Reading List and Course Outline

Robert T. Deacon
Economics 260A
Winter 2013

Natural Resource Economics

Time/place: MW 2:00-3:15, NH 1109
Office hours: W 10:00-12:00 and by appointment

Course requirements:

1. One term paper (40%) with class presentation: Papers (~15 pages) should be literature reviews that identify the economic contributions in the received literature. As part of your paper present a proposal for future research based on what you have learned. A set of suggested topics is posted on GS. A one paragraph description of your paper topic is due on February 4 and finished papers are due on February 27. Presentations will be scheduled for the last 2 weeks of class. Please make an appointment with me to discuss your paper sometime during the quarter.

2. Each student will present 2-3 papers in class and will provide a 2-3 page referee report (25%) for each. Referee reports must be emailed to the entire class 2 days before the presentation. The (strictly observed) time available for each presentation is 20 min., plus 5-10 min. Q&A. A list of papers suggested for presentation follows.

3. Take-home exam (20%).

4. Class participation (15%).

Papers approved for presentation (first come-first served):


** Costello, Christopher J., and Daniel Kaffine, “Natural resource use with limited-tenure property rights,”, JEEM 2008.


** Fehr, Ernst, and Andreas Leibbrandt, 2010. “A field study on cooperativeness and impatience in the tragedy of the commons”. Unpublished manuscript: Department of Economics, University of Chicago. (This paper and the next one are considered as a pair.)


** Pindyck, R.S., "The Optimal Exploration and Production of Nonrenewable Resources," JPE, 1978.


**Format**
At the beginning of the course I will ask students their areas of potential interest and will tailor coverage of material accordingly. Early in the quarter I will lecture on basic concepts and methods and on a few specialized and applied topics. I will announce in class the material to read for the next meeting. Occasionally I will assign a homework problem for the next class and rely on class participation to help solve it. Homework problems are on GS. (Class participation in solving homework problems and discussion comprise 15 percent of the grade.)

**Topics**
This course examines the operation of markets for natural resources including minerals, fossil fuels, forest resources, fish, water, and natural environments. Physical processes determine natural resource abundance and at least a rudimentary representation of these processes is necessary for economic analysis. Consequently, readings often present simple biological models for studying fisheries and forests, incorporate geological concepts in examining minerals and hydrological concepts in examining groundwater. This connection with natural process is what sets natural resource economics apart from other fields. Ownership rights to natural resources often are not clearly defined, in which case the interests of some segments of society will not be reflected in market outcomes and the scramble to acquire these assets will be wasteful. These themes appear at various points in the course.

**Textbook**

This is a book on modeling methods and spends little time with applications, policy and institutions. Other textbooks are listed below. The first two are classic texts on natural resource economics theory; they treat some individual topics in more detail than Conrad and Clark. Selected chapters from both are included on the reading list. Conrad’s *Resource Economics* is similar to Conrad and Clark, but is less rigorous and spends more time discussing resource industries and policies and emphasizes simulations. Hanley *et al* and Hartwick and Olewiler are undergraduate texts.


Journal title abbreviations

AER  American Economic Review  AJAE  American Journal of Agric. Econ.
CJE  Canadian Journal of Economics  EJ  Economic Journal
EI  Economic Inquiry  ERE  Environ and Resource Econ
JEL  Journal of Economic Literature  JLE  Journal of Law and Economics
JLEO  Jour. of Law, Econ. and Organiz  JEP  J of Econ Perspectives
JPubE  J of Public Economics  JUE  J of Urban Economics
JEEM  Jour. of Environ. Econ. and Mgt  LE  Land Economics
MRE  Marine Resource Economics  NRM  Natural Resource Modeling
QJE  Quarterly Journal of Economic  REE  Resource and Energy Economics
REEP Rev. Env. Econ. & Policy  RJE  Rand J of Economics
SJE  Scandinavian J of Economics  SEJ  Southern Economic Journal
WRR  Water Resources Research  YJR  Yale Journal on Regulation

Readings marked * are emphasized.

I. INTRODUCTION

A. Policy Issues and Scope of the Natural Resources Field

* Hartwick and Olewiler, Chap. 1.


Dasgupta and Heal, Chap. 1.

B. Natural Resource Scarcity

* Fisher, Chapter 4.


Hartwick and Olewiler, Chap. 2.


II. GENERAL CONCEPTS AND METHODS

A. Welfare Economics, Property Rights, and Externalities

(Review material)

Dasgupta and Heal, Chapter 2, Chapter 3.


B. Analytical Methods


Dasgupta and Heal, Chapter 4.


C. Applications


III. NONRENEWABLE RESOURCES

A. Basic Hotelling Model: Competition

* Conrad and Clark, pp. 117-145.


Dasgupta and Heal, Chap. 6.

Hartwick and Olewiler, Chap. 8.

Fisher, Chapter 2, pp. 10-37.

* Pindyck, R.S., "The Optimal Exploration and Production of Nonrenewable Resources," *JPE*, 1978.


B. Basic Hotelling Model: Imperfect Competition, Risk and Green Paradox

Hartwick and Olewiler, Chap. 9.


* Dasgupta and Heal, Ch. 11.


C. Empirical Studies


Pindyck, R.S., "Gains to Producers from the Cartelization of Exhaustible Resources," *REStat.*, 1978, pp. 238-251.


D. Taxation of Nonrenewable Resources

Dasgupta and Heal, Ch. 12.


E. Empirical Tests of the Hotelling Model


F. What Motivates OPEC Behavior?


### IV. FOREST RESOURCES

**A. Basic Models and Results**

* Conrad and Clark, pp. 96-97.


Johansson, P. O., and K. G. Lofgren, *The Economics of Forestry and Natural Resources*, Chap. 4, Basil Blackwell, 1997. (Chapters 5 and 7 are also suggested.)


**B. Externalities, Ecological Considerations, Taxation and Forest Management**


**C. Management of Publicly Owned Forests**


**D. Sequestering Carbon in Forests**


**E. Supply of Forest Outputs**


V. DEFORESTATION, BIODIVERSITY AND RELATED TOPICS

A. Valuing Biodiversity for Pharmaceutical Use


B. Deforestation


C. Species Extinction and Preservation


D. Preserving Species: The U.S. Endangered Species Act


E. Measuring and Valuing Biodiversity


VI. FISHERIES AND OTHER RENEWABLE, UNOWNED SPECIES

A. Fisheries: Basic Models and Results

* Conrad and Clark, pp. 62-96.


Hartwick and Olewiler, Chaps. 4, 11.

Dasgupta and Heal, Ch. 5.


Fisher, Chapter 3.


B. Fisheries: Alternative Approaches to Stock Dynamics


C. Fisheries: Policy Analysis


* Deacon, R.T., “Managing Fisheries by Assigning Rights to Harvester Cooperatives”, *REEP* 2012 257-2??.

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D. Fisheries: Spatial Analysis and Marine Reserves


E. Topics in Fishery Cooperatives and User-based Management

* Fehr, Ernst, and Andreas Leibbrandt, 2010. “A field study on cooperativeness and impatience in the tragedy of the commons”. Unpublished manuscript: Department of Economics, University of Chicago.


F. Free Access, Over Exploitation, and Extinction


VII. RESOURCES, INSTITUTIONS, AND INSTITUTIONAL CHANGE

A. The ‘Natural Resource Curse’


B. Evolution of Property Rights and Natural Resource Use


C. Informal Management of Common Property Resources


VIII. WATER RESOURCES

A. General Analysis


B. Managing Groundwater

* Conrad and Clark, pp. 194-197.


