

ECON 9320. Environmental and Resource Economics II

Spring 2015

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Office Hours: Mondays 10:00-12:00 or by appointment or by chance

Course Description

This class is one of four in the environmental/urban economics field. The classes can be taken in any order.

This class will look at public goods and externalities in the environmental context. It will consider policy tools and other institutions for addressing these effects. It will also consider the problem of estimating people's demand for environmental goods, necessary information for some policy approaches. Finally, it will consider applied evaluation of some policies.

The course's objectives are to introduce you to environmental problems and policy solutions, to teach state-of-the-art econometric procedures for designing and evaluating policies, and to give you practice in the activities of professional research economists.

Required texts

The following texts are required:

- A Myrick Freeman III, Joseph A. Herriges, and Catherine L. Kling, *The Measurement of Environmental and Resource Values: Theory and Methods*, 3rd ed. Washington, DC: Resources for the Future, 2014.
- Nick Hanley, Jason F. Shogren, and Ben White. *Environmental Economics in Theory and Practice*, 2nd ed. Palgrave-Macmillan. 2007.

The following text is recommended but not required:

- Richard Cornes and Todd Sandler, *The Theory of Externalities, Public Goods, and Club Goods*, 2nd ed. New York: Cambridge University Press, 1996.

In addition, there will be numerous readings assigned. Hard-to-come-by readings will be available on the Desire2Learn page.

Grades

take-home midterm	25%
class participation	25%
referee report (3-6 p.)	10%
research paper (20-30 p.)	
-intermediate deadlines	5%
-final paper	25%
-presentation	10%

Note on class participation

While some days will be predominantly lecture-based, others will be based on seminar-style discussion of a paper or group of papers. On these days, students will be called on at random to present a 10 minute overview of the paper, after which we will have a group discussion. Thus, class participation is a critical part of the semester.

Readings marked with a double-star (**) are designated as student-led discussion. But students are expected to be able to contribute to discussion for all papers marked with a * as well.

Note on writing assignments

We will have two writing assignments. The first assignment is a referee report. You must pick a recent (within three years) working paper to review. Excellent places to find such papers include:

- the NBER environment/energy group
<http://www.nber.org/papersbyprog/EEE.html>;
- the NBER environmental meetings
<http://www.nber.org/summer-institute/> → choose a year and select the <eee> line;
- Resources for the Future (RFF)
http://www.rff.org/rff/Publications/Discussion_Papers.cfm; and
- Fondazioni Eni Enrico Mattei (FEEM)
<http://www.feem.it/getpage.aspx?id=73&sez=Publications&padre=20&tab=1>

but you are not limited to these. If you are thinking strategically the paper will be related to your own research paper (see below).

You must prepare a 1-page cover letter to the imaginary editor for whom you are reviewing the paper, summarizing the paper, evaluating its contribution and merit, and offering advice on accepting or rejecting the paper. Separately, you must provide constructive comments to the author.

Second, we will have a research paper. The paper may be based on one you have already done for another class or it may be entirely new. In the former case, it must relate to the environment in some way. Additionally, we must agree on what the "value added" of the semester will be,

above your previous drafts. In the latter case, I typically will look for a good theory section and motivation, and the beginning of data analysis, but each paper's contribution can be discussed on a case-by-case basis. Some will have more theory, some more empirical work, etc. In either case, you will have intermediate deadlines of (i) choice of topic; (ii) 1p. overview, with research question, 3 citations to literature, statement of your contribution, and identification of data (if relevant); (iii) description of data and summary statistics and longer bibliography.

Writing assignments will be graded on your analysis, your application to questions of policy and academic interest, and your writing. The Writing Studio is a valuable resource for students who need help with their writing.

All final writing assignments will be distributed to the entire class.

Deadlines

The deadlines for these assignments are as follows:

On or Before...

Feb 6 -- meet with me to discuss your research paper & your choice of paper to review

Feb 20 -- referee report due to me & entire class by 5 PM (email is fine)

March 1 -- 1 p. overview due by 5 PM

March 13 -- take home exam distributed in AM and due by 5 PM (under my door or by email)

April 3 -- draft bibliography plus descriptive writeup of data (or alternative) due by 5 PM

April 24 -- final paper due to me & entire class by 5 PM

Presentations during exam week

Please see the Policy on Academic Honesty (Section 409).

Course Outline

Abbreviations

<i>AER</i>	<i>American Economic Review</i>
<i>JEEM</i>	<i>Journal of Environmental Economics and Management</i>
<i>JEL</i>	<i>Journal of Economic Literature</i>
<i>JPE</i>	<i>Journal of Political Economy</i>
<i>QJE</i>	<i>Quarterly Journal of Economics</i>
<i>REEP</i>	<i>Review of Environmental Economics and Policy</i>
<i>RESTAT</i>	<i>Review of Economics and Statistics</i>

** indicates student-led discussion

* indicates highest priority reading

◦ indicates optional reading

Introduction

Jan 12 Introduction to environmental economics

- * Freeman et al., Ch. 1.
- John V. Krutilla, 1967, "Conservation Reconsidered," *AER* 57(4): 777-89.
- H. Spencer Banzhaf, 2010, "Consumer Surplus with Apology: A Historical Perspective on Non-Market Valuation and Recreation Demand," *Annual Review of Resource Economics* 2: 183-207.
- F.A. Hayek, 1945, "The Use of Knowledge in Society," *AER* 35(4): 519-30.

Externalities and Public Goods

Jan 14 Theory of externalities

- * Cornes & Sandler Chs. 3-4.
- Steven G. Medema, 2009, *The Hesitant Hand: Taming Self-Interest in the History of Economic Ideas*, Princeton University Press, Chs. 2-3.

Jan 19 No Class: MLK Day

Jan 21 Non-rivalry, excludability, and Samuelson's theory of public goods

- * Cornes & Sandler Ch. 6.
- Paul A. Samuelson, 1954, "The Pure Theory of Public Expenditure," *RESTAT* 36: 387-9; and Paul A. Samuelson, 1955, "A Diagrammatic Exposition of a Theory of Public Expenditure," *RESTAT* 37: 350-6.

Jan 26 Commons and open access goods

- * Cornes & Sandler § 8.4 - 8.5.
- Garrett Hardin, 1968, "The tragedy of the commons," *Science* 162: 1243-8.
- H. Spencer Banzhaf, Timothy Fitzgerald, and Kurt Schnier, 2013, "Non-Regulatory Approaches to the Environment: Coasean and Pigouvian Perspectives," *REEP* 7(2): 238-58
- H. Scott Gordon, 1954, "The Economic Theory of a Common-Property Resource: The Fishery," *JPE* 62(2): 124-42.

Jan. 28 Impure and mixed public goods

- * Cornes & Sandler § 8.1 - 8.3.

** Matthew J. Kotchen, 2006, "Green Markets and Private Provision of Public Goods," *JPE* 114: 816-34.

** Geoffrey Heal, 2003, "Bundling Biodiversity," *Journal of the European Economic Association* 1(2/3): 553-60.

◦ Matthew J. Kotchen and Michael R. Moore, 2008, "Conservation: From Voluntary Restraint to a Voluntary Price Premium," *Environmental and Resource Economics* 40: 195-215.

Feb. 2 Club goods and the Tiebout model

* Cornes & Sandler Ch. 11

* Charles Tiebout, 1956, "A Pure Theory of Local Expenditures," *JPE* 64: 416-24.

** Stephen Calabrese, Dennis Epple, Richard Romano, 2012, "Inefficiencies from Metropolitan Political and Fiscal Decentralization: Failures of Tiebout Competition," *RESTUD* 79(3): 1081-1111.

◦ Bruce W. Hamilton, 1975, "Zoning and Property Taxation in a System of Local Governments," *Urban Studies* 12: 205-11.

Feb 4, 9 Introduction to policy instruments, regulatory and Pigovian solutions

* Hanley et al. §4.1-4.2

* Lawrence H. Goulder and Ian W.H. Parry, 2008, "Instrument Choice in Environmental Policy," *REEP* 2(2): 152-74.

◦ James Bushnell and Catherine Wolfram, 2012, "Enforcement of Vintage Differentiated Regulations: The Case of New Source Review," *JEEM* 64: 137-52.

◦ Dean Lueck and Jeffrey A. Michael, 2003, "Preemptive Habitat Destruction under the Endangered Species Act," *Journal of Law and Economics* 46(1): 27-60.

Feb. 11 Coase and common law

** Ronald H. Coase, 1960, "The Problem of Social Cost." *Journal of Law and Economics* 3(1): 1-44.

** Steven Shavell, 1984, "A Model of the Optimal Use of Liability and Safety Regulation," *RAND Journal of Economics* 15(2): 271-80.

◦ Henry Butler, 2008, "Defense of Common Law Environmentalism," *Case Western Reserve Law Rev.* 58: 705-52.

◦ Steven G. Medema, "The Curious Treatment of the Coase Theorem in the Environmental Economics Literature, 1960-1979," *REEP* 8(1): 39-57.

Feb. 16 New institutional approaches

- * Elinor Ostrom, 1990, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge: Cambridge University Press, Chs. 1, 3.
- * Harold Demsetz, 1967, "Toward a Theory of Property Rights," *AER* 57(2): 347-59.
- ** Richard Hornbeck, 2010, "Barbed Wire: Property Rights and Agricultural Development," *QJE* 125(2): 767-810.
- Terry L. Anderson and P.J. Hill, 1975, "The Evolution of Property Rights: A Study of the American West." *Journal of Law and Economics* 18(1): 163-79.

Feb. 18 Cap-and-Trade

- * Hanley et al. §4.4
- ** Martin L. Weitzman, 1974, "Prices versus Quantities," *RESTUD* 41(4): 477-91.
- Brian C. Murray, Richard G. Newell, and William A. Pizer, 2009, "Balancing Cost and Emissions Certainty: An Allowance Reserve for Cap-and-Trade." *REEP* 3(1): 84-103.

Dynamics of Natural Resources

Feb. 23 Nonrenewable resources

- * Hanley et al. Ch. 7-8
- Jeffrey A. Krautkraemer, 1998, "Nonrenewable Resource Scarcity," *JEL* 36(4): 2065-2107.

Feb. 25 Renewable resources: Fisheries & livestock

- * Hanley et al. Ch. 9
- M. Scott Taylor, 2011, "Buffalo Hunt: International Trade and the Virtual Extinction of the North American Bison," *AER* 101(7): 3162-95.

March 2 Estimation of dynamic efficiency costs

- ** Ling Huang and Martin D. Smith, 2014, "The Dynamic Efficiency Costs of Common-Pool Resource Exploitation," *AER* 104(2): 4071-4103

March 4 Renewable Resources: Forestry

- * Hanley et al. Ch. 10

March 9 Environmental federalism: Applications to tropical deforestation and US air quality

** Robin Burgess et al., 2012, "The Political Economy of Deforestation in the Tropics" *QJE* 127(4): 1707-54.

** H. Spencer Banzhaf and B. Andrew Chupp, 2012, "Fiscal Federalism and Interjurisdictional Externalities: New results and an Application to US Air Pollution," *Journal of Public Economics* 96: 449-64.

Welfare Economics

March 11 Consumer surplus and welfare aggregation

* Freeman et al., Ch. 3

◦ Daniel Slesnick, 1998, "Empirical Approaches to the Measurement of Welfare." *JEL* 36(4): 2108-65.

◦ Charles Blackorby and David Donaldson, 1990, "A Review Article: The Case Against the Use of the Sum of Compensating Variations in Cost-Benefit Analysis." *Canadian J. of Economics* 23(3): 471-94.

◦ W. Michael Hanemann, 1991, "Willingness to Pay and Willingness to Accept: How Much Can They Differ?" *AER* 81(3) 635-47.

◦ Arnold. C. Harberger, 1971, "Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay," *JEL* 9(3): 785-97.

◦ Robert Willig, 1976, "Consumer Surplus without Apology," *AER* 66(4): 589-97.

Spring Break

March 23 Consumer surplus and welfare aggregation, cont'd

March 25 Discounting

* Richard W. Tresch, "The Rate of Discount for Public Investments," Ch. 24 of *Public Finance: A Normative Theory*, 2nd ed., Elsevier, 2002.

* Christian Gollier and James K. Hammitt, "The Long-Run Discount Rate Controversy," 2014, *Annual Review of Resource Economics* 6: 273-95.

◦ Kenneth J. Arrow and 12 others, "Should Governments Use a Declining Discount Rate in Project Analysis?" 2013, *REEP* 18(2): 145-63.

◦ Martin L. Weitzman, 1998, "Why the Far-Distant Future Should be Discounted at its Lowest Possible Rate," *JEEM* 36: 201-8.

March 30 Uncertainty

- * Freeman et al. Ch. 5 (up to p. 151)
- * Robert S. Pindyck, 2007, "Uncertainty in Environmental Economics," *REEP* 1(1): 45-65.
- Jinhua Zhao and Catherine L. Kling, 2009, "Welfare Measures when Agents can Learn: A Unifying Theory," *Economic Journal* 119: 1560-85.
- Charles Kolstad, 1996, "Fundamental Irreversibilities in Stock Externalities." *Journal of Public Economics* 60: 221-33.
- Paul Mensink and Till Requate, 2005, "The Dixit-Pindyck and the Arrow-Fisher-Hanemann-Henry option values are not equivalent," *Resource & Energy Economics* 27: 83-8.
- Kenneth J. Arrow, 2009, "A Note on Uncertainty and Discounting in Models of Economic Growth," *Journal of Risk and Uncertainty* 38(2): 87-94.
- Martin L. Weitzman, 2009, "On Modeling and Interpreting the Economics of Catastrophic Climate Change," *RESTAT* 91(1): 1-19.

Nonmarket Valuation

April 1 Nonmarket valuation: Introduction

- * Freeman et al., Ch. 4.

April 6 Stated preference [We will appoint presentations in advance]

- * Freeman et al., Ch. 12
- ** Richard T. Carson et al., 2003, "Contingent Valuation and Lost Passive Use: Damages from the Exxon Valdez Oil Spill," *Environmental and Resource Economics* 25: 257-86.
- ** Wiktor Adamowicz, Diane Dupont, Alan Krupnick, and Jing Zhang, 2011, "Valuation of Cancer and Microbial Disease Risk Reductions in Municipal Drinking Water," *JEEM* 61: 213-26.

April 8 Property values and hedonics: Introduction

- * Freeman et al., Ch. 10.
- * H. Spencer Banzhaf, 2014, "Panel Data Hedonics: Rosen's First Stage and Difference-in-Differences as 'Sufficient Statistics,'" <http://www2.gsu.edu/~prchsb/Papers/SufficientStatisticHedonicsDec2014.pdf>.

April 13 Hedonics: Identification and endogeneity problems

- * Timothy J. Bartik, 1987, "The Estimation of Demand Parameters in Hedonic Models," *JPE* 95(1): 81-88.
- * Kelly Bishop and Christopher Timmins, 2013, "Estimating the Marginal Willingness to Pay Function without Instrumental Variables," http://www.public.asu.edu/~kcbisho2/bishop_timmins_jan2013.pdf.
- Ivar Ekeland, James J. Heckman, and Lars Nesheim, 2004, "Identification and Estimation in Hedonic Models," *JPE* 112(1): S60-109.

April 15 Travel cost models and outdoor recreation

- * Freeman et al., Ch. 9
- ** Christopher Timmins and Jennifer Murdock, 2007, "A Revealed Preference Approach to the Measurement of Congestion in Travel Cost Models," *JEEM* 53(2): 230-49.
- H. Spencer Banzhaf, 2010, "Consumer Surplus with Apology," *op cit*.

April 20 Averting behavior and health valuation

- * Freeman Ch. 7, especially pp. 211-27.
- ** Olivier Deschênes, Michael Greenstone, and Joseph S. Shapiro, 2012, "Defensive Investments and the Demand for Air Quality: Evidence from the NO_x Budget Program and Ozone Reductions," http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2109861

April 22 Green GDP and sustainability

- * Hanley et al. Ch. 2
- * Partha Dasgupta and Karl-Göran Mäler, 2000, "Net National Product, Wealth, and Social Well-Being," *Environment and Development Economics* 5: 69-93.
- Kenneth J. Arrow et al., 2010, "Sustainability and the Measurement of Wealth," NBER Working Paper 16599.
- Robert M. Solow, 1991, "Sustainability: An Economist's Perspective," in *Economics of the Environment: Selected Readings*, ed. by R. Dorfman and N.S. Dorfman, 3rd ed., 1993, Norton.

April 27 The social cost of carbon (papers are in dialogue with one another and will be discussed as a group rather than individually)

** William Nordhaus, 2014, "Estimates of the Social Cost of Carbon: Concepts and Results from the DICE-2013R Model and Alternative Approaches," *Journal of the Association of Environmental & Resource Economists* 1(1/2): 273-312.

** Nicholas Stern, 2013, "The Structure of Economic Modeling of the Potential Impacts of Climate Change: Grafting Gross Underestimation of Risk onto already Narrow Science Models," *JEL* 51(3): 838-59.

** Robert S. Pindyck, 2013, "Climate Change Policy: What Do the Models Tell Us?" *JEL* 51(3): 860-872.

◦ Michael Greenstone, Elizabeth Kopits, and Ann Wolverton, 2013, "Developing a Social Cost of Carbon for US Regulatory Analysis," *REEP* 7(1): 23-46.

◦ Richard S.J. Tol, 2009, "The Economic Impact of Climate Change," *JEP* 23(2): 29-51.

Additional Notes

- The course syllabus provides a general plan for the course; deviations may be necessary.
- Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take time to fill out the online course evaluation
- Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.