



## Department of Economics Course Outline

		<b>Term:</b>	Winter 2005
<b>Course:</b>	Economics 611.10 [International Trade and the Environment]	<b>Section:</b>	01
<b>Time:</b>	T 14:00 ? 16:50	<b>Place:</b>	ST027
<b>Instructor:</b>	Dr. M. Scott Taylor		
<b>Office:</b>	SS 428	<b>Telephone:</b>	220-8912
<b>Office Hours:</b>	M 16:00 ? 17:00	<b>E-Mail:</b>	<a href="mailto:mstaylor@ucalgary.ca">mstaylor@ucalgary.ca</a>

### Textbook(s):

*Required:*

B.R. Copeland and M. Scott Taylor, *Trade and the Environment: Theory and Evidence*, Princeton University Press 2003.

In addition there will be a set of required readings that I will make available during the course. A tentative reading list is attached at the end of this document. I will be adding and subtracting from this reading list: you will **not** be required to read everything on this list.

### Book(s) on Reserve:

N/A

### Course Outline:

This course will examine the links between international trade and the environment. During the course we will try to answer three basic questions about the link between trade and the environment using both theoretical and empirical methods. The questions we will try to answer are:

(1) how does international trade affect the environment?

For example does free trade raise local or world pollution levels? Does it lead to over consumption of cheap resources produced in developing countries?

(2) how does government environmental policy affect trade flows and environmental outcomes?

For example, does tight environmental regulation in the rich developed countries drive polluting industries to relocate in poor countries to escape regulation? Will world pollution rise when firms flee to these pollution havens? What happens to pollution levels in rich countries; what happens to pollution in poor countries.

Will the implementation of the Kyoto protocol in Canada but not the US undermine Canadian production of energy intensive manufactures?

and (3) how should government policy be constructed to internalize environmental externalities?

For example, should countries be able to put tariffs on pollution intensive goods that come from countries with no regulation? Should we be able to stop imports from countries that refuse to sign the Kyoto protocol? Should trade and environmental policy be linked, and if so when?

### General Outline of Topics

- ☒ Introduction: Defining the Issues
- ☒ Trade, Growth and Pollution in a Small Open Economy
- ☒ Trade Liberalization and the Environment
- ☒ Pollution Haven models of International Trade
- ☒ Factor endowments and Policy differences as motives for trade
- ☒ A Test of the Factor Endowments versus Pollution Haven motives for trade
- ☒ Transboundary pollution: the Strategic Use of Pollution
- ☒ Global Warming and the Kyoto Protocol
- ☒ Incomplete property rights, renewable resources, and trade.
- ☒ Pollution and Production Possibilities
- ☒ Strategic Trade and Races to the Bottom
- ☒ A summing up. What have we learnt?

### Prerequisites

The prerequisites are one semester of Graduate Micro. A previous graduate course in trade would be helpful but it is not currently a prerequisite for the course.

### Required Reading

I have written a book on this topic that will be available in the bookstore. It is *Trade and the Environment: Theory and Evidence*, Princeton University Press 2003 by B.R. Copeland and M. Scott Taylor.

In addition to there will be a set of required readings that I will make available during the course. A tentative reading list is attached at the end of this document. I will be adding and subtracting from this reading list: you will **not** be required to read everything on this list.

### **Grade Determination and Final Examination Details:**

There will be two midterms taken in class time (60% total) and one project (40%). The project will be a short critical review of a research paper in the area. It cannot be longer than 15 pages, double-spaced in 12 point font. You will be asked to coordinate your topic with me, submit a first draft, and then write a final draft. The final draft will be due one week after the end of lectures. Your review of this paper could be the start of an MA or PhD thesis.

Tests and final exams are marked on a numerical (percentage) basis, then converted to letter grades. The course grade is then calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	95 ? 100	B	75 - 79	C-	55 ? 59
A	90 ? 94	B-	70 ? 74	D+	50 ? 54
A-	85 ? 89	C+	65 ? 69	D	45 ? 49
B+	80 ? 84	C	60 ? 64	F	0 ? 44

If, for some reason, the distribution of grades determined using the aforementioned conversion chart appears to be abnormal the instructor reserves the right to change the grade conversion chart if the instructor, *at the instructor's discretion*, feels it is necessary to more fairly represent student achievement.

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

Non-programmable calculators will not be allowed during the writing of tests or final examinations.

Tests and exams will not involve multiple choice questions.

### **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.

### **Short term Visitors.**

I have arranged for one international visitor to come to Calgary during March. Sjak Smulders from Tilburg University (the Netherlands) is an expert on growth and the environment and he will give three graduate lectures on this topic during his visit. Class lectures will be cancelled that week as students will be expected to attend Sjak's seminars instead.

I am also currently negotiating with one other potential visitor to come from another week giving a series of lectures on computable general equilibrium models and the Kyoto protocol.

## **Tentative Reading List**

### **1. Introduction: Defining the Issues**

Chapter 1, Copeland and Taylor (2001)

Debate: Does Free Trade Harm the Environment, *Scientific American*, November 1993, 41-57. J. Bhagwati versus Herman Daly.

Trade and the Environment: The Greening of Protectionism, *The Economist*, Feb. 27th, 1993, 25-28.

A New Paradigm for World Welfare, R. Constanza, et al. *Environment*, Vol. 37, No. 5, June 1995, 17-44.

Trade and the Environment: The North-South Divide, *Environment*, Sept. 1995, Vol. 37, No. 7., 16-41.

GATT and Environment: Basic Issues and Some Developing country concerns, P. Sorsa, WB chapter 18.

The Origins of the Trade and Environment Conflict, Esty chapter 1 and 2.

International Trade and the Environment: An Overview, P. Low, WB chapter 1.

Trade and the Environment: A survey of the Literature J. Dean, WB, chapter 2

### **2. Trade, Growth and Pollution in a Small Open Economy**

Chapter 2, Copeland and Taylor (2001)

N. Stokey, "Are there Limits to Growth", *International Economic Review*, (1998).

Kahn, Matthew E, "A Household Level Environmental Kuznets Curve," *Economics Letters* 59(2), (1998): 269-273.

Andreoni, James and Arik Levinson, "The Simple Analytics of the Environmental Kuznets Curve," NBER Working Paper #6739, 1998.

John, A. and R. Pecchenino, "An overlapping generations model of growth and the environment," *The Economic Journal*, 104 (1994): 1393-1410.

Beckerman, W, "Economic growth and the environment: Whose growth? Whose environment?" *World Development* 20 (1992): 481-496.

Barrett, S, "Environment and Growth", mimeo, Nov. 1996.

Barrett, S. and K. Graddy, "Freedom, Growth, and the Environment," mimeo, April 1998.

Cropper Maureen and Charles Griffiths, "The interaction of population growth and environmental quality," *American Economic Review* 84(2), (1994): 250-4.

Gale, L.R. and J.A. Mendez, "The Empirical Relationship between Trade, Growth and the Environment," *International Review of Economics and Finance*

, 7(1):53-61.

Grossman G.M, and A. B. Krueger, "Environmental Impacts of a North American Free Trade Agreement," in *The US-Mexico Free Trade Agreement*, P. Garber, ed. Cambridge, MA: MIT Press, 1993.

Grossman G.M, and A. B. Krueger, "Economic Growth and the Environment," *Quarterly Journal of Economics*, (1995): 353-377.

Harbaugh, W., A. Levinson, and D. Wilson, " Reexamining Empirical Evidence for an Environmental Kuznets Curve," mimeo December, 1998.

Hettige, H., M. Mani, and D. Wheeler, "Industrial Pollution in Economic Development: Kuznets Revisited," Development research group mimeo, The World Bank, December 1997.

Hilton, H., and A. Levinson, "Factoring the Environmental Kuznets Curve: Evidence from Automotive Lead Emissions," *Journal of Environmental Economics and Management*, 35 (1998): 126-141.

Holtz-Eakin, D. and T. Selden, "Stoking the fires? CO2 emissions and economic growth," *Journal of Public Economics*, 57 (1995): 85-101.

Selden T. and D. Song, "Environmental quality and development: Is there a Kuznets curve for air pollution emissions?" *Journal of Environmental Economics and Management* 27 (1994): 147-162.

Selden T. and D. Song, "Neoclassical Growth, the J Curve for Abatement, and the Inverted U Curve for Pollution," *Journal of Environmental Economics and Management* 29 (1995): 162-68.

### **3. Trade Liberalization and the Environment**

Chapter 3 Copeland and Taylor (2001)

"International Trade and the Environment: Policy Reform in a Polluted Small Open Economy", B.Copeland, *Journal of Environmental Economics and Management*, Vol. 26, Jan. 1994, 44-65.

Trade Policy and Pollution, P. Low and R. Safadi, WB chapter 3. ?/6

International Policy coordination and Environmental quality, R. Safadi, P. Low, WB chapter 16.

### **4. Pollution Haven Models of international trade**

Chapter 4 Copeland and Taylor (2001)

Pollution, Welfare, and Environmental Policy in the Theory of Comparative Advantage", R. Pethig, *Journal of Environmental Economics and Management*, Vol. 2, Feb. 1976, 160-169.

"National Environmental Policies and the Effects of Economic Integration", M. Rauscher, *European Journal of Political Economy*, Vol 7, 1991, 313-329.

"North-South Trade and the Environment", B. Copeland and M. Scott Taylor, *Quarterly Journal of Economics*, (August, 1994), 755-787.

"Regulation, Factor Rewards, and International Trade", M. C. McGuire, *Journal of Public Economics*, 17 (1982):335-354.

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## **. Factor endowments and Policy Differences as Determinants of Trade**

Chapter 5 Copeland and Taylor (2001)

"Trade and the Environment: A Partial Synthesis", B. Copeland and M. Scott Taylor,

*American Journal of Agricultural Economics*, 77, (August, 1995), 765-771.

"Trade and Pollution Policy when Domestic Income Distribution Matters", C. McAusland, University of Michigan mimeo, Nov. 1998.

## **6. Empirical tests of the Pollution Haven and Factor Endowments Models**

Chapter 6 Copeland and Taylor (2001) "Is Free Trade Good for the environment" Werner Antweiler, et al. (*American Economic Review*, 2001)

Do Dirty Industries Migrate?, P. Low and A. Yeats, WB chapter 6

Economic Development, Environmental Regulation and the International Migration of

Toxic Industrial Pollution: 1960-1988, Lucas, Wheeler, and Hettige, WB chapter 5.

Trade Policy and Industrial Pollution in Latin America: Where are the Pollution Havens?, N. Birdsall and D. Wheeler, WB chapter 10.

Trade Measures and Environmental Quality: The Implication for Mexico's Exports, P. Low, WB chapter 7

## **7. Transboundary Pollution: the Strategic Uses of Pollution**

"International externalities and optimal tax structures", J.R. Markusen, *Journal of International Economics*, Vol. 5, 1975, 15-29.

"Cooperative control of international pollution and common property resources", J.R. Markusen, *Quarterly Journal of Economics*, Vol. 89, 1975, 618-632.

"Investment, Technology and the Global Environment: Towards international agreement in a world of disparities" I. Diwan and N. Shafik, in WB, 263-287.

Regional Trade Agreements, S. Charnovitz, Vol. 37, No.6, July/August 1995: 16-45.

Trade and the Environment: Harmonization and Technical Standards, D. Robertson, WB chapter 17.

"Trade and Transboundary Pollution", B. Copeland and M. Scott Taylor, *American Economic Review*, Vol. 85, No. 4 (September 1995), 716-737.

The political economy of Trade and the Environment in the United States, C. VanGrasstek, WB chapter 13.

The political economy of Trade and the Environment in Western Europe, G. Klepper, WB chapter 14.

## **8. Global Warming and the Kyoto Protocol**

Chapter 8 Copeland and Taylor (2001)

Barrett, Scott. "Self-Enforcing International Environmental Agreements." *Oxford Economic Papers*, 1994, 46, pp. 878-894

Barrett, Scott. "Trade Restrictions in International Environmental Agreements." London Business School, March 1994

Bertram, Geoffrey. "Tradeable Emission Permits and the Control of Greenhouse Gases," *The Journal of Development Studies*, Vol. 28, No.3, April 1992, pp423-446.

Bohm, Peter. "Benefits of International Carbon Emissions Trading: Theory and Experimental Evidence." Stockholm University, 1998

Bohm, Peter. "Distributional Implications of Allowing International Trade in CO<sub>2</sub> Emission Quotas." *World Economy*, January 1992, 15(1), pp. 107-14

Böhringer, Christoph and Welsh, Heinz. "C&C- Contraction and Convergence of Carbon Emissions: The Economic Implications of Permit Trading." ZEW discussion paper No. 99-13

Brecher, Richard A. and Diaz Alejandro, Carlos F. "Tariffs, Foreign Capital and Immiserizing Growth." *Journal of International Economics*, 1977, 7, pp. 317-322

Carraro, Carlo and Siniscalco, Domenico. "Strategies for the International Protection of the Environment." *Journal of Public Economics*, 1993, 52, pp. 309-328

Chander, Parkash and Tulkens, Henry. "Theoretical Foundations of Negotiations and Cost Sharing in Transfrontier Pollution Problems." *European Economic Review*, 1992, 36, pp. 388-398

Cooper, Richard N. "Toward a Real Global Warming Treaty." *Foreign Affairs*, March/April 1998, pp. 66-79

Felder, Stefan and Rutherford, Thomas F. "Unilateral CO<sub>2</sub> Reductions and Carbon Leakage: The Consequences of International Trade in Oil and Basic Materials." *Journal of Environmental Economics and Management*, 1993, 25, 162-176

Fischer, Carolyn; Kerr, Suzi and Toman, Michael. "Using Emissions Trading to Regulate U.S. Greenhouse Gas Emissions: An Overview of Policy Design and Implementation Issues." *Resources For the Future*, July 1998, 98-40

Hoel, Michael. "Global Environmental Problems: The effects of Unilateral Actions taken by one country," *Journal of Environmental Economics and Management*, 20, 1991, pp.55-70.

Jorgenson, Dale W. and Wilcoxon, Peter J. "Reducing US Carbon Emissions: An Econometric General Equilibrium Assessment." *Resource and Energy Economics*, 1993, 15, pp. 7-25

The Kyoto Protocol and the President's Policies to Address Climate Change: Administration Economic Analysis, July 1998

Lile, Ronald; Powell, Mark and Toman, Michael. "Implementing the Clean Development Mechanism: Lessons From U.S.

Private-Sector Participation in Activities Implemented Jointly." Resources for the Future, November 1998, 99-08

Manne, Alan S. and Rutherford, Thomas F. "International Trade in Oil, Gas and Carbon Emission Rights: An Intertemporal General Equilibrium Model." The Energy Journal, 1994, 15 (1), pp. 57-76

Manne, Alan S. and Richels, R.G. "Global CO<sub>2</sub> emission reductions: the impacts of rising energy costs," the Energy Journal, 12, 87-107, 1991.

Nordhaus, W.D., "To slow or not to slow: the Economics of the Greenhouse effect," The Economic Journal, 101, July 1991, 920-937.

Parry, Ian W. H.; Williams, Robertson C. III and Goulder, Lawrence H. "When Can Carbon Abatement Policies Increase Welfare? The Fundamental Role of Distorted Factor Markets." Journal of Environmental Economics and Management, January 1999, 37 (1), pp. 52-84

Perroni, C. and T.F.Rutherford. "International Trade in Carbon Emission Rights and Basic Materials: General Equilibrium Calculations for 2000," Scandinavian Journal of Economics 1993, 95(3), p257-278.

Pezzey, John. "Analysis of Unilateral CO<sub>2</sub> Control in the European Community and OECD." Energy Journal, 1991, 13 (3), pp. 159-171

Selden, T.M. and D. Song, "Environmental Quality and Development: Is there a Kuznets Curve for Air Pollution Emissions?" Journal of Environmental Economics and Management, 27, (1994), p147-162.

Stavins, Robert N. "Policy Instruments for Climate Change: How Can National Governments Address a Global Problem?" Resources for the Future, January 1997, 97-11

United Nations Conference on Trade and Development, Greenhouse Gas Emissions Trading: Defining the Principles, Modalities, Rules and Guidelines for Verification, Reporting and Accountability, August 1998

United Nations Framework Convention on Climate change, United Nations, 1992

United Nations, Framework Convention on Climate Change, Report of the Conference of the Parties on its Fourth Session, Held at Buenos Aires From 2 to 14 November 1998, Part One: Proceedings, January 1999

United Nations, Framework Convention on Climate Change, Report of the Conference of the Parties on its Fourth Session, Held at Buenos Aires From 2 to 14 November 1998, Part Two: Action Taken By the Conference of the Parties at its Fourth Session, January 1999

Welsch, Heinz. "Incentives for Forty-five Countries to Join Various Forms of Carbon Reduction Agreements." Resource and Energy Economics, 1995, 17, pp. 213-237

Whalley, John and Wigle, Randall. "The International Incidence of Carbon Taxes, " in Global Warming: Economic Policy Responses, edited by R.Dornbusch and J.M. Poterba, MIT Press, Cambridge, 1991a, pp. 233-263.

Whalley, John and Wigle, Randall. "Cutting CO<sub>2</sub> Emissions: The Effects of alternative Policy Approaches." The Energy Journal, 1991b, 12 (1), pp. 109-24

## **9. Incomplete property rights, renewable resources, and trade**



Tropical Forests and Trade Policy: The Case of Indonesia and Brazil, C.A. Primo Braga, WB chapter 11.

"International Trade and Open Access Renewable Resources: The Small Open Economy Case", J. Brander and M. Scott Taylor, Canadian Journal of Economics, Vol. 30, No. 3 (August 1997), 526-552.

Chichilnisky, AER 1994

"International Trade between Consumer and Conservationist Countries", J. Brander and M. S. Taylor, Resource and Energy Economics, Vol. 19, (1997), 267-297.

"Open Access Renewable Resources: Trade and Trade Policy in a Two-Country Model", J. Brander and M. S. Taylor, Journal of International Economics, Vol. 44, No.2, (April 1998), 181-209.

## **10. Pollution and production possibilities**

The Environment as a factor of production: the Economic growth and trade policy linkages, R. Lopez, WB chapter 9.

"The Trade Induced Degradation Hypothesis", B. Copeland and M. Scott Taylor, Resource and Energy Economics, Vol. 19, (May 1997), 321-344.

Economic Growth and Environment, M. Radetzki, Chapter 8.

"Trade, Spatial Separation and the Environment", . B. Copeland and M. Scott Taylor, Journal of International Economics, Vol. 47, No. 1, (February, 1999), 137-168.

Copeland and Taylor, Resource and Energy Economics 1998

Trade, Environment and the Pursuit of Sustainable Development, S. Hudson, WB chapter 4.

The Battle for Sustainable Development, Esty chapter 8.

Arrow, K., B. Bolin, R. Costanza, P. Dasgupta, C. Folke, C.S. Holling, B.O. Jansson, S. Levin, K.G. Maler, C. Perrings, Pimentel. 1995, "Economic Growth, Carrying Capacity, and the Environment," *Science* 268: 520-521, April 28 1995.

## **11. Strategic Trade and Races to the Bottom**

"Strategic environmental policy and international trade", S. Barrett, Journal of Public Economics, Vol. 54, 1994, 325-38.

"A Simple model of Trade, Capital mobility, and the Environment", B. Copeland and M.

S. Taylor, NBER No. 5898, Jan. 1997.

## **12. A summing up. What have we learnt?.**

The purpose of these lectures is to expose graduate students to the very best researchers in the field while introducing the researchers to the department here in Calgary.

Students? Union Vice-President, Academic

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**Notes:**

- Students seeking reappraisal of a piece of graded term work (term paper, essay, etc.) should discuss their work with the Instructor within two weeks of the work being returned to the class.

Safewalk / Campus Security: 220-5333

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