

## General Equilibrium Analysis of Environmental Tax Policy (for PhD students, Fall '09)

Finance 580, M&W 11:00-12:20, in BIF 2001  
(A different Fin 580 is for masters students; get the right topic.)  
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This course is about how to build and use analytical general equilibrium models to do research. The primary examples are drawn from environmental tax policy, but the method is equally useful for analysis of non-tax policies and other problems in public economics, trade, development, and other fields. We will replicate and extend existing G.E. models with general production and demand functions that are differentiated to find closed-form solutions for the incidence of the tax, including changes in all factor prices, input quantities, outputs, prices, and welfare of each group. Such models can be used to analyze the effects of tax or environmental policy on pollution, poverty, growth, trade, and welfare. Using few sectors, they focus on general concepts, forming a foundation for more detailed computational models.

This course is intended for advanced students who have taken graduate microeconomics, constrained optimization, and econometrics. It is two credits, or half of a full four-credit course. Instead of meeting twice a week, we will meet only once a week for the whole semester. In the past, my full course surveyed all of environmental econ, with readings from a large variety of topics, replication exercises, a draft and final paper, plus a final exam. To cut the workload in half, this course will not survey all topics. Instead, we focus on analytical approaches that can be used promptly to do new research, replicating models that can be extended to address a new question about air pollution, global warming, water pollution, solid waste, or toxic waste. Rather than cover all those topics, however, we learn the method and let you choose your topic. A draft and paper are required, but no final exam.

Replication exercises will count for 25% of the grade. The draft paper counts for 25%, a presentation counts for 25%, and your final paper counts for 25%. The goal for this paper is not to summarize existing literature, but to perform some new derivation, computer work, or estimation. The point is to learn what constitutes new research: how to motivate the question, model it, solve it, and get results. Past papers always improved substantially with successive drafts. You can give me any number of drafts, and I will promise to read and provide comments on each within a week.

Readings below are illustrative. The first two survey of all environmental economics; do not "read" them, but look to see the list of possible topics (and read only the ones of interest). Others will be studied in more detail. All the ones by me are available on my website at [http://works.bepress.com/don\\_fullerton/](http://works.bepress.com/don_fullerton/)

Baumol, William J. and Wallace E. Oates, The Theory of Environmental Policy, New York: Cambridge University Press, Second Edition, 1988.

Cropper, Maureen L. and Wallace E. Oates, "Environmental Economics: A Survey," Journal of Economic Literature 30 (2), June 1992, 675-740.

Fullerton, Don, and Thomas Kinnaman, "Garbage, Recycling, and Illicit Burning or Dumping," Journal of Environmental Economics and Management 29 (1), July 1995, 78-91.

Weitzman, Martin L., "Prices vs. Quantities," Review of Economic Studies 41 (4), Oct. 1974, 477-91.

Fullerton, Don, Gilbert Metcalf, "Tax Incidence," Handbook of Public Economics, Vol. 4, A. Auerbach and M. Feldstein, eds., Amsterdam: Elsevier, 2002, 1787-872 (first 12 pages only).

Bovenberg, A. Lans and Ruud A. de Mooij, "Environmental Levies and Distortionary Taxation," American Economic Review 84 (4), September 1994, 1085-89.

Fullerton, Don, and Gilbert Metcalf, "Environmental Controls, Scarcity Rents, and Pre-Existing Distortions," Journal of Public Economics 80 (2), May 2001, 249-67.

Fullerton, Don, and Garth Heutel, "The General Equilibrium Incidence of Environmental Taxes," Journal of Public Economics 91 (3-4), April 2007, 571-91.