

Econ 890: Theory of Environmental Policy: Taxes and Permits

Course content and goals: This class will present the theory of using taxes and permits to ameliorate environmental problems. The goal of the class is to enable students to understand the classic and recent literature on this topic and to prepare them to make contributions to this literature.

Course Requirements: Students grades will be determined by: two referee reports (each worth 15 percent), and several presentations (the total number depends on the class enrollment, in total worth 30 percent of the grade), class participation (worth 10 percent) and a final paper (30 percent of the grade).

For the presentations, students will select a paper of interest, either from the readings below or their own choice, and lead the class in an analysis and critical discussion of the paper. The other students are expected to read the paper in advance and participate in the discussion.

For the final paper, students will make a research proposal. The proposal will include the research question and motivation, the method of analysis, and perhaps a rudimentary model. The idea is to identify a topic and begin down the road toward producing a research paper.

Course Schedule: I will lecture for the about the first six to eight weeks of the semester. The remaining time will cycle through student presentations, and perhaps presentations by me.

Course Outline and Readings:

Basic Theory: Taxes

Carlton, D. and Loury, G. 1980. The limitations of Pigovian taxes as a long-run remedy for externalities, *Quarterly Journal of Economics*, 95:559-566.

Barnett, A., (1980), "The Pigouvian Tax Rule Under Monopoly," *American Economic Review*, **70**: 1037-1041.

Spulber, D. 1985. Effluent Regulation and Long-Run Optimality. *J. Environmental Economics and Management* 12: 103-116.

Basic Theory: Permits

Montgomery, D. 1972. Markets in Licenses and Efficient Pollution Control Programs. *Journal of Economic Theory* 5: 395-418.

Hahn, R. (1984), "Market Power and Transferable Property Rights," *Quarterly Journal of Economics*, 753-765.

D. Malueg and A. Yates 2009. Bilateral Oligopoly, Private Information, and Pollution Permit Markets. *Environmental and Resource Economics* 43: 553-572.

Uncertainty and Instrument Choice

Buchanan, J., and G. Tullock. 1975. Polluters' Profits and Political Response: Direct Control versus Taxes. *American Economic Review* 65: 139-147

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

Stavins, R. 1996, "Correlated Uncertainty and the Choice of Pollution Control Instruments," *Journal of Environmental Economics and Management* **30**: 218-232.

Roberts, M. and Spence, M. 1976. Effluent charges and licenses under uncertainty. *Journal of Public Economics* 5: 193-208.

Weitzman, M. 1978. Optimal rewards for economic regulation. *American Economic Review* 68: 683-691.

Yates, A. 2012. On a fundamental advantage of permits over taxes for the control of pollution, *Environmental and Resource Economics* 51: 583-598.

Spatial Issues

Muller, N. and R. Mendelsohn (2009), Efficient pollution regulation: getting the prices right, *American Economic Review*, 99: 1714-1739.

Williams III, R. (2003), Cost effectiveness vs. hotspots: determining the optimal size of emission permit trading zones, University of Texas at Austin, Working Paper.

Krysiak, F., and P. Schweitzer (2010), The optimal size of a permit market, *Journal of Environmental Economics and Management*, 60: 133-143

A. Yates, M. Doyle, J. Rigby, and K. Schnier 2013, *Market Power, Private information, and the optimal scale of pollution permit markets with application to North Carolina's Neuse River*. *Resource and Energy Economics*, 35: 256-276.

Holland, S. and A. Yates (2015), Optimal trading ratios for pollution permit markets, *Journal of Public Economics*, 125: 16-27.

Farrow, R., M. Schultz, P. Celikkol, and G. Van Houtven (2005), Pollution trading in water quality limited areas: use of benefits assessment and cost-effective trading ratios, *Land Economics* 81: 191-205.

Forsund, F. and E. Naevdal (1998), Efficiency gains under exchange-rate emission trading, *Environmental and Resource Economics* 12: 403-423.

Fowlie, M. and N. Muller (2010), Designing markets for pollution when damages vary across sources: evidence from the Nox budget program, Working Paper, Middlebury College.

Incentive Schemes

Kwerel, E. 1977, To tell the truth: Imperfect information and optimal pollution control. *The Review of Economic Studies*, 44:595-601.

Montero, J. 2008, A simple auction mechanism for the optimal allocation of the commons. *American Economic Review*, 98:496-518.

Helm, C. and F. Wirl 2014, The principal-agent model with multilateral externalities: An Application to climate agreements. *Journal of Environmental Economics and Management*, 67:141-154.

Temporal Issues

Newell, R. G. and W. A. Pizer (2003). Regulating stock externalities under uncertainty. *Journal of Environmental Economics and Management* **45**(2): 416-432.

Yates, A.J. and M.B. Cronshaw .(2001) Pollution Permit Markets with Intertemporal Trading and Asymmetric Information. *Journal of Environmental Economics and Management* **42**(1):104-118.

Kling, Catherine and Jonathan Rubin (1997) Bankable Permits for the Control of Environmental Pollution. *Journal of Public Economics* **64**:99-113.

Rubin, Jonathan (1996). A Model of Intertemporal Emission Trading, Banking and Borrowing. *Journal of Environmental Economics and Management* **31**(3): 269-286.

Feng, Hongli & Zhao, Jinhua, 2006. Alternative intertemporal permit trading regimes with stochastic abatement costs. *Resource and Energy Economics* 28: 24-40.

Innovation

Maleug, D. 1989. Emission Trading 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

Requate, T. and Unold, W. 2003. Environmental policy incentives to adopt advanced abatement technology: will the true ranking please stand up? *European Economic Review* 47: 125-146.

Initial Allocations

Bohringer, C. and Lange, A. (2005), On the design of optimal grandfathering schemes for emission allowances. *European Economic Review* 49, 2041-2055

Mackenzie, I. A., N. Hanley, et al. (2008). The Optimal Initial Allocation of Pollution Permits: a Relative Performance Approach. *Environmental and Resource Economics* 39(3): 265-282.

Helm, C. (2003). International Emissions Trading with Endogenous Allowance Choices. *Journal of Public Economics* 87(12): 2737-2747.

MacKenzie, I. and Ohndorf, M. 2012. Cap-and-trade, taxes, and distributional conflict, *Journal of Environmental Economics and Management*, 63: 51-65.

Citizen Participation

Shrestha, R. 1998, Uncertainty and the choice of policy Instruments: a note on Baumol and Oates propositions, *Environmental and Resource Economics* 12, 497-505.

Malueg, D. A. and A. J. Yates 2006. Citizen Participation in Pollution Permit Markets. *Journal of Environmental Economics and Management* 51(2): 205-217.

Smith, S. and A. J. Yates 2003. Optimal Pollution Permit Endowments in Markets with Endogenous Emissions. *Journal of Environmental Economics and Management* 46(3): 425-446.

