CLIMATE CHANGE ECONOMICS

Paris School of Economics, Centre d'Economie de la Sorbonne
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November 22, 2012

This is an advanced mini-course in Resource and Environmental Economics with a special focus on the economics of climate change. It covers the static and dynamic public resource problems, and their implications, for example, technology choices in climate change. The course has also methodological objectives; it introduces the main principles of dynamic decision-making relevant for climate-economy modeling. Recent developments in climate-economy modeling will be covered. During the course, a detailed in climate-economy model is developed, and issues such as calibration, discounting, uncertainty, and climate-economy feedbacks will be analyzed. We progress using the chalk-and-talk method.

Classes

Tuesday 14h-17h room S/3
Wednesday 9h-12h room S/3
Wednesday 13h30-16h30 room115

Structure

The structure of the course is the following
*=main reading assignment
I. Public vs. Private Resources
A. Static and dynamic common pool problems
B. Private resources and distortions
Readings: Harstad&Liski (2012)*, Harstad (2012), Hörner&Kamien (2004)

II. Dynamic general-equilibrium externality pricing
A. General equilibrium Pigouvian tax
B. Discounting and uncertainty
C. Growth
Readings: Gerlagh et al. (2012, section 2)*, Weitzman (2007)*, Brock&Mirman (1972)

III. Integrated Assessment Models
A. Carbon cycle
B. Climate-economy interactions
Readings: Golosov et al. (2011)*, Gerlagh et al. (2012)*, Nordhaus&Boyer (2000), Nordhaus (1991,1993)

<u>Readings: advanced general texts</u>

1. Kolstad, C., Environmental Economics, Oxford University Press, 2000.
2. Dasgupta, P., and G. Heal, Economic Theory and Exhaustible Resources, Oxford University Press, 1979 (classic in resource economics).
3. Baumol, W.J., and W.E. Oates, The theory of environmental policy, Cambridge University Press, 2. Edition 1992 (classic in environmental economics)
4. Gollier, C., The economics of risk and time, MIT Press 2001.

5. Nordhaus, W., and J. Boyer, Warming the World: Economic Modeling of Global Warming, MIT Press, Cambridge, Mass., Summer 2000.

Texts on methods

6. Dynamic programming: Stokey, Nancy, Robert Lucas and Edward Prescott (1989). Recursive Methods in Economic Dynamics. Harvard University Press.
7. Optimal Control Theory and Static Maximization in Economics, (with D. Léonard), Cambridge University Press, 1992.

Articles

1. Brock, William A. & Mirman, Leonard J., 1972. "Optimal economic growth and uncertainty: The discounted case," Journal of Economic Theory, Elsevier, vol. 4(3), pages 479-513, June.
2. Bård Harstad and Matti Liski (2012): “Games and Resources”, NBER Working Paper No. 18519, forthcoming in Encyclopedia of Energy, Natural Resource and Environmental Economics.
3. Harstad, Bård (2012): "Climate Contracts: A Game of Emissions, Investments, Negotiations, and Renegotiations," Review of Economic Studies, forthcoming
4. Hörner, J., and M. Kamien. 2004. “ Coase and Hotelling: A Meeting of the Minds”, Journal of Political Economy 112, 718-723.
5. Gerlagh, R., M. Liski, Strategic resource dependence, Journal of Economic Theory, Volume 146, Issue 2, March 2011, Pages 699–727
6. Gerlagh, R., and M., 2012, Liski, Carbon Prices for the Next Thousand Years, CESifo Working Paper Series No. 3855, http://hse-econ.fi/liski/
7. Nordhaus, W., 1973. “The Allocation of Energy Reserves”, Brookings Papers 3, 529-570.
8. Nordhaus, W.D, 1991, To Slow Or Not To Slow: The Economics Of The Greenhouse Effect, The Economic Journal, 101, 920-937.
9. Nordhaus, W. D., 1993, Optimal greenhouse-gas reductions and tax policy in the ”DICE” model, The American Economic Review, 83 (2), pp. 313-317.
10. Nordhaus, W. D., 1993, Rolling the 'DICE': an optimal transition path for controlling greenhouse gases, Resource and Energy Economics, Elsevier, vol. 15(1), pages 27-50, March.
11. Nordhaus, W. D.(2007), A Review of The Stern Review on the Economics of Climate Change, Journal of Economic Literature, 45 (3), 686-702.
12. Mikhail Golosov, John Hassler, Per Krusell, Aleh Tsyvinski, OPTIMAL TAXES ON FOSSIL FUEL IN GENERAL EQUILIBRIUM, Working Paper 17348
13. Tol, R. (2009), The economic effects of climate change, Journal of economic perspectives, 23(2): 29-51.
14. Weitzman, M. (2007). A Review of The Stern Review on the Economics of Climate Change, Journal of Economic Literature, 45 (3), 703-724.