

PRINCETON UNIVERSITY
WWS582b: Environmental & Natural Resource Economics

Spring 2004
Venue: TBA
Meeting times: Fri. 9:30 am–12:30 pm
Office hours: Wed. 11-12 am, Thurs. 1-2 pm

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Overview:

This course introduces students to the use of economics in understanding both the sources of, and the remedies to environmental and resource allocation problems. The course will emphasize the reoccurrence of economic phenomenon like public goods, externalities, market failure, and imperfect information. In addition, students will learn about policy options like property rights, command-and-control, market based incentives, and cost-benefit analysis. These concepts will be illustrated in a variety of applications ranging from the domestic pollution of air, water, and land to international issues such as stratospheric ozone destruction and global warming. The aim is not to memorize facts but to understand the structure of policies, their successes and their failures. In each instance, we will address questions such as: What is the underlying basis of the problem? What is the current policy response and how does it rate in terms of efficiency, equity and enforceability? What are the reform alternatives? How can one identify, quantify, and monetize the related costs and benefits and how are they distributed across different segments of society?

The course will involve a combination of lectures and class discussion and will culminate in the presentation of student research papers. A course website will be available at:

<http://blackboard.princeton.edu/>

Readings:

The main textbooks for this course are:

Stavins, Robert N. 2000. Economics of the Environment: Selected Readings. Fourth Edition. Norton Press: New York.

Portney, Paul R. and Robert N. Stavins. 2000. Public Policies for Environmental Protection. 2nd Edition. Resources for the Future: Washington DC.

The first text will expose you to influential work by environmental economists while the second text serves as a reference for the major environmental regulatory systems in the US. A copy of both textbooks will be on reserve in the library. The remaining papers on the syllabus will be available on the web via the library's electronic reserve service. A link will be available on the course website under the "Course Materials" section. A userid and access password will be distributed in class. Students may need to download the *DjVu* viewer plug-in to read the e-reserve files. A free copy of the viewer software can be downloaded from the course website.

Requirements and Grades:

Students will be expected to read extensively, synthesize and analyze important issues, and contribute to group learning. Final grades will be based on performance in a final paper (50%), homework assignments (40%), briefing sessions (5%), and class participation (5%).

Paper (50%)

Each student will work on an individual project based on an intensive literature review and/or original research. Past topics have ranged from decision making under uncertainty for climate change policy to regulating biotechnology. Regardless of which option you choose, the relevant deadlines are:

- ✓ **Proposal** (10%): Prepare a 2-3 page proposal that sets out the (1) objective of the project; (2) outline of the proposed methodology; and (3) proposed literature and data sources. The proposal is due in class on **03/12/04**.
- ✓ **Oral presentation** (15%): Oral presentation of reports will be held on **04/23/04** and **04/30/04**. Your presentation will be evaluated by your peers on the basis of its organization, depth of analysis, and response to audience questions.
- ✓ **Final report** (25%): A final report of about 15-20 double-spaced pages is due in my mailbox latest by 4:30 p.m. on **05/11/04**. It should incorporate responses to relevant questions raised by the audience during the oral presentation. Late submissions will not be accepted.

Homework Assignments (40%)

Regular homework assignments will be assigned as the class proceeds. Written responses to the assignments will be due in the next class and will form the basis for part of the class discussion. For this reason, late submission of homework assignments will not be accepted.

Briefing Sessions (5%)

The briefing sessions will involve student led discussions of selected papers. The briefings will enable students to contribute to group learning and to practically apply what they have learned from the lectures. Each student will lead one briefing session. The student leader is expected to briefly summarize the objective, critical assumptions, methodology, and conclusions of the assigned paper. The leader will then engage the audience in a discussion to determine whether the conclusions are justified and to identify policy implications. All students are, therefore, expected to read the pre-assigned papers before coming to class.

Class Participation (5%)

Class participation is actively encouraged and will be used to make borderline adjustments to the final grade.

Reading List

Introduction

Fullerton, Don. How Economists See the Environment. In, Stavins (2000), chapter 1.

Analytical Tools

Rosen, Harvey. 1999. Public Finance. Fifth Edition. Irvin Press. Chapter 5. pp 63-84.

Kelman, Steven. Cost-Benefit Analysis: An Ethical Critique. In, Stavins (2000), Chapter 15.

Arrow, Kenneth, et al. Is there a Role for Benefit-Cost Analysis in Environmental, Health, and Safety Regulation? In, Stavins (2000), chapter 13.

Cost and Benefit Valuation

Porter, Michael E. and Claas van der Linde. 1995. Towards a New Conception of the Environment-Competitiveness Relationship. In, Stavins (2000), Chapter 7.

Palmer Karen, Wallace E. Oates and Paul Portney. 1995. Tightening Environmental Standards: The Benefit-Cost or the No Cost Paradigm. In, Stavins (2000), Chapter 8.

Brunnermeier, Smita and Mark Cohen. 2003. Determinants of Environmental Innovation in US Manufacturing Industries. Journal of Environmental Economics and Management. Vol. 45. Pg 278-293.

Hanemann, W. Michael. Valuing the Environment through Contingent Valuation. In, Stavins (2000), Chapter 11.

Diamond, Peter and Jerry Hausman. Contingent Valuation: Is Some Number Better than No Number? In, Stavins (2000), Chapter 12.

Policy Options

Rosen, Harvey. 1999. Public Finance. Fifth Edition. Irvin Press. Chapter 6. pp 85-111.

Coase, Ronald. 1993. The Problem of Social Cost. In, Stavins (2000), chapter 3.

Tietenberg, Tom. Economic Instruments for Environmental Regulation. In, Stavins (2000), chapter 16.

Hahn, Robert. 1989. Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Order. In Stavins (2000), chapter 18.

Sandel, Michael. It is Immoral to Buy the Right to Pollute. In, Stavins (2000), chapter 19.

Weitzman, Martin. 1974. Prices versus Quantities. Review of Economic Studies. Vol. 41. Pg 477-491.

Khanna, Madhu and Lisa Damon. 1999. EPA's Voluntary 33/50 Program: Impact on Toxic Releases and Economic Performance of Firms. Journal of Environmental Economics and Management. Vol. 37(1). Pp. 1-25.

Air and Water

Portney, Paul. Air Pollution Policy. In, Portney and Stavins 2000, Chapter 4.

Schmalensee, Richard et al. 1998. An Interim Evaluation of the Sulfur Dioxide Emissions Trading Program. In, Stavins (2000), chapter 20.

Stavins, Robert. What Can We Learn from the Grand Policy Experiment? Lessons from SO₂ Allowance Trading. In, Stavins (2000), chapter 21.

Freeman, Myrick III. Water Pollution Policy. In, Portney and Stavins 2000, Chapter 6.

Toxic and Solid Waste

Macauley, Molly and Margaret Walls. Solid Waste Policy. In, Portney and Stavins 2000, Chapter 8.

Sigman, Hilary. Hazardous Waste and Toxic Substance Policy. In, Portney and Stavins 2000, Chapter 7.

Hamilton, James, H. 1995. Testing for Environmental Racism: Prejudice, Profits and Political Power. Journal of Policy Analysis and Management. Vol. 14. Pp. 107-132.

Global Pollution

Nordhaus, William D. 1993. Reflections on the Economics of Climate Change. In, Stavins (2000), Chapter 22.

Schelling, Thomas. 1993. The Cost of Combating Global Warming: Facing the Tradeoffs. In, Stavins (2000), Chapter 23.

Nordhaus, William D. 1992. An Optimal Transition Path for Controlling Greenhouse Gases. Science. Vol. 258. pp. 1315-1319.

Barrett, Scott. 1998. Political Economy of the Kyoto Protocol. Oxford Review of Economic Policy. Vol. 14 (4). Winter 1998. Pp. 20-39.

Nordhaus, William D. 1992. An Optimal Transition Path for Controlling Greenhouse Gases. Science. Vol. 258. pp. 1315-1319.

Sustainable Development

Hilton, F. G. H. and Arik Levinson. 1997. Factoring the Environmental Kuznets Curve: Evidence from Automotive Lead Emissions. Journal of Environmental Economics and Management. Vol. 35 (2). Pp. 126-141.

Arrow, K., B. Bolin, R. Costanza, P. Dasgupta, C. Folke, C. Holling, B. Jansson, S. Levin, K. Maler, C. Perrings, and D. Pimentel. 1995. Economic Growth, Carrying Capacity and the Environment. Science. April 28 1995. Vol. 268. Pp. 520-521.

Solow, Robert. Sustainability: An Economist's Perspective. In, Stavins (2000), Chapter 5.

Natural Resource Management

Harding, Garrett. Tragedy of the Commons. In Stavins (2000), Chapter 2.

Bardhan, Pranabh. 1993. Symposium on the Management of Local Commons. Journal of Environmental Perspectives. Vol. 7(4). Pg 87-92.

Barbier, Edward. 1998. Economic Aspects of Tropical Deforestation in Southeast Asia. In, The Economics of Environment and Development: Selected Essays. Edward Elgar Press.

Metrick and Weitzman. Conflicts and Choices in Biodiversity Preservation. In Stavins, 2000. Chapter 26.

Trade and Environment

Bhagwati, Jagdish and Herman Daly. 1993. Debate: Does Free Trade Harm the Environment? Scientific American. November 1993. Pp. 41-57.

Barbier, Edward. 1998. Elephant Ivory and Tropical Timber: The Role of Trade Interventions in Sustainable Management. In, The Economics of Environment and Development: Selected Essays. Edward Elgar Press.

Brunnermeier, Smita and Arik Levinson. 2003. Examining the Evidence on Environmental Regulations and Industry Location. Forthcoming, Journal of Environment and Development.