

Intro: EVP524/GEOG 524,
“Introduction to Environmental and Resource
Economics”

August 30, 2006

Plan for today

- Introduction – myself
- Course logistics
- Introductions – yourselves
- Questions
- Scarcity, Opportunity cost, and Economic Rationality
- Pareto Optimality and the Kaldor/Hicks criterion
- Positive and Normative Economics
- Stavins: Myths about environmental economists
- Optimization

My background

- Graduate training in environmental and resource economics
- Post-doc at CIPEC, interdisciplinary
- Major research areas: land-use modeling, human/environment interactions, complexity theory
- Many ongoing research projects
- Other important info

Course logistics (see syllabus also)

- Description: Introduction to analytical models in environmental and resource economics
- Format: short writing assignment discussions, lecture, student-led discussions of related readings.
- Office hours: Wednesday and Thursday 3-4 and by apt. (Note I'm now in Research 1)

Goals of the course for students

- Understand the basic modeling framework used in neoclassical environmental and resource economics at an intermediate microeconomic level
- Be able to complete basic analytical problems using graphical analysis and simple algebra
- Be able to verbally explain and discuss solutions
- Have a basic understanding of key research issues in this field
- Be able to understand economic jargon and put it in context

Course Requirements and Grading

- Problem sets (Analytical problems, explanations, and short writing assignments (40%) (group work OK, individual answers required))
- Present summary and lead discussion for one supplementary reading (20%) (Provide list of top 3 to me by next week.)
- Midterm exam (20%)
- Final exam (20%)

(Policy details on syllabus)

Math is hard but worth it

- As Barbie says, “Math is hard!”
- This class may be more mathematical than others in your graduate curriculum
- The effort is well worth it, as math provides another language/tool
- You do not need to get the numbers right to pass the class; understanding logic and process is more important
- As Einstein said, “Do not be troubled by your problems with mathematics; mine are much greater.”

Structure of the class

- Basic microeconomic intro/review: demand, supply, and market equilibrium (crash course)
- Externalities and corrective mechanisms
- Public goods
- Natural Resource Management
- Non-market valuation and benefit-cost analysis

Required Texts

- Hackett: Designed for an interdisciplinary audience with little or no background in economics.
- Nicholson: Good reference for basic microeconomic theory. Level of the book slightly higher than Hackett. Takes a similar conceptual approach to Hackett.
- Stavins: Collection of articles. You may be able to obtain/copy only required readings if you don't want to buy the book. These articles represent a very mainstream economics view.
- Electronic Reserves: Additional readings here when required text is weak. Will send out username and password as soon as I get them.

Strategies for managing readings

- In many cases, we will go over concepts more than once
- Readings follow this format as well--in many cases, I provide several sources covering the same concepts
- I will try to provide a list of key concepts for each week
- You might skip the applications sections in Nicholson to save time if the material comes easily to you, but many of these are quite interesting.

Break for questions, introductions, and break

Intro to Env. And Res. Econ, Lecture 1
Dawn Parker, George Mason
University
Additional content from Hackett 2001

What is economics?

Intro to Env. And Res. Econ, Lecture 1
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What is economics? (my perspective)

- *Economics* is the study of how scarce resources are allocated among competing uses
- Resources are said to be *scarce* if, at a zero price, more is wanted than is available
- Scarcity forces us to make choices regarding how to allocate resources
- Economics encompasses choice related to both market and non-market allocation of scarce resources

What is opportunity cost?

- *Opportunity cost* is the value of the next-best alternative to the chosen activity
- Opportunity costs should be measured in real, not monetary, terms
- PPF example: a production possibilities frontier illustrates combinations of output that can be obtained from a fixed level of inputs. Opportunity cost can be measured as how much of one output you have to give up to get another unit of the other output.

What is economic rationality?

- A choice from competing options is *economically rational* if the anticipated net benefits of that choice exceed the opportunity cost
- Economic models generally assume that both consumers and producers behave as optimizers. Evidence regarding the correctness of this assumption is fairly weak, but evidence as to the predictive power of the theory is somewhat stronger.

Aggregate welfare criteria in economics

- An action is said to be *Pareto efficient* if no one is made worse off by the action (while presumably some benefit is generated).
- Evaluation under the Pareto efficiency criteria tends to favor maintaining the status quo.
- Note if your production levels are below the PPF, Pareto improvements are always possible.
- The less restrictive *Kaldor-Hicks* criterion selects the alternative that generates the largest net gain in social welfare.
- Kaldor-Hicks is viewed as potentially Pareto-efficient because sufficient welfare exist so that those who gain could compensate those who lose.

Intro to Env. And Res. Econ, Lecture 1

Taught by Prof. George Mason University

Additional content from Hackett 2001

Positive vs. Normative Economics

- *Positive* economic models seek to explain behavior: how *do* economics actors behave?
- *Normative* economic models seek to propose policies or prescribe behavior: how *should* the economy operate?

Positive vs. Normative in environmental economics

- In theory, perfectly operating markets maximize economic welfare.
- However, in theory, markets for environmental quality and natural resources do not operate perfectly.
- Thus, market interventions are theoretically justified.
- This leads to a role for both positive and normative economics: how are environmental quality and natural resources allocated vs. how should they be allocated
- We will explore this dichotomy throughout the class

Myths about economists (Fullerton and Stavins)

- The market solves all problems (see previous slide)
- Market solutions are always best for market problems
- Only market prices are used to evaluate policies
- Economists are concerned only with efficiency, not distribution

Key themes from next lecture's readings:

- Definition of utility
- Basic properties of preferences
- MRS and diminishing marginal utility
- Economic goods and bads
- Budget constraint and utility maximization conditions; effects of increase in income; effects of changes in price
- Construction of individual demand curves
- Consumer surplus
- Construction of market demand curves

Articles for student presentation

- Download file list and spreadsheet from the web site
- Download articles from webCT, or directly through subscribed journal sites
- Create a new column for yourself and fill out the spreadsheet
- Save with your name in the filename and e-mail to me
- I will make an initial allocation, then trades will be allowed (if a trade occurs, how might we characterize this?)