CHANDRA KIRAN B KRISHNAMURTHY

Center for Environmental and Resource Economics
Umeå University, Sweden
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Position

2011- Post-Doctoral Fellow, Center for Environmental and Resource Economics, Umeå University

Teaching and Research Fields

Primary fields: Environmental and Resource Economics, Applied Econometrics and Statistics
Secondary fields: Development Economics, Statistical Modeling of Climate and weather extremes

Education

2005-2011 COLUMBIA UNIVERSITY, SCHOOL OF INTERNATIONAL AND PUBLIC AFFAIRS
PhD Sustainable Development
Thesis Title: "Essays on Climatic Extremes, Agriculture and Natural Resource Management"
Committee: Geoffrey Heal, Wonghee Tim Huh, Bernard Salanié, Upmanu Lall, Wolfram Schlenker

2002-2005 INDIRA GANDHI INSTITUTE OF DEVELOPMENT RESEARCH(IGIDR)
M.Phil (Master of Philosophy), Economics

2001 B.E., Mechanical Engineering, Bangalore University

Teaching Experience

Econometrics for Public Policy, Principles of Economics, Challenges of Sustainable Development, Human Ecology for Sustainable Development, Introduction to International Development (All at Columbia University)

Conferences and Workshops Attended

NBER Summer workshop on Environmental Economics (Summer 2007)

CBMS workshop on Bayesian Nonparametrics, University of California at Santa Cruz, Aug 16-20, 2010

(Invited) Banff International Research Station (BIRS) workshop on "Extremes in Weather and Climate", Aug 23-27, 2010, Banff, Alberta, Canada

Seminars and Presentations

MIT Sloan School of Management (Jan 2011)

CERE, Umeå University (Feb 2011)

National Institute for Advanced Study (NIAS), Bangalore (June 2011)

Research Papers

The Distributional Impacts of Climate Change on Indian Agriculture: A Quantile Regression Approach (Job Market Paper)

Using a 25-year panel on more than 300 districts, and newly available gridded climate datasets, we estimate the impact of climate change on Indian agriculture. The effects of random year-to-year variations in weather are used to estimate the relationship between weather and agricultural yield, separately for the major food crops, for each season. This approach permits delineation of impacts by crop and by growing season, unlike previous work for India. In addition, we use a newly developed quantile regression framework for fixed effects panel data, which allows for differential impacts of weather and climate at different quantiles of yield. We find robust, negative impacts of climate change on wheat yields while impacts on Rice yields are positive at the lowest quantiles and are relatively unchanged at the higher quantiles.

Work in progress

Groundwater Management under Multiple Uncertainty

There is a vast literature on groundwater management when recharge is stochastic and when demand is known. Given the developed country setting of this literature, there is no corresponding focus on stochastic demand, especially when demand is a function of the price of crops. In a setting with high price variability, we illustrate that it is important to account for this source of uncertainty, for two reasons: first, the magnitude of this uncertainty can easily exceed that of natural recharge and second, the implications for risk averse farmers of multiple sources of uncertainty is substantial. In particular, the effect on steady state distribution of groundwater stock of increases in variability are very uncertain. We provide conditions under which increases in uncertainty lead to reduction in optimal withdrawal.

Risk Aversion, Discounting and Management of natural resources

There is a burgeoning literature on elicitation of risk aversion and discount rate parameters for a variety of populations, mostly in the developing nations. There is less understanding of how these influence decision making, especially with long-lived environmental resource. This study is an attempt at understanding the extent to which risk aversion and discounting explain observed choices which lead to more (or less) extraction of resources. The specific context we consider is that of groundwater extraction for growing of rice in Punjab (India). We first elicit farmer risk aversion and discount rates through a survey. Subsequently, we link these to farmer observed behavriour. In particular, we attempt to evaluate if more risk averse farmers extract more groundwater through greater allocation of area to the rice crop. This study also carries out a joint estimation of both risk aversion and discount rates and finds that this substantially reduces the estimated risk aversion coefficients.

Publications

Economics and Operations Research:

(Invited) Economic Impact of Carbon Emission Restrictions: The Case of India (with Jyothi Parikh), *in* Energy Security, Climate Change and Sustainable Development, Mathur et al (editors), Anamaya Publishers, New Delhi, 2007

Concavity and Monotonicity properties in a Groundwater Model (with Tim Huh and Richard Weber), accepted for publication at *Naval Research Logistics*

Non-Economics:

Changing Frequency and Intensity of Rainfall Extremes over India from 1951-2003 (with Upmanu Lall and Hyun-Han Kwon), 2009, *Journal of Climate*, 4737-4746, 22, 18