ENV 200B / ESP 212B /ECL 212B: Environmental Policy Analysis

Winter Quarter, 2018

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Office Hours: 10 – 11:30am Monday, Wickson 2140

Description

This course will take an economic approach to policy design and assessment. We will explore theory underlying key concepts in economics the environment, including (1) motivations for intervention in the free market to protect the environment, (2) foundations of cost-benefit analysis and (3) rationale for policy choice and design. The objective will be to evaluate environmental policy using an economic framework—with an awareness of both the power and limitations of the method—and to effectively read and critique the writings of economists and those using economic thinking. We will cover the relevant analytical tools of economics and explore applications to current policy problems such as climate change, water pollution, and biodiversity.

Prerequisites

This course assumes previous exposure to microeconomics, statistical and regression techniques, policy analysis, and environmental or natural resource economics at the undergraduate level.

Required Reading

K&O: N. Keohane and S. Olmstead. Markets and the Environment, Island Press, Washington, D.C., 2nd Ed. 2016. (*1st Edition, 2007, is also fine*.). Available on Amazon and on reserve at Shields Library

Other readings will be made available as required on Canvas

Grading

Discussion Leading and Readings Presentation	10%
Class Discussion Participation	15%
Midterm Quiz (Feb 14th)	15%
Final Quiz (March 14th)	15%
Policy Case Study	35%
Final Presentation	10%

Class Requirements

1. Discussion Leading and Readings Presentation

Chose one class (possibly two depending on the number of students enrolled) to lead the discussion on the readings. This will also include a *short* presentation on the readings that highlights key points (don't just summarize readings), ties in themes that relate to the rest of the class, and raises questions for discussion. Questions could relate to the methodology of a particular paper, the underlying assumptions of the author, the generality of their conclusions. Then guide / lead the subsequent class discussion. This could involve tying together points made by different people, relating points back to the readings, raising counter-examples, or suggesting additional prompts for discussion.

2. Class Discussion and Participation

Each class will be split roughly into half lecture and half discussion. Class members are expected to fully participate in the discussion. This means doing the readings for each class – it is really obvious if you haven't don the readings! Then participate in the discussion. Good participation means not just stating an opinion or restating the points made in the readings but engaging with others and responding to the questions raised by the discussion leaders.

3. Midterm and Final Quiz

These will be short, in-class quizzes, a combination of short essay questions and multiple choice questions.

4. Policy Case Study

Chose an environmental problem that you are interested in and a proposed or implemented policy solution to that problem. Analyze the problem and the policy from an economic perspective using the tools learned in the class. Length should be approximately 10 pages (1.5 space), including figures and references. Additional details on this assignment will be provided.

5. Final Presentation

10 to 15 minute in-class presentation (depending on class size) describing you policy case study.

Topics and Readings

Monday 8th Jan – Course Introduction, Economics and its Role in Policy Analysis
K&O, Chapter 1
Fullerton, D. and Stavins, R., 1998. "How Economists See the Environment", Nature 395, **6**, 701-702.
1. What are Fullerton and Stavins' four myths about how economists view the environment?
2. What is meant by the 'efficiency' of competitive markets?
3. What is an 'externality'?
4. What does it mean for a `market (to) fail'? (What is market failure?)

Wednesday 10th Jan – Economic Efficiency and Environmental Protection
K&O, Chapter 2
Shogren, J. F. and L. O. Taylor, 2008. "On Behavioral-Environmental Economics", Review of Environmental Economics and Policy, **2,** 26-44.

1. *What is meant by "behavioral failure" and why might it be a particular problem for modeling choice with respect to environmental goods?*
2. *How can behavioral failures affect thinking about environmental policy?*
3. *Is behavioral failure just another form of market failure?*

Monday 15th Jan – MARTIN LUTHER KING DAY

Wednesday 17th Jan – Rationality and Market Efficiency
K&O, Chapter 4
Jolls, C., Sunstein, C. R., and Thaler, R., 1998. "A Behavioral Approach to Law and Economics", *Stanford Law Review*, 1471-1550.
This is a long article -- just focus on sections I, V and the conclusion.
1. Behavioral economics stresses three main types of bounds on human behavior that represent departures from the standard economic assumption of rational choice. Describe each of these three bounds.
2. What is nonmarket behavior? Why do the authors suggest that behavioral analaysis is particularly promising given the presence of nonmarket behavior (p. 1473)?
3. If behavior is not rational does that mean it is necessarily unpredictable?

Monday 22nd Jan – Market Failures, Externalities and Public Goods Provision
K&O, Chapter 5
Stavins, R. N., 2011. "The Problem of the Commons: Still Unsettled After 100 Years", *The American Economic Review*, 100, **1,** 81-108
Focus on 81-92 and the conclusion. Skim the rest--which will be useful for our study of climate change and market based instruments to come.
1. How is spatial scale of a resource likely to affect the probability of the tragedy of the commons, i.e. the likelihood that citizen collective action (as described by Ostrom) won't be successful?
2. How is the nature of a good (rival/non-rival, excludable/non-excludable) as summarized in Table 1

related to the type of problem we might expect in efficient provision of the good (e.g. positive/negative externality, over/under-provision)?

Wednesday 24th Jan – Market Failures, Continued

Ostrom, E., 2009. "A General Framework for Analyzing Sustainability of Socio-Ecological Systems", *Science*, 325, 419-422.

1. *What are characteristics of resource systems are predictive of collapse?*
2. *What is the core argument of Hardin (1968) as summarized by Ostrom and what summary of research findings does she use to (at least partially) refute it?*

Monday 29th Jan – Introduction to Cost-Benefit Analysis, Discounting

K&O, Chapter 3

Goulder, L. H., and Stavins, R. N., 2002, "An Eye on the Future", *Nature*, 419, 673-674.

Office of Management and Budget, "Circular A-4: Regulatory Analysis" https://obamawhitehouse.archives.gov/omb/circulars_a004_a-4/. This is the official guidance to federal agencies on how to perform a CBA. Read through section E.

Wednesday 31st Jan – Measuring Benefits 1: Hedonics and the VSL

Bockstael et al., 2000, "Measuring Economic Values of Nature," *Environmental Science and Technology*, 34, 1384-1389.

Robinson, Lisa A. (2007). How US Government Agencies Value Mortality Risk Reductions, *Review of Environmental Economics and Policy* 1(2) 283:287.

Optional

Department of Transportation, 2015, "Guidance on Treatment of the Economic Value of a Statistical Life in U.S. Department of Transportation Analyses –2015 Adjustment"

Monday 5th Feb – Measuring Benefits 2: Travel Cost and Contingent Valuation

Pearce, D., G. Atkinson and S. Mourato (2006) Chapters 7: "Revealed Preference Methods for Valuing Non-market Impacts" in *Cost-Benefit Analysis and the Environment: Recent Developments*, OECD. Note – the article only goes through page 13, the rest is references.

Ahmed. M. et al., 2007, "Valuing Recreational and Conservation Benefits of Coral Reefs – The Case of Bolinao, Philippines", *Ocean and Coastal Management*, **50**, 103 – 118.

Bishop et al., 2017, "Putting a Value on Injuries to Natural Assets: The BP Oil Spill", *Science*, 356 (6335), p. 253 – 254.

Wednesday 7th Feb – Measuring Costs and Distributional Impacts

K&O, Chapter 8

Bento, A. (2013). The Equity Impact of Environmental Policy. Annual Review of Resource Economics, 5(1).

1. Focus on Sections 1 and 2
2. *What does it mean for a policy to be regressive?*
3. *What reasons do we have for thinking that environmental policies are likely to be regressive?*

4. *How can regressivity be counteracted (see discussion of Bento et al. (2009))?*

Blog post on the distributional effects of clean energy credits:
https://energyathaas.wordpress.com/2015/07/20/are-clean-energy-tax-credits-equitable/

Monday 12th Feb – Policy Instruments and Economic Efficiency
K&O: Chapter 9, Chapter 10
Sandel, M. J. (2012). What money can't buy: the moral limits of markets. Farrar, Straus and Giroux. (Excerpt covering tradable pollution permits and offsets, pp. 72-79).
1. What message does Sandel believe is conveyed by using government regulation (as opposed to tradable permits) to control pollution?
2. Buying the right to pollute does damage to which two norms?
3. Does Sandel believe that the effect of market instruments (like cap and trade) on norms implies that they are always a bad idea?
Schmalensee and Stavins, 2017. "The Design of Environmental Markets: What Have We Learned from Experience with Cap and Trade?" *Oxford Review of Economic Policy*, **33** (4), 572-588

Wednesday 14th Feb – Midterm Quiz

Monday 19th Feb – PRESIDENTS DAY

Wednesday 21st Feb – Climate Change: Social Cost of Carbon
Greenstone, M., Kopits, E., & Wolverton, A. (2013). Developing a social cost of carbon for US regulatory analysis: A methodology and interpretation. Review of Environmental Economics and Policy, 7(1), 23-46.

1. What is the social cost of carbon (SCC) meant to reflect/include?
2. How is it meant to be used in policy analysis—what is the objective behind generating this estimate?
3. Who is generating and then publishing an estimate of the SCC?
4. What are the three steps in the "reduced-form" approach to estimating the SCC (not the numbered list on p. 25)?
5. What are the three key modeling assumptions made (i.e. input parameters used) in the estimation of the SCC highlighted by the authors?
6. What is the "equilibrium climate sensitivity"?
7. What is the half-life of CO2?
8. What regions of the world are captured by the SCC estimate used by the U.S. and why?
9. Why does the SCC grow over time (e.g. for a unit generated in 2010 versus 2025)?

Arrow, K., Cropper, M., Gollier, C., Groom, B., Heal, G., Newell, R., Nordhaus, W., Pindyck, R., Pizer, W., Portney, P., Sterner, T., Tol, R., and Weitzman, M. (2012). How Should Benefits and Costs Be Discounted in an Intergenerational Context? The Views of an Expert Panel. The Views of an Expert Panel (December 19, 2012). Resources for the Future Discussion Paper, (12-53).

1. Focus on the first 10 pages of this paper

2. *What does it mean to select a discount rate (or parameters that determine the discount rate) using "prescriptive" approach, and how does that differ from a "descriptive" approach?*

Monday 26th Feb – Climate Change: Domestic Policy

AEA Research Summary, "Are Subsidies for Electric Cars Good for the Environment? https://www.aeaweb.org/research/are-subsidies-for-electric-cars-good-for-environment

Fowlie, M., L. Goulder, M. Kotchen, S. Borenstein, J. Bushnell, L. Davis, M. Greenstone, C. Kolstad, C. Knittel, R. Stavins, M. Wara, F. Wolak, and C. Wolfram (2014). An Economic Perspective on the EPA's Clean Power Plan. *Science* 336(6211), pp. 815-816.

1. What is the emissions reduction goal of the Clean Power Plan (CPP)?
2. What are the three key steps involved in the plan?
3. What are the expected net benefits in 2030?
4. What are the two major categories of estimated benefits and what do they include? Which of these forms the majority of the estimated benefits?
5. What does it mean for state-level emissions standards to be "ratio-based"? How are energy efficiency improvements accounted for under this metric?
6. What are two possible problems/concerns with the ratio-based approach that don't apply under a mass-based target?
7. What are the advantages of a ratio-based approach?
8. How is the plan designed for cost-effectiveness (flexibility) within and across states?

Regulatory Impact Analysis of Repeal of the Clean Power Plan: https://www.epa.gov/sites/production/files/2017-10/documents/ria_proposed-cpp-repeal_2017-10.pdf.

1. Only read through p.16 of the report (Table 1-8)
2. What changes is EPA making to its analysis from its initial analysis of the CPP in order to justify repeal?
3. This op-ed post might help understand what's going on.

Optional:

Mildenberger, M., Howe, P., Marlon, J., and Leiserowtiz, A. 2017. "The spatial distribution of Republican and Democratic climate and energy opinions at state and local scales." *Climatic Change.* Also explore the online data visualization tool: http://climatecommunication.yale.edu/visualizations-data/partisan-maps-2016/

Farrell, J., 2015. "Network Structure and Influence of the Climate Change Counter-Movement", *Nature Climate Change*, **6**, 370-374.

Wednesday 28th Feb – Climate Change: International Agreements, Game Theory

Olmstead, S. M., & Stavins, R. N. (2012). Three key elements of a post-2012 international climate policy architecture. Review of Environmental Economics and Policy, 6(1), 65-85.

1. *What are the strengths and weaknesses of the Kyoto protocol?*

2. What are the four main arguments for expanding participation by developing countries? Explain the tension between equity and cost-effectiveness when considering the question of whether to expand participation in a global GHG mitigation agreement to include meaningful reductions by developing countries.

Calliari, E., A. D'Aprile and D. Marinella (2016). Unpacking the Paris Agreement. Review of Environment, Energy and Economics (Re3), FEEM online
Feb. http://www.feem.it/userfiles/attach/2016291758554Re3-Calliari_DAprile_Davide_Unpacking-20160204.pdf.

1. *There is one mitigation objective of the Paris Agreement stated in explicit numeric terms—what is it?*
2. *What is an "NDC"?*
3. *With respect to adaptation, are countries required to take any specific measures by a specific deadline?*
4. *What compromise was reached between developing and developed countries with respect to developed country liability for loss and damage from climate change?*
5. *What is the Global Stocktake and how is it linked with submission of new NDCs?*
6. *Are the emissions targets and/or financing commitments legally binding?*

Monday 5th March – Ecosystem Services
Lawler J., et al. (2014). Projected land-use change impacts on ecosystem services in the United States. Proceedings of the National Academy of Sciences, 111(20), 7492-7497.

Jack, K. et al., 2008. 'Designing Payments for Ecosystem Services: Lessons from Previous Experience with Incentive-Based Mechanisms", *Proceedings of the National Academy of Sciences*, **105**, 28, 9465-9470.

Jaychandran, S. et al., 2017, "Cash for Carbon: A Randomized Trial of Payments for Ecosystem Services to Reduce Deforestation", *Science*, **357** (6348), pp. 267 – 273.

Optional
Boyd J and Banzhaf S. 2007. What are ecosystem services? The need for standardized environmental accounting units. Ecological Economics 63:616-626.

Wednesday 7th March – Economics of Biodiversity
Stephen Polasky, Christopher Costello, Andrew Solow, "The Economics of Biodiversity", Chapter 29 in: Karl-Goran Maler and Jeffrey R. Vincent, Editor(s), Handbook of Environmental Economics, Elsevier, 2005, Volume 3. Pages 1517-1560.

Nelson, E. et al. 2008, "Efficiency of Incentives to Jointly Increase Carbon Sequestration and Species Conservation on a Landscape", *Proceedings of the National Academy of Sciences*, **105**, 28, 9471- 9476.

Optional

Ando, A. et al. 1998. “Species Distributions, Land Values, and Efficient Conservation”, *Science*, **279**, 2126 – 2128.

Monday 12th March – Sustainability, Capital and Growth
K&O, Chapter 11
Kenneth J. Arrow, Partha Dasgupta, Lawrence H. Goulder, Kevin J. Mumford and Kirsten Oleson (2012). Sustainability and the measurement of wealth. *Environment and Development Economics*, 17, pp 317-353.

Wednesday 14th March – Final Quiz, Final Presentations