Trends, and Explanations*. *Journal of Economic Literature* 2017, 55(3), 789–865.

<https://doi.org/10.1257/jel.20160995>

Munnell, Alicia H., Geoffrey MB Tootell, Lynn E. Browne, and James McEneaney. "Mortgage lending in Boston: Interpreting HMDA data." *American Economic Review* (1996): 25-53.

## Health

- Berndt and Showalter, 1999, Draft of “Health Insurance and the Demand for Medical Care: Econometric Tools for Limited and Skewed Dependent Variable Models.”
- Aron-Dine, Aviva, Liran Einav, and Amy Finkelstein. “The RAND health insurance experiment, three decades later.” *Journal of Economic Perspectives* 27, no. 1 (2013): 197-222.
- Brot-Goldberg, Z. C., Chandra, A., Handel, B. R., & Kolstad, J. T. (2017). What does a deductible do? The impact of cost-sharing on health care prices, quantities, and spending dynamics. *Quarterly Journal of Economics*, 132(3), 1261-1318.

## Immigration

- David Card, 2009. “Immigration and Inequality.” *American Economic Review*, 99 (2): 1-21. DOI: 10.1257/aer.99.2.1
- Pollin, Robert, and Jeannette Wicks-Lim. “Did immigrants in the US labor market make conditions worse for native workers during the Great Recession?” University of Massachusetts Amherst, Political Economy Research Institute (2011).

## Minimum Wage

- David Card and Alan B. Krueger. Chapter 6, “Evaluation of Time-Series Evidence” and Chapter 2, “Employer Responses to the Minimum Wage: Evidence from the Fast-Food Industry.” *Myth and Measurement: The New Economics of the Minimum Wage*. Princeton University Press, 1995, <https://www.jstor.org/stable/j.ctv7h0s52> <http://www.jstor.org/stable/2118030>.
- Arindrajit Dube, T. William Lester and Michael Reich, “Minimum Wage Effects Across State Borders: Estimates Using Contiguous Counties,” *Review of Economics and Statistics* 92(4), pages 945-64, 2010. <http://www.irl.berkeley.edu/workingpapers/157-07.pdf>

## New problems and new techniques

- Symposium on new econometric methods, *Journal of Economic Perspectives*, Fall 2001, <http://www.jstor.org/stable/i346045>, especially John DiNardo and Justin Tobias, “Nonparametric Density and Regression Estimation”; David Brownstone and Robert Valletta, “The Bootstrap and Multiple Imputations: Harnessing Increasing Computer Power for Improved Statistical Tests”; Joshua D. Angrist and Alan B. Krueger, “Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments”; and Stanley, Tom D. “Wheat from chaff: Meta-analysis as quantitative literature review.”
- Moulton, Brent R. “An Illustration Of A Pitfall In Estimating The Effects Of Aggregate Variables On Micro Units” *Review of Economics and Statistics* Vol. 72, No. 2 (May, 1990), pp. 334-338.
- Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. “How much should we trust differences-in-differences estimates?” *Quarterly Journal of Economics* 119.1 (2004): 249-275.
- David S. Lee and Thomas Lemieux, “Regression Discontinuity Designs in Economics,” NBER Working Paper 14723, February 2009, <http://www.nber.org/papers/w14723>
- Varian, Hal R. 2014. “Big Data: New Tricks for Econometrics.” *Journal of Economic Perspectives*, 28 (2): 3-28.

## **V. Macro: Forecasting, Granger Causality, Cointegration, VAR, and the Credibility Revolution**

Berndt, Ch. 6

Léonce Ndikumana, “Macroeconomic Policy Factors and Private Investment in South Africa,” Appendix 2 of Pollin, Epstein, Heintz and Ndikumana, An Employment-Targeted Economic Program for South Africa.

Stock, James, H., and Mark W. Watson. 2001. "Vector Autoregressions." *Journal of Economic Perspectives*, 15 (4): 101-115. DOI: 10.1257/jep.15.4.101

Chodorow-Reich, Gabriel, Laura Feiveson, Zachary Liscow, and William Gui Woolston. 2012. “Does State Fiscal Relief During Recessions Increase Employment? Evidence from the American Recovery and Reinvestment Act.” *American Economic Journal: Economic Policy* 4 (3): 118-145.

Olivier Blanchard and Daniel Leigh, “Growth Forecast Errors and Fiscal Multipliers,” IMF Working Paper No. 13/1. <http://www.imf.org/external/pubs/ft/wp/2013/wp1301.pdf>

## **VI. Inflation, Unemployment, and Aggregate Macroeconometric Models (4 Classes)**

Berndt, Ch. 10.

Robert Pollin, “Wage Bargaining and the U.S. Phillips Curve: Was Greenspan Right about ‘Traumatized Workers’ in the 1990s?” unpublished manuscript.

Anwar Shaikh, *Capitalism*, pp. 661 – 672.

Robert J. Gordon, “The Phillips Curve Is Alive and Well: Inflation and the NAIRU During the Slow Recovery,” NBER Working Paper No. 19390, August 2013, <http://www.nber.org/papers/w19390>

Olivier Blanchard, “Should We Reject the Natural Rate Hypothesis?” *Journal of Economic Perspectives*, 2018, <https://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.32.1.97>

Michael Bruno “Does Inflation Really Lower Growth?” *Finance and Development*, September 1995, pp. 35–38.

Michael Bruno and William Easterly, “Inflation Crises and Long-Run Growth,” *Journal of Monetary Economics*, 1998, 41, pp. 3 – 26, <http://www.sciencedirect.com/science/article/pii/S0304393297000639>.

Robert Pollin and Andong Zhu, “Inflation and Economic Growth: A Cross-Country Non-Linear Analysis,” *Journal of Post Keynesian Economics*, Summer 2006, pp. 593-614. Also at: [http://www.peri.umass.edu/fileadmin/pdf/working\\_papers/working\\_papers\\_101-150/WP109.pdf](http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_101-150/WP109.pdf)

Josh Bivens, “Inflation: Sources, Consequences, and Appropriate Policy Remedies,” *Economic Policy Institute*, <https://www.epi.org/blog/inflation-sources-consequences-and-appropriate-policy-remedies/>

## **VII. Student Oral Presentations of Course Term Papers (3 classes plus extra sessions as needed)**

Start thinking about it right away.