

# EA/EC 541 ENVIRONMENTAL ECONOMICS

SPRING 2006

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B310 Clark

491-2485

Office Hours: Monday & Friday 10-11:30 and 1:30-3, Tue-Thur 1:30-3 and by appointment.

## Course Goals:

\*To develop in students an understanding of the economic theory and principles for developing new environmental policies and evaluating current environmental policies of air and water quality.

\*Topics include externalities, public goods, reinterpretation Pigouvian taxes as "green taxes" with corresponding double efficiency gains, evaluating of environmental standards as well as environmental policies such as tradeable discharge permits and emissions markets.

\*The theory and techniques for valuing improvements in air and water quality using hedonic property value, travel cost and contingent valuation methods will be presented.

**Texts: Baumol and Oates: Theory of Environmental Policy, Second Edition**

**Champ, Boyle and Brown, A Primer on Non-Market Valuation, Kluwer Publishers.**

**There is also a class reader composed of articles mentioned below for sale at bookstore.**

**There will be 2 midterms, a final and a term project. The 2 mid terms and project are equally weighted in determining your grade. More details on the term project will be provided in a separate handout. The first Mid-Term is *tentatively* scheduled for the Thursday February 23th. I do grade on a curve and I use plus/minus grading.**

## **I. BASIC CRITERIA & INTRO FOR EVALUATING ENVIRONMENTAL POLICY**

A. Goals of Society

1. Economic Efficiency and Equity

2. Efficiency in Consumption, Production and Jointly

B. Competitive Market Allocations and Efficiency for Private Goods

C. Market Failure: Externalities, Public Goods and Non-convexities

READINGS: Chapter 3, pages 14-20, 114-116, 128-131.

D. Rationale for Government intervention in environmental management and solutions- Pigouvian taxes or property rights.

A note on the pro's and con's of taxing output versus emissions.

READINGS: Chapter 3, pages 21-31.

E. When Coase Theorem is and is not likely to be a solution.

READINGS: Pages 9-13, Chapter 3, pages 32-35

F. Government Failure: Inefficient regulations such as uniform standards or too high of standards could make matters worse than unregulated externalities.

G. Need for Economically Efficient Environmental Policy so as to not sacrifice goals due to high cost of means.

## **II. FIRST BEST ANALYSIS OF INTERNALIZING EXTERNALITIES**

### **A. Local and Global Optimality with a Single Sector**

READINGS: Chapter 7, pages 91-93 and pages 97-99;

Optional (I did not put in reader): Nonconvexity Induced by External Costs on Production: Theoretical Curio or Policy Dilemma, Paul Burrows, Journal of Environmental Economics and Management, June 1986.

### **B. Dangers of Piecemeal Policies over Externalities and Media**

Competitive level of one externality generating output may not be excessive if there are other outputs with even higher externalities per unit of output relative to their value.

READINGS: Chapter 7: 91-93 and 103-106.

### **C. Advantages of Green Taxes: Raising Tax Revenue while Replacing Distortionary Taxes with efficiency inducing taxes.**

In Course Reader: David Terkla, The Efficiency Value of Effluent Tax Revenues. J of Environmental Economics and Management 11:107-123, 1984

Double Dividend Reconsidered by William Jaeger (2001 AERE newsletter--in Reader)

## **II. SOME SECOND BEST CONSIDERATIONS**

### **A. Monopolistic Market Structures and Pollution Taxes**

READINGS: Chapter 6: pages 79-88;

### **B. Taxes Versus Subsidies: Short run and Long run effects**

READINGS: Chapter 14

### **C. Uncertainty and Choice of Taxes versus Quantity Controls (Permits)**

1. Equivalence of instruments under certainty (dual)
2. Equivalence of instruments with uncertainty regarding benefits
3. Lack of Equivalence when uncertainty regarding costs.
4. How Slopes of MB and MC influence choice of Taxes vs Permits
5. Mixed system of Permits and Taxes

READINGS: Chapter 5

6. Empirical estimates of losses with uncertainty and nonlinear costs

READINGS: in course reader. W. Watson and R.Ridker, Losses from Effluent Taxes and Quotas under uncertainty, J of Environmental Economics and Mgmt 11: 310-326. (1984).

Robert Stavins. 1996. Correlated Uncertainty and Policy Instrument Choice. J of Environmental Economics and Mgmt 30: 218-232.

## **III. THE NEED FOR VALUATION OF EXTERNAL SOCIAL COSTS TO SET OPTIMAL EMISSIONS, STANDARDS OR EFFLUENT TAXES**

#### **IV. METHODS FOR VALUING EXTERNAL SOCIAL COSTS OF POLLUTION**

- A. Hedonic Property Method: Readings--Laura Taylor, chapter in Primer for Non-Market Valuation.
- B. Travel Cost Method: Readings--George Parsons, Primer for Non-Market Valuation.
- C. Contingent Valuation: Readings--Kevin Boyle: chapter in Primer for Non-Market Valuation.  
Course Reader: Valuing the Health Effects of Air Pollution, in Risk in Perspective. Harvard Center for Risk Analysis July 1999.

#### **V. SECOND BEST ENVIRONMENTAL POLICIES**

##### A. Standards-Tax approach

1. Excessive Costs of Uniform Standards
2. A Standards & Tax Combination when MB and MC uncertain

READINGS: Chapter 11

##### B. Marketable Emissions Permits

READINGS: Chapter 12

Lessons Learned from the SO<sub>2</sub> Allowance Trading. *Choices* 1<sup>st</sup> Quarter 2005; Vol 20(1): 53-57 in Reader

##### C. Stochastic Weather Influences and Taxes vs Stds Again.

READINGS: Chapter 13, and Levy and Spengler, Health Benefits of Emissions Reductions from Older Power Plants, Harvard Center for Risk Analysis April 2001. (Reader).

#### **VII. Recent Applications and Innovations in Environmental Policy**

##### A. Economics of Recycling and Deposit-Refund Systems

READINGS: The Economics of Solid Waste Recycling by Jennifer Lamb, Jennifer Marron and Carolyn Pilling. Association of Environmental and Resource Economists Newsletter, May 1990.  
Deposit Refund Systems for Managing Hazardous Wastes Produced by Small Businesses. Wendy Pratt-Cuckovich and Seymore Schwartz. *J of Env. Mgmt* 29: 145-161. 1989. (Reader)

##### B. Improving Urban Air Quality: The Automobile Problem (and Land Use)

READINGS: The Cost-effectiveness of Methanol Vehicles. Margaret Walls and Alan Krupnick. Resources Summer 1990.

Determinants of Participation in Accelerated Vehicle Retirement Programs. Anna Alberini, Winston Harrington and Virginia McConnell. *Rand Journal of Economics*, 1995.

#### **VIII. Environmental Risk Analysis**

**Reader: Loomis and Frasier outline.**

#### **IX. Natural Resource Damage Assessment**

**EA/EC541 Dr. Loomis, List of Publications for Reader**

David Terkla, The Efficiency Value of Effluent Tax Revenues. J of Environmental Economics and Management 11:107-123, 1984

William Jaeger. Double Dividend Reconsidered. (2001 AERE newsletter; Does not need copyright clearance, it is not copyrighted)

W. Watson and R.Ridker, Losses from Effluent Taxes and Quotas under uncertainty, J of Environmental Economics and Mgmt 11: 310-326. (1984).

Robert Stavins. 1996. Correlated Uncertainty and Policy Instrument Choice. J of Enviromental Economics and Mgmt 30: 218-232.

Valuing the Health Effects of Air Pollution, in Risk in Perspective. Harvard Center for Risk Analysis July 1999.

Levy and Spengler, Health Benefits of Emissions Reductions from Older Power Plants, Harvard Center for Risk Analysis April 2001.

Jennifer Lamb, Jennifer Marron and Carolyn Pilling. The Economics of Solid Waste Recycling Association of Environmental and Resource Economists Newsletter, May 1990 (does not need copyright clearance).

Stavins, Robert. Lessons Learned from the SO2 Allowance Trading. *Choices* 1<sup>st</sup> Quarter 2005; Vol 20(1): 53-57 (Says does not need copyright clearance).

Wendy Pratt-Cuckovich and Seymore Schwartz. Deposit Refund Systems for Managing Hazardous Wastes Produced by Small Businesses. J of Env. Mgmt 29: 145-161. 1989.

Margaret Walls and Alan Krupnick. The Cost-Effectiveness of Methanol Vehicles.. Resources Summer 1990. (Says it does not need copyright clearance)

Anna Alberini, Winston Harrington and Virginia McConnell.Determinants of Participation in Accelerated Vehicle Retirement Programs. Rand Journal of Economics, 1995.

Loomis and Frasier outline. Environmental Risk Analysis;  
Written by myself (Loomis) and another faculty member here at CSU (Marshal Frasier) do does not need copyright clearance.