

Environmental Economics (AAE / ECON / Env. St. 343)

Practice Exam #2.

1. Recent survey evidence has shown that lakeshore residents in northern Wisconsin prefer to live on quiet lakes with few houses. Suppose a contingent valuation survey is used to ask lakeshore residents the following question: "What is your willingness-to-pay (WTP) to ensure that no other houses are built near your lake?" Use a graph to depict this particular measure of economic value and discuss the allocation of property rights that is implicit in the survey question.
2. True, False, Uncertain. Briefly explain your answer: "An economic measure of the benefits derived from lower air pollution will be fully reflected in wage rate differences across regions."
3. The government of La Plata is trying to calculate the economic benefits of an increase in the size of a nature reserve. For that, they intend to use a travel cost model where the individual yearly demand for trips to the reserve is given by $T = 20 - (1/4)P_t + R$, where T is the number of trips, P_t is the price of trips, and R is the size of the reserve. The price of trips is known to be 12 dollars and the entrance to the reserve is restricted to 5000 visitors a year. What would be the benefits from an increase in the size of the reserve from 6 to 9 if there are 200 people with the above demand function?

The following information applies to questions 4 through 6. A major goal of ecosystem restoration projects is to restore the natural features of certain areas to conditions that existed before development. Suppose there is interest in ecosystem restoration on a 100,000 acre portion of the Chequamegon-Nicolet National Forest in Wisconsin. The forest in the project area is currently dominated by young trees (i.e. less than 30 years old) and the government harvests trees at a constant rate of 5 million board feet per year from this area and sells the logs to local sawmills. The goal of the project is to restore the area to old growth (i.e. majority of trees exceeding 200 years in age). This project requires the government to stop harvesting timber on the entire property immediately and to let the area revert to old growth over time. You are asked to perform a cost-benefit analysis (CBA) on this project.

4. Identify one benefit of the above ecosystem restoration project and explain how you would quantify this benefit (i.e. technique and data). Carefully justify your answer.
5. Explain why the project may lead to a Potential Pareto Improvement but not a Pareto Improvement. How could a Pareto Improvement be achieved?

6. Suppose your estimate of the benefits from the ecosystem restoration project vary with the age of the forest as follows:

Age of the Forest (years)	Estimate of Benefits
0 – 100	\$10 million / year
100 – 200	\$15 million / year
200 +	\$20 million / year

Explain how the choice of a *constant* discount rate could impact the estimated net present value (NPV) of the project. What role could sensitivity analysis play in selecting the discount rate?

7. Consider the following statement: “Few markets exist for assets with maturities exceeding 30 years, making the interest rate beyond that horizon highly uncertain.” What are the implications of this statement for cost-benefit analyses of long-term projects? Explain.