Department of Economics
Delhi School of Economics

M.A. Economics

COURSE 409: APPLIED ENVIRONMENTAL ANALYSIS

Course Description

This course focuses on empirical applications in environmental and natural resource economics. The emphasis is on understanding tools and techniques and applying them in a hands-on manner with environmental and natural issues as the context. It comprises applied optimal control and dynamic optimisation problems using R/Matlab; computable general equilibrium (CGE) models using GAMS; and applied econometrics—cross section, panel data (static, dynamic and non-linear models) and discrete choice (limited dependent variable) models using Stata and Mata.

Topics

1. Non-market valuation techniques: revealed and stated preferences.
2. Environmental valuation at firm level: environment as an input in production; multioutput production technologies; emission generating production technologies.
3. Environmental valuation at the macro level: reduced form and computable general equilibrium models.
4. Environment and technological progress: econometric studies.
5. Dynamic applications: renewable and non-renewable resources; stock pollutants.

Texts/Readings

Mario J. Miranda and Paul L. Fackler (2002) *Applied Computational Economics and* Finance. MIT Press (reprinted by Prentice-Hall India 2010).

Jerome Adda and Russell W. Cooper (2003). *Dynamic Economics: Quantitative Methods and Applications*. MIT Press.

Kenneth L. Judd (1998). *Numerical Methods in Economics*. MIT Press.

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Rolf Färe and Daniel Primont (1995). *Multi-output production and duality: theory and applications*. Kluwer, Boston.

Jeffrey M. Wooldridge (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd edition). MIT Press.

Badi H. Baltagi (2013). *Econometric Analysis of Panel Data* (5th edition). Wiley.

A. Myrick Freeman III, Joseph A. Herriges and Catherine L. Kling (2014). *The Measurement of Environmental and Resource Values: Theory and Methods* (3rd edition). Routledge/RFF Press.

Patricia A. Champ, Kevin J. Boyle and Thomas C. Brown (eds.) (2003). *A Primer on Nonmarket Valuation*. Springer.

Timothy C. Haab, Kenneth E. McConnell (2002). *Valuing Environmental and Natural Resources: The Econometrics of Non-Market Valuation*. Edward Elgar.

Jon M. Conrad (2010). *Resource Economics* (2nd edition). Cambridge University Press.

William Nordhaus (2013). "Integrated Economic and Climate Modeling," in *Handbook of Computable General Equilibrium Modeling*, Vol. 1, Elsevier, pp. 1069-1131.

William Nordhaus and Paul Sztorc (2013). DICE 2013R: Introduction and User's Manual. 2nd
(October 2013)
http://aida.wss.yale.edu/~nordhaus/homepage/documents/DICE_Manual_100413r1.pdf

Sushama Murty, R.R. Russell and S. B. Levkoff (2012). "On modeling pollution-generating technologies," *Journal of Environmental Economics and Management* **64**:117–135.

Subal C. Kumbhakar and Efthymios G. Tsionas (2016). "The good, the bad and the technology: endogeneity in environmental production models," *Journal of Econometrics*, **190(2)**:315-327.

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