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Economics 678 Environmental Economics, Fall 2022

University of Tennessee, Knoxville

Course Section: Econ 678-001

Meeting Time and Place: Tues, Thurs 9:45-11:00 in HBB 132

Course Credit Hours: 3 hours

Faculty Contact Information

Professor: Scott Holladay

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Office Hours: Tuesday/Thursday 11-12 and by appointment

Course Description/Information:

Economics 678 is a graduate level course designed to provide students with an introduction to theoretical and empirical developments in environmental economics. This course focuses on the design and effectiveness of regulations to correct externalities. The application of concepts from public and welfare economics to environmental problems is a major focus of the course. Theory plays an important role in modern environmental economics, but this course will focus largely on using empirical techniques to identify causal relationships.

Value Proposition:

This course is designed to train researchers in environmental economics. Students will read the literature and learn to identify important research questions. They will develop the technical skills to collect data, manage datasets and implement empirical analysis. Students will develop a project proposal that demonstrates their ability to do both. This project proposal is intended as a first step towards a dissertation chapter for students who are interested in writing in environmental economics or related fields.

Texts/Resources/Materials:

- Required text:

Daniel J. Phaneuf and Till Requate, "A Course in Environmental Economics: Theory, Policy, and Practice", 2nd edition. (Oxford University Press, 2017).

- Recommended text:

Angrist, Joshua D., and Jörn-Steffen Pischke. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press, 2008.

- Statistical Software Packages:

All students will need access to Microsoft Excel and a statistical software package. In class we will use Stata and Python, but several other packages (R, SAS, SQL) are widely used as well. If you are familiar with another software package you are encouraged to use it. We may also use QGIS and Curl for assignments. All this software is available for free to UTK students.

Assignments and Exams

- Research Proposal (40%): The goal of this course is to prepare you to produce research in environmental economics. A two-page proposal is due on November 1st. The completed proposal is due on the final exam date.
- Problem Sets (25%): I will assign four or five problem sets in the first part of the course that emphasize applications of methods we are discussing. These can be completed in small groups, but each student must write up his or her own responses.
- Writing assignments (15%): Effective communication is crucial for dissemination of research. Throughout the semester I will give you a portion of a paper and ask you to write or re-write a section (introduction, data, results, etc). I will grade your submissions and we will go over your writing as a group. Multiple rounds of editing may be required if your initial submission is not acceptable.
- Reading Summaries (15%): In class discussion is most effective when everyone has read the papers. For a subset of papers, indicated with asterisk in the reading list, you will be asked to submit short written summaries. Please prepare a ½-1 page summary of each paper that discusses: the main research question; data used in the analysis; the empirical approach, structural versus reduced form, identification of the parameter(s) of interest, etcetera; and any major assumptions or limitations of the study.
- Class Participation (5%): Students are expected to have read the assigned materials before class, contribute to discussions, and listen to each other and the professor.

Special Topics

The final third of the class covers special topics selected by students. This is your chance to spend a class reviewing a topic in environmental economics that is most interesting to you. Throughout the semester I will go over some of the major active questions in environmental and natural resource economics. By mid-October I will ask you to select a single topic that you want to cover in your class. I will prepare a short reading list covering that topic. The student who selected the topic will outline one of those papers to the rest of the class. Students will be responsible for reading the papers and coming to ready to discuss the literature and think about research questions and methodologies.

Course Outline

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25-Aug	Course Intro	
30-Aug	Market Failure and Policy Solutions	Phaneuf & Requate Chap 1,2
1-Sep	A simple model	P&R Chap 3, Linn et al (2014)

Empirical Methods

6-Sep	Randomized Control Trials	Mostly Harmless Econometrics 1,2
8-Sep	Difference-in-difference	MHE 5, Greenstone (2002)
13-Sep	Difference-in-difference (continued)	Goodman-Bacon (21); Chaisemartin et al (22)
15-Sep	Instrumental Variables	MHE 4, Schlenker et al (2015);
20-Sep	Machine Learning	Burling et al (2017)
22-Sep	Regression Discontinuity	MHE 6, Bento et al (2014), Meyer (2019)
27-Sep	Structural Models	Timmins et al (2009)

Environmental Topics

29-Sep	Environmental Policy Instruments	P&R Chap 5
4-Oct	Environmental Policy Under Uncertainty	P&R Chapter 4, Weitzman (1974)
6-Oct	Fall Break	
11-Oct	Cap and trade	P&R Chap 8, Fowlie (2010), Meng (2017)
13-Oct	Environmental reg. and competition	Ryan (2012)
18-Oct	Weather and Climate	Park (2020); Sexton et al (2022)
20-Oct	Social norms	Allcott (2011), Holladay et al (2019)
25-Oct	Welfare Analysis	P&R Chap 14
27-Oct	Stated Preference Models	P&R Chapter 19
1-Nov	Electricity Markets	Jha (2019)
3-Nov	Natural Resources	Anderson et al (2018)
8-Nov	Trade & Environment	P & R Chapter 12; Antweiler et al (2001)
10-Nov	Leakage	Baylis et al (2014)

Special Topics - Student led

15-Nov	Special Topics	TBA
17-Nov	Special Topics	TBA
22-Nov	Special Topics	TBA
24-Nov	Thanksgiving Break	
29-Nov	Special Topics	TBA
1-Dec	Special Topics	TBA
6-Dec	Special Topics	TBA

Reading List

Allcott, H. (2011). Social norms and energy conservation. *Journal of Public Economics*, 95(9):1082–1095

Anderson, Soren T., Ryan Kellogg, and Stephen W. Salant. "Hotelling under pressure." *Journal of Political Economy* 126.3 (2018): 984-1026.

Antweiler, Werner, Brian R. Copeland, and M. Scott Taylor. "Is free trade good for the environment?." *American economic review* 91.4 (2001): 877-908.

Baylis, Kathy, Don Fullerton, and Daniel H. Karney. "Negative leakage." *Journal of the Association of Environmental and Resource Economists* 1.1/2 (2014): 51-73.

Bento, Antonio, Daniel Kaffine, Kevin Roth and Matthew Zaragoza-Watkins. (2014) "The Effects of Regulation in the Presence of Multiple Unpriced Externalities: Evidence from the Transportation Sector." *American Economic Journal: Economic Policy*, 6(3): 1-29.

Burlig, F., Knittel, C., Rapson, D., Reguant, M., & Wolfram, C. (2020). Machine learning from schools about energy efficiency. *Journal of the Association of Environmental and Resource Economists*, 7(6), 1181-1217.

De Chaisemartin, Clément, and Xavier D'Haultfoeuille. *Difference-in-differences estimators of intertemporal treatment effects*. No. w29873. National Bureau of Economic Research, 2022.

Fabra, N. and Reguant, M. (2014). Pass-through of emissions costs in electricity markets. *American Economic Review*, 104(9):2872–2899

Fowlie, M. (2010). Emissions trading, electricity restructuring, and investment in pollution abatement. *American Economic Review*, 100(3):837–869

Goodman-Bacon, Andrew. "Difference-in-differences with variation in treatment timing." *Journal of Econometrics* 225.2 (2021): 254-277.

Greenstone (2002), "The Impacts of Environmental Regulations on Industrial Activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufactures." *Journal of Political Economy* 110: 1175-1219.

Holladay, Scott J., et al. "Prices versus nudges: What matters for search versus purchase of energy investments?." *Journal of Public Economics* 172 (2019): 151-173.

Jha, Akshaya, and Frank A. Wolak. *Can Financial Participants Improve Price Discovery and Efficiency in Multi-Settlement Markets with Trading Costs?*. Forthcoming at *American Economic Journal: Economic Policy*.

Keane, Michael (2010), "Structural vs. Atheoretical Approaches To Econometrics." *Journal of Econometrics*, Vol 156.

Linn, J., E. Mastrangelo, and D. Burtraw, (2014). "Regulating greenhouse gases from coal power plants under the Clean Air Act," *Journal of the Association of Environmental and Resource Economists* 1: 97-134.

Meng, Kyle C. 2017. "Using a Free Permit Rule to Forecast the Marginal Abatement Cost of Proposed Climate Policy." *American Economic Review*, 107 (3): 748-84.

Meyer, Andrew G. "Elite Influence on Climate Change Skepticism: Evidence from Close Gubernatorial Elections." *Journal of the Association of Environmental and Resource Economists* 6.4 (2019): 783-822.

Park, R. Jisung, Joshua Goodman, Michael Hurwitz, and Jonathan Smith. 2020. "Heat and Learning." *American Economic Journal: Economic Policy*, 12 (2): 306-39.

Ryan, Stephen P. "The Costs of Environmental Regulation in a Concentrated Industry." *Econometrica* 80.3 (2012): 1019–1061.

Sexton, Steven, Zhenxuan Wang, and Jamie T. Mullins. "Heat Adaptation and Human Performance in a Warming Climate." *Journal of the Association of Environmental and Resource Economists* 9.1 (2022): 141-163.

Schlenker, W., & Walker, W. R. (2015). Airports, air pollution, and contemporaneous health. *The Review of Economic Studies*, rdv043.

Timmins, Christopher and Schlenker, Wolfram (2009), "Reduced-Form Versus Structural Modeling in Environmental and Resource Economics". *Annual Review of Resource Economics*, Vol. 1, No. 1, pp.351-380.

Weitzman, Martin (1974), "Prices vs. Quantities." *Review of Economic Studies*. 61(4): 477-491