



International Trade and the Environment: Resources and Trade
Department of Economics
Course Outline

Course:	Economics 611.10 Independent Study	Term: Fall	2014
		Section:	02
Time:	MW 14:00 – 15:15	Place:	SS 403
Instructor:	Prof. M. Scott Taylor		
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Office Hours:	M 16:30 – 17:30	E-Mail:	mstaylor@ucalgary.ca

Course Outline

This course will explore the relationship between resource use and international markets. During the course we will try to answer three basic questions about the link between openness to international markets and resource use using both theoretical and empirical methods. The questions we will try to answer are: (1) How does the ability to sell resource products on international markets affect resource extraction? (2) How does it affect national and international measures of wellbeing? (3) In light of the answers to the first two questions, what role, if any, is there for government policy?

There isn't a large or cohesive literature that addresses these questions, and that is why I have said the course will explore the relationship. To some extent we are breaking new ground, and looking for cohesion across a literature that is anything but cohesive. There is a small literature on international trade and renewable resources; and even smaller one on non-renewables; a quite different literature on trade in non-renewables such as fossil fuels; and, some discussion of how openness to international markets affects the development of resource rich countries. We are going to sample from these areas and from others in economics to try to weave together some answers in 13 weeks. For Ph.D. students looking for research topics, this course may be quite useful in formulating a research question to pursue. Students are going to learn a bit about international economics, a bit about resource economics, and a bit about doing research in economics. The course would be a great complement to a specialty in international economics or environmental/resource/energy economics at either the M.A. or Ph.D. level.

To proceed we will be discussing in class academic research from journal articles, and some book chapters. The required theory will come from resource economics and international economics. As a result, the course will have a series of Methods lectures where I will spend an entire lecture outlining a tool used in this area of research. These tools will then be employed in our discussions of specific papers. Methods lectures will occur about once a week. The remaining lectures will discuss academic research papers on the topic. You will be expected to have read the relevant paper carefully before class and be prepared to discuss it with your fellow students. I will discuss the paper in a lecture format, but will ask for class input throughout. A typical reading workload is 150 pages per week/per course.

Prerequisites

There are really no formal prerequisites; all that is required is a good understanding of microeconomic theory, some mathematical sophistication, and a willingness to work hard. The course will use techniques and methods used in first year graduate courses in microeconomics, macroeconomics, and international trade. I understand that some students will be taking these courses simultaneously. It is open to both M.A. and Ph.D. students.

General Outline of Topics

Method Lectures (not necessarily in order)

1. Making sense of Optimal Control Theory
2. What you really need to know about solving differential equations
3. A pain-free introduction to Phase-Plane Techniques
4. Convergence and the Solow Model
5. What is Hotelling's rule and why should I care?
6. The ins and outs of the Gordon-Schaefer Model
7. David Ricardo inventor of the simplest general equilibrium model with production.
8. Ricardo's followers: Dornbusch, Fischer, and Samuelson
9. Ricardo's followers: Eaton and Kortum

Grade Determination and Final Examination

There will be one midterm in mid October worth (35% total), three short reports on individual papers assigned during the term (45%), and class participation marks of (20%). The short reports will be critical reviews of research papers that I do not discuss in class. Each report cannot be longer than 5 pages, double-spaced in 12 point font.

Organization

The primary means of communication outside of the class will be by email list. Therefore, one requirement for this course is for each student to obtain and monitor an email account. All general announcements regarding readings, etc. will be made via email.

Tentative Reading List (required readings are indicated with *)**1. Renewable Resources: Theory**

*G Hardin. 1968. "The Tragedy of the Commons". *Science*, vol. 162, pp.1243-1248, 1968.

*C. W. Clark and G. R. Munro, "The economics of fishing and modern capital theory: a simplified approach," *J. Environ. Econ. Manag.*, vol. 2, no. 2, pp. 92–106, 1975.

M. L. Cropper, D. R. Lee, and S. S. Pannu, "The optimal extinction of a renewable natural resource," *J. Environ. Econ. Manag.*, vol. 6, no. 4, pp. 341–349, 1979.

M. Datta and L. J. Mirman, "Externalities, market power, and resource extraction," *J. Environ. Econ. Manag.*, vol. 37, no. 3, pp. 233–255, 1999.

*H. S. Gordon, "The Economic Theory of a Common-Property Resource: The Fishery," *J. Polit. Econ.*, 1954.

J. M. Karpoff, "Suboptimal controls in common resource management: the case of the fishery," *J. Polit. Econ.*, pp. 179–194, 1987.

D. Levhari and L. J. Mirman, "The great fish war: an example using a dynamic Cournot-Nash solution," *Bell J. Econ.*, pp. 322–334, 1980.

R. McKelvey, "The fishery in a fluctuating environment: Coexistence of specialist and generalist fishing vessels in a multipurpose fleet," *J. Environ. Econ. Manag.*, vol. 10, no. 4, pp. 287–309, 1983.

*M., Morcom, Charles Kremer, "Elephants," *Am. Econ. Rev.*, vol. 90, pp. 212–234, 2000.

*A. Scott, "The Fishery: The Objectives of Sole Ownership," *J. Polit. Econ.*, pp. 116–124, 1955.

V. L. Smith, "Economics of production from natural resources," *The American Economic Review*. JSTOR, pp. 409–431, 1968.

S. K. Swallow, "Depletion of the environmental basis for renewable resources: the economics of interdependent renewable and nonrenewable resources," *Journal of Environmental Economics and Management*, vol. 19, no. 3. Elsevier, pp. 281–296, 1990.

*M. S. Taylor and J. A. Brander, "The simple economics of Easter Island: A Ricardo-Malthus model of renewable resource use," *The American Economic Review*, vol. 88, no. 1. pp. 119–138, 1998.

F. Wirl, "De-and reforestation: stability, instability and limit cycles," *Environ. Resour. Econ.*, vol. 14, no. 4, pp. 463–479, 1999.

*H. Demsetz, "Toward a Theory of Property Rights," *Am. Econ. Rev.*, 1967.

M. Weitzman, "Free access vs private ownership as alternative systems for managing common property," *J. Econ. Theory*, vol. 8, pp. 225–234, 1974.

R. Brooks, M. Murray, S. Salant, and J. C. Weise, "When is the standard analysis of common property extraction under free access correct?: A game-theoretic justification for non-game-theoretic analyses," *J. Polit. Econ.*, vol. 107, no. 4, pp. 843–858, 1999.

P. A. Neher, "Notes on the Volterra-quadratic fishery," *J. Econ. Theory*, vol. 8, no. 1, pp. 39–49, 1974.

P. A. Neher, *Natural Resource Economics: conservation and exploitation*. Cambridge: Cambridge University Press, 1990.

P. A. Samuelson, "Is the rent-collector worthy of his full hire?," *East. Econ. J.*, vol. 1, no. 1, pp. 7–10, 1974.

M. Weitzman, "Landing fees vs harvest quotas with uncertain fish stocks," *J. Environ. Econ. Manag.*, vol. 43, no. 2, pp. 325–338, 2002.

R. Cornes, C. F. Mason, and T. Sandler, "The commons and the optimal number of firms," *Q. J. Econ.*, pp. 641–646, 1986.

2. Non-Renewable Resources: Theory

E. S. Amundsen and R. Schöb, "Environmental taxes on exhaustible resources," *Eur. J. Polit. Econ.*, vol. 15, no. 2, pp. 311–329, 1999.

P. Dasgupta and G. Heal, "The optimal depletion of exhaustible resources," *Rev. Econ. Stud.*, pp. 3–28, 1974.

M. Eswaran and T. Lewis, "Exhaustible resources and alternative equilibrium concepts," *Can. J. Econ.*, pp. 459–473, 1985.

Y. H. Farzin, "The time path of scarcity rent in the theory of exhaustible resources," *Econ. J.*, pp. 813–830, 1992.

L. C. Gray, "Rent Under the Assumption of Exhaustibility," *Q. J. Econ.*, vol. 28, pp. 466–489, 1914.

*H. Hotelling, "The Economics of Exhaustible Resources," *J. Polit. Econ.*, pp. 137–175, 1931.

J. A. Krautkraemer, "Nonrenewable resource scarcity," *J. Econ. Lit.*, pp. 2065–2107, 1998.

T. R. Lewis, "Monopoly exploitation of an exhaustible resource," *J. Environ. Econ. Manag.*, vol. 3, no. 3, pp. 198–204, 1976.

T. R. Lewis, "Sufficient conditions for extracting least cost resource first," *Econom. J. Econom. Soc.*, pp. 1081–1083, 1982.

J. R. Livernois and R. S. Uhler, "Extraction costs and the economics of nonrenewable resources," *The Journal of Political Economy*. JSTOR, pp. 195–203, 1987.

R. S. Pindyck, "The optimal exploration and production of nonrenewable resources," *J. Polit. Econ.*, pp. 841–861, 1978.

R. M. Solow and F. Y. Wan, "Extraction costs in the theory of exhaustible resources," *Bell J. Econ.*, pp. 359–370, 1976.

J. E. Stiglitz, "Monopoly and the rate of extraction of exhaustible resources," *Am. Econ. Rev.*, pp. 655–661, 1976.

J. E. Swierzbinski and R. Mendelsohn, "Exploration and exhaustible resources: the microfoundations of aggregate models," *Int. Econ. Rev.*, vol. 30, no. 1, pp. 175–86, 1989.

M. C. Weinstein and R. J. Zeckhauser, "The optimal consumption of depletable natural resources," *The Quarterly Journal of Economics*. JSTOR, pp. 371–392, 1975.

H. Welsch and F. Stähler, "On externalities related to the use of exhaustible resources," *Journal of Economics*, vol. 51, no. 2. Springer, pp. 177–195, 1990.

*J. M. Hartwick, "Intergenerational equity and the investing of rents from exhaustible resources," *Am. Econ. Rev.*, vol. 67, no. 5, pp. 972–974, 1977.

J. Hörner and M. I. Kamien, "Coase and Hotelling: a meeting of the minds," *J. Polit. Econ.*, vol. 112, no. 3, pp. 718–723, 2004.

G. C. Loury, "A theory of oil'igopoly: Cournot equilibrium in exhaustible resource markets with fixed supplies," *Int. Econ. Rev.*, vol. 27, no. 2, pp. 285–301, 1986.

J. F. Reinganum and N. L. Stokey, "Oligopoly extraction of a common property natural resource: The importance of the period of commitment in dynamic games," *Int. Econ. Rev.*, pp. 161–173, 1985.

S. W. Salant, "Exhaustible resources and industrial structure: A Nash-Cournot approach to the world oil market," *J. Polit. Econ.*, pp. 1079–1093, 1976.

S. Salant, M. Eswaran, and T. Lewis, "The length of optimal extraction programs when depletion affects extraction costs," *J. Econ. Theory*, vol. 31, no. 2, pp. 364–374, 1983.

*J. Stiglitz, "Growth with exhaustible natural resources: efficient and optimal growth paths," *Rev. Econ. Stud.*, pp. 123–137, 1974.

M. Weitzman, "The optimal development of resource pools," *J. Econ. Theory*, vol. 12, no. 3, pp. 351–364, 1976.

3. Resource Economics in an Open Economy: Theory

M. C. Kemp and N. Van Long, "Chapter 8 The role of natural resources in trade models," *Handbook of International Economics*, vol. Volume 1. Elsevier, 1984.

M. C. Kemp and N. Van Long, "International trade with an exhaustible resource: A theorem of Rybczynski type," *Int. Econ. Rev.*, pp. 671–677, 1979.

M. C. Kemp and N. Van Long, "Rybczynski's theorem in a context of exhaustible resources: The case of time-contingent prices," *Int. Econ. Rev.*, pp. 699–710, 1982.

E., Barbier, Edward Bulte, "Trade and Renewable Resources in a Second Best World: An Overview," *Environ. Resour. Econ.*, vol. 30, no. 4, pp. 423–463, 2005.

E. B. Barbier and M. Rauscher, "Trade, tropical deforestation and policy interventions," *Environ. Resour. Econ.*, vol. 4, no. 1, pp. 75–90, 1994.

*J. A. Brander, M. S. Taylor, "International trade and open-access renewable resources: The small open economy case," *Can. J. Econ. Rev. Can. d'économique.*, vol. 30, no. 3, 1997.

*J. A. Brander, M. S. Taylor, "International trade between consumer and conservationist countries," *Resour. Energy Econ. Resour. Energy Econ.*, vol. 19, no. 4, pp. 267–297, 1997.

J. A. Brander, M. S. Taylor, "Open access renewable resources: Trade and trade policy in a two-country model," *J. Int. Econ.*, vol. 44, pp. 181–209, 1998.

G. Chichilnisky, "North-South Trade and the Global Environment," *Am. Econ. Rev.*, vol. 84, no. 4, pp. 851–874, 1994.

A. Emami and R. S. Johnston, "Unilateral resource management in a two-country general equilibrium model of trade in a renewable fishery resource," *Am. J. Agric. Econ.*, vol. 82, no. 1, pp. 161–172, 2000.

L. Karp, S. Sacheti, and J. Zhao, "Common Ground Between Free-Traders and Environmentalists," *Int. Econ. Rev.*, vol. 42, no. 3, pp. 617–648, 2001.

L., Long, Ngo Van, Tian, Huilan Hotte, "International trade with endogenous enforcement of property rights," *J. Dev. Econ.*, vol. 62, pp. 25–54, 2000.

S. Polasky, C. Costello, and C. McAusland, "On trade, land-use, and biodiversity," *J. Environ. Econ. Manag.*, vol. 48, no. 2, pp. 911–925, 2004.

A. A. Cecen, "Resource extraction, international trade and production with the resource," *Energy Econ.*, vol. 13, no. 4, pp. 254–257, 1991.

*B. R. Copeland, M. S. Taylor, "Trade, Tragedy, and the Commons," *Am. Econ. Rev.*, vol. 99, pp. 725–749, 2009.

R. Harris, "Trade and depletable resources: The small open economy," *Can. J. Econ.*, pp. 649–664, 1981.

*N. Vousden, "International trade and exhaustible resources: A theoretical model," *Int. Econ. Rev.*, pp. 149–167, 1974.

J. Brander and S. Djajic, "Rent-extracting tariffs and the management of exhaustible resources," *Can. J. Econ.*, pp. 288–298, 1983.

E. Maskin and D. Newbery, "Disadvantageous oil tariffs and dynamic consistency," *Am. Econ. Rev.*, pp. 143–156, 1990.

4. Resource Economics in an Open Economy: Empirical Applications

R. C. Allen, Keay Ian, "The First Great Whale Extinction: The End of the Bowhead Whale in the Eastern Arctic," *Explor. Econ. Hist.*, vol. 38, no. 4, pp. 448–477, 2001.

R. C. Allen, Keay Ian, "Saving the Whales: Lessons from the Extinction of the Eastern Arctic Bowhead," *J. Econ. Hist.*, vol. 64, no. 2, pp. 400–432, 2004.

E. B. Barbier, R. Damania, and D. Leonard, "Corruption, trade and resource conversion," *J. Environ. Econ. Manag.*, vol. 50, no. 2. Elsevier, pp. 276–299, 2005.

E. B. Barbier, "Explaining agricultural land expansion and deforestation in developing countries," *Am. J. Agric. Econ.*, vol. 86, no. 5, pp. 1347–1353, 2004.

C. A. P. Braga, "Tropical forests and trade policy: The cases of Indonesia and Brazil.," *World Bank Discuss. Pap.* 1992.

*R. T. Deacon, "Deforestation and the Rule of Law in a Cross-Section of Countries," *Land Econ.*, vol. 70, no. 4, 1994.

*A. D. Foster and M. R. Rosenzweig, "Economic Growth and the Rise of Forests," *Quarterly Journal of Economics*, vol. 118, no. 2. pp. 601–637, 2003.

*S. Ferreira, "Deforestation, Property Rights, and International Trade," *Land Econ.*, vol. 80, no. 2, 2004.

*R. López, "The Tragedy of the Commons in Côte d'Ivoire Agriculture: Empirical Evidence and Implications for Evaluating Trade Policies," *World Bank Econ. Rev.*, 1998.

R. López, "Agricultural Intensification, Common Property Resources and the Farm-Household," *Environ. Resour. Econ.*, vol. 11, no. 3–4, pp. 3–4, 1998.

*R. López, "Environmental externalities in traditional agriculture and the impact of trade liberalization: the case of Ghana," *J. Dev. Econ.*, vol. 53, no. 1, pp. 17–39, 1997.

*M. S. Taylor, "Buffalo Hunt: International Trade and the Virtual Extinction of the North American Bison," *Am. Econ. Rev.*, vol. 101, pp. 3162–3195, 2011.

M. Bhattarai and M. Hammig, "Institutions and the Environmental Kuznets Curve for Deforestation: A Crosscountry Analysis for Latin America, Africa and Asia," *World Development*, vol. 29, no. 6. pp. 995–1010, Jun-2001.

*H. Bohn, Deacon Robert T., "Ownership risk, investment, and the use of natural resources," *Am. Econ. Rev.*, vol. 90, no. 03, pp. 526–549, 2000.

B. Bayramoglu and J. F. Jacques., "Fishery Resources and Trade Openness: Evidence from Turkey," *Working Papers 2012/02, INRA, Economie Publique.*