Economic Models: Econometric (Ricardian-Based) Models

Description	Econometric models are manipulated with climate change scenarios to predict the economic costs of adaptation. They estimate structural relations between historical climate and agricultural land values under the presumption that such relations reflect a steady-state level of adaptation of regional farming systems to local climate characteristics. These relations are cross-sectional (i.e., units of observation are geographic areas) and the geographic variation in land values is assumed to be partly regulated by differences in the quality of climate inputs. Parameter estimates embed the relative efficiency of current adaptation to a range of climate conditions (cold and warm).
Appropriate Use	Econometric models can capture the full range of economic adaptations that farmers and supporting institutions are likely to use in response to climate change. They are particularly suited to analysis that assumes no change in real crop prices in response to climate change. These tools do not estimate the cost of adaptation.
Scope	All locations; agricultural sector; national or regional.
Key Output	Potential changes in regional or national cropping patterns, land prices, production, revenues, and profits.
Key Input	Historical climate and land values.
Ease of Use	Because no established or "canned" models exist, each application requires development of a unique, region-specific model.
Training Required	Expertise in principles of econometric modeling.
Training Available	No formal training offered.
Computer Requirements	IBM-compatible PC.
Documentation	See Mendelsohn et al., 1994, in References below.
Applications	Econometric models have been used to estimate the economic cost/benefit of climate change for agriculture and forestry in the United States, Brazil, and India.
Contacts for Tools, Documentation, Technical Assistance	Dr. Robert Mendelsohn, Yale University, 360 Prospect St., New Haven, CT 06511 USA; Tel: +1.203.432.5128; Fax: +1.203.387.0766; e-mail: robert.mendelsohn@yale.edu.
Cost	Varies, depending on data needs and resources required for developing a unique model.
References	Mendelsohn, R., W. Nordhaus, and D. Shaw. 1994. The impact of global warming on agriculture: A Ricardian analysis. *American Economic Review* 84(4):753-751. Mendelsohn, R. and J. Neumann (eds.). 1999. *The Impacts of Climate Change on the U.S. Economy*. Cambridge University Press, Cambridge, England. Dinar, A., R. Mendelsohn, R. Evenson, J. Parikh, A. Sanghi, K. Kumar, J. McKinsey, and S. Lonergon. 1998. Measuring the Impact of Climatic Change on Indian Agriculture. World Bank Technical Report No. 409, The World Bank, Washington, DC.