

Pontificia Universidad Católica de Chile
Department of Economics

Environmental Economics
EAE- 395A

Juan-Pablo Montero (jmontero@faceapuc.cl)
March-June 2008

This is a graduate level course in environmental economics of approximately 26 sessions of 1 hr 20 min each. It has as prerequisite a graduate course in microeconomics (e.g., Microeconomics Theory I). The main focus of the course is on the theory of externalities and regulation theory as applied to environmental problems. It will also cover some empirical aspects of environmental regulation and provides an introduction to environmental valuation. The lectures on environmental valuation will be given by Oscar Melo (omelo@uc.cl) from the Agriculture and Resource Economics Department.

Grading

two written examinations (60%); two referee reports (20%); class participation, which may include presentation of some paper (20%).

Texts

The course does not follow any text in particular. There are some books –available in the library– that are referenced a few times

MWG: A. Mas-Colell, M. Whinston and J. Green, *Microeconomic Theory*, Oxford University Press, New York, 1995.

Kolstad: Charles Kolstad, *Environmental Economics*, Oxford University Press, 2000.

B&O: William J. Baumol and Wallace E. Oates, *The Theory of Environmental Policy*, 2nd edition, Cambridge University Press, 1988.

Reading List

You are not expected to read everything that is on this list. However, the readings marked with a "snow flake" should be read in advance of the corresponding class. Note that I may change some of the readings, specially towards the end of the semester. Most article readings are available through WWW.JSTOR.ORG. I will provide copies with Ana María Artigas (artigas@faceapuc.cl) of the ones that are not.

Externalities and Public Goods

(2 sessions)

* Kolstad, ch. 3-7.

* MWG, ch. 11

* B&O, ch 4.

R. Coase (1960), The Problem of Social Cost, *Journal of Law and Economics* 3, 1-44.

Environmental Policy Instruments

(1 session)

* Kolstad, caps. 8 y 9.

* Oates et al. (1989), The Net Benefits of Incentive-based Regulation: A case study of environmental standard Setting, *American Economic Review* 79, 1233-1242.

* Kolstad, Ulen and Johnson (1990), Ex ante regulation vs. ex post liability for harm: Substitutes or complements? *American Economic Review*.

Cropper, M. y W. Oates (1992) "Environmental Economics: A Survey", *Journal of Economic Literature*

Montgomery, D. (1972), Markets in licenses and efficient pollution control programs, *Journal of Economic Theory* 5, 395-418.

Adverse Selection

(6 sessions)

* B&O, ch. 5.

* Kolstad, ch. 10.

* Weitzman, M. (1974), Prices vs. Quantities, *Review of Economic Studies* 41(4), 477-91.

* Roberts, M.J. and M. Spence (1976), Effluent Charges and Licenses Under Uncertainty, *Journal of Public Economics* 5, 1976, 193-208.

* Evan Kwerel (1977), To Tell the Truth: Imperfect Information and Optimal Pollution Control, *Review of Economic Studies* 44 (3), 595-601.

* Wilson, R. (1979), Auctions of Shares, *Quarterly Journal of Economics* 93, 675-89.

* Varian, H. (1994), A solution to the problem of externalities when agents are well-informed, *American Economic Review* 84, 1278-1293.

* S. Baliga and E. Maskin (2002), Mechanism design for the environment, mimeo, Kellogg-Northwestern University.

* Dasgupta, P., P. Hammond and E. Maskin (1980), On imperfect information and optimal pollution control, *Review of Economics Studies* 47, 857-860.

* Montero, J.-P. (2008), A simple auction mechanism for the optimal allocation of the commons, *American Economic Review*, March.

* Spulber, D. (1988), Optimal environmental regulation under asymmetric information, *Journal of Public Economics* 35, 163-181.

Tracy Lewis (1996), Protecting the Environment When Costs and Benefits are Privately Known, *Rand Journal of Economics* 27 (4), 819-847.

Moral Hazard/Incomplete Monitoring

(1½ sessions)

* Holmstrom, B. (1982), Moral hazard in teams, *Bell Journal of Economics* 13, 324-340.

* Segerson, K. (1988), Uncertainty and Incentives for Non Point Pollution Control”, *Journal of Environmental Economics and Management*, 15, 87-98.

* Montero, J.P. (2005), Pollution markets with imperfectly observed emissions, *RAND Journal of Economics* 36, 645-660.

Fullerton, D. and S. West (2002), Can taxes on cars and on gasoline mimic an unavailable tax on emissions, *Journal of Environmental Economics and Management* 43, 135-157.

Incomplete Enforcement

(1 $\frac{1}{2}$ sessions)

* Kolstad, cap. 11.

* Louis Kaplow and Steven Shavell (1994), Optimal law enforcement with self-reporting of behavior, *Journal of Political Economy* 102(3), 583-606.

* Montero, J.P., (2002), Prices versus quantities with incomplete enforcement, *Journal of Public Economics* 85, 435-454.

Livernois, J., and C.J. McKenna (1999), Truth or consequences: Enforcing pollution standards with self-reporting, *Journal of Public Economics* 71, 415-440.

Malik, A. (1990), Markets for Pollution Control when Firms are Non-compliant, *Journal of Environmental Economics and Management* 18, 97-106.

Stranlund, J. and C. Chavez. 2000. Effective Enforcement of a Transferable Emissions Permit System with a Self-Reporting Requirement, *Journal of Regulatory Economics* 18(2), 113-131.

Garvie, D. and A. Keeler, Incomplete Enforcement with Endogenous Regulatory Choice, *Journal of Public Economics* 55, 1994, 141-162.

Market Power

(2 sessions)

* B&O, ch. 6.

* Hahn, R.W. (1984), Market power and transferable property rights, *Quarterly Journal of Economics* 99, 753-65.

* M. Liski and J.-P. Montero (2008), Market power in an exhaustible-resource market: The case of storable pollution permits, mimeo, PUC.

Besanko D. (1987) , “Performance versus Design Standards in the Regulation of Pollution”, *Journal of Public Economics*, 34, 19-44.

Katsoulacos, Y. and A. Xepapadeas, “Environmental Policy under Oligopoly with Endogenous Market Structure,” *Scandinavian Journal of Economics* 97(3), 411-420, 1995.

Technology Innovation

(1 session)

* Milliman, S. and R. Prince (1989), Firm incentives to promote technological change in pollution control, *Journal of Environmental Economics and Management* 17, 247-265.

* Malueg, D. (1989), Emission credit and the incentive to adopt new pollution abatement technology, *Journal of Environmental Economics and Management* 16, 52-57.

* Montero, J.P. (2002), Permits, standards and technology innovation, *Journal of Environmental Economics and Management* 44, 23-44.

Biglaiser, Gary, John K. Horowitz, and John Quiggin (1995), Dynamic Pollution Regulation, *Journal of Regulatory Economics* 8, 33-44.

Laffont, J.-J., and J. Tirole (1996), Pollution Permits and Environmental Innovation, *Journal of Public Economics* 62, 127-40.

Jaffe et al. (2002), Technological Change and the Environment, *Handbook of Environmental Economics*, eds. Karl-Göran Mäler and Jeffrey Vincent. Amsterdam: Elsevier Science.

"Voluntary" Regulation

(1 session)

* Segerson, K. and T. Miceli (1998), Voluntary environmental agreements: Good or bad news for environmental protection?, *Journal of Environmental Economics and Management* 36, 109-130.

* Montero, J.P. (1999), Voluntary Compliance with Market Based Environmental Policy : Evidence from the U.S. Acid Rain Program, *Journal of Political Economy*, 107, 5, 998-1033.

* Kotchen, M. (2006), Green markets and private provision of public goods, *Journal of Political Economy* 114, 816-834.

Empirical Analysis of Regulatory Performance

(2 sessions)

* Joskow, P., R. Schmalensee, and E.M. Bailey (1998), The market for sulfur dioxide emissions, *American Economic Review* 88, 669-685.

* Greenstone, M. (2002), The impacts of environmental regulations on industrial activity: Evidence from the 1970 and 1977 Clean Air Act Amendments and the Census of Manufacturers, *Journal of Political Economy* 110, 1175-1219.

* Montero J.P. , Sánchez J.M. y R. Katz (2002), A Market Based Environmental Policy Experiment in Chile, *Journal of Law and Economics* 45, April.

* Davis, L. (2008), The Effect of Driving Restrictions on Air Quality in Mexico City, *Journal of Political Economy* 116, 38-81.

Fullerton and Kinnaman (1996), Household responses to pricing garbage by the bag, *American Economic Review* 86, 971-984.

O’Ryan, R. (1995), Cost-effective policies to improve urban air quality in Santiago, Chile, *Journal of Environmental Economics and Management* 31, 302-313.

Foster V. and Hahn, R. (1995), Designing More Efficient Markets: lessons from Los Angeles Smog Control, *Journal of Law and Economics* , 38, 19-48.

Schmalensee R., et al, (1998), “ An Interim Evaluation of Sulfur Dioxide Emissions Trading”, *Journal of Economic Perspectives* 12, 53-68.

Stavins, R. (2000), “Experience with Market-Based Environmental Policy Instruments”, *Handbook of Environmental Economics*, eds. Karl-Göran Mäler and Jeffrey Vincent. Amsterdam: Elsevier Science.

Tax Interactions/Double Dividend

(1½ sessions)

* Kolstad, ch. 14

* Bovenberg and Mooij (1994), Environmental levies and distortionary taxation, *American Economic Review* 84, 1085-89.

Bovenberg, L. and L. Goulder (1996), Optimal environmental taxation in the presence of other taxes: general equilibrium analysis, *American Economic Review* 86 (September).

Goulder et al. (1997), Revenue-Raising versus other approaches to environmental protection: The critical significance of preexisting tax distortions, *RAND Journal of Economics* 28, 708-731.

Goulder (1998), Environmental policy making in a second-best setting, *Journal of Applied Economics* 1.

Discounting, Irreversibility, Learning, Uncertainty

(x sessions)

Weitzman, M. (2001), Gamma Discounting, *American Economic Review* 91, 260-271.

Weitzman, M. (1998), Why the far-distant future should be discounted at its lowest possible rate, *Journal of Environmental Economics and Management* 36, 201-208.

Arrow, K. and A. Fischer (1974), Environmental Preservation, Uncertainty and Irreversibility, *Quarterly Journal of Economics* 88, 312-319.

Dixit, A. and R. Pindyck (1994), Investment under Uncertainty, Princeton University Press Chapter 1 (introduction)

Kolstad, C. (1996), Learning and Stock Effects in Environmental Regulation, *Journal of Environmental Economics and Management* 31, 1-18.

Pindyck, R. (2000), Irreversibilities and the timing of environmental policy, *Resource and Energy Economics* 22, 233-259.

Development, International Trade and Interjurisdictional Competition

(x sessions)

Oates and Schwab (1988), Economic competition among jurisdictions: Efficiency enhancing or distortion inducing, *Journal of Public Economics* 35, 333-354.

Brander, J. and M.S. Taylor (1998), The simple economics of Easter Island: A Ricardo-Malthus Model of Renewable Resource Use, *American Economic Review* 88, 119-138.

Partha Dasgupta. (notes from Workshop “Environment and Industrial Economics”, CORE—Louvain, Nov. 2005).

Coopeland and Taylor (2003), Trade, Growth, and the Environment, *Journal of Economic Literature*.

Environmental Valuation

(5 sessions by Oscar Melo; to be completed)

Adamowicz, W., J. Swait, J. Louviere and M. Williams. “Perceptions versus Objective Measures of Environmental Quality in Combined Revealed and Stated Preference Models of Environmental Valuation”. *Journal of Environmental Economics and Management* 32, p.65-84. 1997.

Bockstael, N. E., K. E. McConnell. *Environmental and Resource Valuation with Revealed Preferences: A Theoretical Guide to Empirical Models*. Springer. 2006

Haab, T.C. and K. McConnell. *Valuing Environmental and Natural Resources*, Edward Elgar.

Hellerstein, D. (1991). Using count data models in travel cost analysis with aggregate data, *American Journal of Agricultural Economics*. 73:860-867.

Herriges, J.A y C.L. Kling. *Valuing Recreation and the Environment*. Edward Elgar, 1999

Kling, C. “The gains from combining travel cost and contingent valuation data to value non market goods” *Land Economics* 73, p 428. 1997.

Melo, O. C. Arguello y G. Donoso. “El uso de Preferencias Reveladas y Preferencias Declaradas en La Valoración Económica Ambiental, El Caso Del Parque Nacional La Campana, Chile”. 2007 mimeo.