

Outline of Materials for Final Exam in EEP101/ECON125

Spring 2006

1. Basic Definitions:

Lecture slides 2

Section notes 1

You should be able to define:

- Pareto optimal
- Perfect competition
- Competitive equilibrium
- Main theory of welfare economics

2. Welfare Economics and Negative Externality:

Lecture slides 2 to 7

Section notes 2 to 4

- (1) Social welfare= $CS+PS+GR-TEC$ where GR is the net government revenue and TEC is the total externality cost
- (2) Equilibrium conditions: should be able to solve mathematically and graphically the equilibrium for each of the following:
 - Social optimum (MSC=MSB)
 - Competitive equilibrium (MPC=MPB)
 - Monopoly (MPC=MR)
 - Monopsony (MO=MB)
 - Middleman (MO=MR)
- (3) Solve for welfare distribution: once you find the equilibrium, you should be able to derive the welfare distribution (CS, PS, and DWL) both mathematically and graphically under each of the different market conditions
- (4) Solve for optimal tax/subsidy and standard and find welfare distribution (using equilibrium conditions)
- (5) Coase Theorem (definition, graphical solution and welfare)
- (6) Choice of taxes and standards, and tradable permits
- (7) Weitzman model (intuition, graph and main results)
- (8) Elasticity Effects on Magnitude of Externalities

3. Technology Adoption:

Lecture slides 8

Section notes 5

- (1) Mathematically compute whether individuals would adopt a new technology. Using this framework, analyze how policies (i.e. affecting output price, input prices, pollution taxes, fixed adoption costs, research and development, etc.) would affect adoption.
- (2) S-curve: heterogeneity of individuals, or imitation

4. Public Goods:

Lecture slides 9 and 10

Section notes 6

- (1) Definition of public good and pure public good (also congestion costs)
- (2) Homogeneous demand: solve for quantity provided, entry fee, and distribution of welfare under management by government, concessionaire, and monopolist.
- (3) Heterogeneous demand: solve for quantity provided, entry fee, and distribution of welfare under management by government, concessionaire, and monopolist.

5. Valuation of Environmental Benefit

Lecture slides 11

Section notes 7

- (1) Types of benefits: use and non-use benefits
- (2) Methodologies to measure benefits (discuss methodology, advantages, and disadvantages)
 - Hedonic pricing
 - Travel cost
 - Contingent Valuation

6. Risk Population and the Environment:

Lecture slides 13

Section notes 7

- (1) Risk assessment model and derivation of risk distribution
- (2) Policy objective under risk consideration (precautionary principle)

7. Natural Resource Economics

Lecture slides 14 and 15

Section notes 8

- (1) General understanding of discounting and investment decisions based on Net Present Value

8. International Economics and the Environmental Kuznets Curve (EKC)

Lecture Slides 16 and 17

Section notes 11

- (1) Comparative advantage and gains from trade
- (2) Heckscher Ohlin theorem and Stolper Samulson theorem
- (3) Discussion of potential social and environmental effects of trade in this context
- (4) Definition of EKC
- (5) Policy implications of acceptance of EKC
- (6) Criticisms
- (7) Possible structural explanations

9. Environmental Services

Lecture slides 18

Section notes 12

- (1) What are we referring to?
- (2) Familiarity with major programs and some examples we discussed
- (3) Discussion of environmental services and poverty alleviation

10. Climate Change

Lecture slides 19

- (1) Effect on agricultural regions and winners or losers
- (2) Adaptation by farmers and factors that will determine the success of adaptation
- (3) Types of economic policies that can be used to slow climate change including basic knowledge about Kyoto protocol

11. Pesticide Economics

Lecture slides 20

Section notes 13

- (1) Mathematical model of pest control:
 - Threshold model
 - Individual optimality conditions and optimal pesticide use
- (2) Preventive versus responsive application

(3) Pros and Cons of pesticide use including discussion of resistance

12. Biotechnology

Lecture slides 21

- (1) General understanding of issues
- (2) Discussion of Potential environmental effects of usage and banning
- (3) Precautionary principle in this context

13. Sustainable Water Use

Lecture slides 22

Section notes 14

- (1) Changing market conditions
- (2) Historical rights versus tradable water rights (including graphical illustration)
- (3) Optimal price of water
- (4) Technology adoption (see 3. Technology adoption)