

Binghamton University
ENVIRONMENTAL ECONOMICS COMPREHENSIVE EXAMINATION
January 28, 2005

General instructions:

This exam consists of two parts. Part A must be answered in the examination hall, in 1.5 hours. Part B is a take-home exercise. Please email completed answers to Part B to Prof. Neha Khanna before noon (12 o'clock) Monday, January 31, 2005. Her email address is nkhanna@binghamton.edu.

PART A

Total time = 1.5 hours

Answer any two out of the three questions below.

1. A competitive market is considered inefficient in the presence of pollution externalities. Please elaborate the argument in a dynamic problem of stock externality provision by comparing the optimality conditions of the open-loop Nash equilibrium and the efficient solution. (You should set up a simple model, make necessary assumptions, and find the Euler equations of the Hamiltonians).
2. Ordinary differential equations (ODE) and/or difference equations are often used to describe resource systems – where we have a logistic growth function of a renewable resource. Please write it down in continuous form (ODE) and in discrete form (Δ equation). Are they equivalent? Why?
3. In a frequently cited paper, titled “Prices vs. Quantities,” Weizman (1974) discussed the impact of uncertainties on taxes and quotas in environmental policies. Without getting into technical details, could you state and explain its general conclusion?

PART B

Take home questions. Answers are due by noon on Monday, January 31, 2005

Please answer both questions.

1. Provide a clear and concise statement of the Environmental Kuznets Curve (EKC) hypothesis. On what basis is this hypothesis generally justified? Does this justification make sense to you? Why or why not?
2. In the econ696F syllabus, there are two theoretical papers on the EKC that give apparently contradictory results. These papers are McConnell (1997) and Lieb (2002). What is the contradiction between these two papers and how can it be reconciled? Please provide an intuitive as well as mathematical explanation.

References

McConnell, Kenneth E., 1997. Income and the Demand for Environmental Quality. *Environment and Development Economics*, 2: 383 – 399.

Lieb, Christoph, 2002. The Environmental Kuznets Curve and Satiation: A Simple Static Model. *Environment and Development Economics*, 7: 429 – 448.

Copies of both papers are available with Pat Sweet.