

ZINNIA MUKHERJEE

UNIVERSITY ADDRESS:

Department of Economics
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CITIZENSHIP: India

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RESEARCH INTERESTS:

Primary interest: Environmental and Natural Resource Economics

Additional interests: International Economics, Public Policy and Applied Microeconomics

EDUCATION:

- PhD Candidate, University of Connecticut, 2004 – Present.
Dissertation Title: “Three Essays on Conservation of Endangered Species”
Expected date of completion: December, 2009

Major Advisor: Kathleen Segerson

Associate Advisors: Thomas Miceli, Xenia Matschke and Stephen L. Ross

Field Course Work:

Industrial Organization, Economics of Organization, Environmental Economics, Natural Resource Economics, International Trade Theory, Applied Public Economics, Nonparametric Econometrics.

- Master of Science (M.Sc.), Economics, University of Calcutta, India, 2001 – 2003.
Specialization: Statistics and Econometrics, Natural Resource and Environmental Economics.
- Bachelor of Science (B.Sc.), Economics, University of Calcutta, India, 1998 – 2001.
Major: Economics
Minors: Mathematics, Political Science.

PROFESSIONAL EXPERIENCE:

Visiting Instructor of Economics (full time), 2009 - present

Department of Economics, Connecticut College, New London, CT.

- Econometrics - Fall 2009 (2 sections).
- Introductory Macroeconomics - Spring 2010 (2 sections).
- Introductory Microeconomics - Spring 2010 (1 section).

Instructor, 2006-2009

Department of Economics, University of Connecticut, Storrs, CT

- Econometrics – Spring 2009, Summer 2009.
- International Trade Theory – Fall 2008.

- Principles of Microeconomics – Summer 2008.
- Public Finance (writing intensive course) – Fall 2007.
- Mathematical Economics (Intensive Session) – Summer 2007, Summer 2009.
- Government and Industry – Summer 2006, Spring 2007.
- Intermediate Microeconomic Theory – Fall 2006, Spring 2006.

Teaching Assistant: Department of Economics, University of Connecticut, Storrs, CT

- Intermediate Microeconomics – Spring 2008.
- Principles of Macroeconomics – Fall 2005.
- Econometrics – Fall 2004, Spring 2005.
- Public Economics – Fall 2004.

NON-ACADEMIC WORK EXPERIENCE:

- Fall 2007 – Research Assistant, Connecticut Center for Economic Analysis.
- Summer 2007 – Research Assistant, Connecticut Center for Economic Analysis.
- Summer 2008 – Research Assistant, UConn Department of Economics and Connecticut Department of Economic and Community Development (Project: State Strategic Economic Plan).

WORKING PAPERS:

- Mukherjee, Zinnia “Controlling Stochastic Externalities with Penalty Threats: The Case of Bycatch” 2009. (*Job Market Paper*)
- Mukherjee, Zinnia “Unilateral Conservation Policies in an Open Economy – The Case of Endangered Species Protection,” 2009.
- Mukherjee, Zinnia “Economic Impact of the TED Regulation – A U.S. Approach to Reduce Stochastic Sea Turtle Bycatch,” 2009.
- Mukherjee, Zinnia “Economic Effects of Marine Hypoxia and Fishing Effort Allocation: The Case of the Long Island Sound,” 2009.

FELLOWSHIP AND AWARDS:

- 2009: Best Doctoral Student Paper at the Jr. Faculty and Doctoral Student Paper Competition by the Northeast Business and Economics Association, for “Economic Impact of the TED Regulation – A U.S. Approach to Reduce Stochastic Sea Turtle Bycatch,” 2009.
- 2009: Multidisciplinary Environmental Research Award for Graduate Students, Center for Environmental Sciences and Engineering, University of Connecticut, March 2009.
- 2008: Doctoral Dissertation Fellowship, Graduate School, University of Connecticut, June 2008.

- 2007: Albert E. Waugh Scholarship, Department of Economics, University of Connecticut, “*to recognize both a high level of academic achievement and promise as a teacher*”.
- 2005: Albert E. Waugh Scholarship, Department of Economics, University of Connecticut.
- 2004 – 2009: Graduate Assistantship, University of Connecticut.
- 2004 – 2008: Pre-doctoral Fellowship, Economics Department, University of Connecticut.

PRESENTATIONS:

- 36th Annual Conference of the Northeast Business & Economics Association, Worcester, MA – November 6, 2009 – “Economic Impact of the TED Regulation – A U.S. Approach to Reduce Stochastic Sea Turtle Bycatch”.
- Camp Resources Workshop XVI, North Carolina State University, Asheville, NC – August 2009 – “Voluntary Approaches to Conserving Endangered Species – The Case of Stochastic Sea Turtle Bycatch”.
- Economics Department, University of Connecticut – Brownbag Seminar Series, Fall 2008 – “Voluntary Approaches to Conserving Endangered Species – The Case of Stochastic Sea Turtle Bycatch”.
- Economics Department, University of Connecticut – Brownbag Seminar Series, Spring 2008 – “Economic Impact of the TED Regulation – A U.S. Approach to Reduce Stochastic Sea Turtle Bycatch”.
- Economics Department, University of Connecticut – Brownbag Seminar Series, Spring 2007 – “Voluntary Threat Mechanisms to Reduce Sea Turtle Bycatch in the Gulf”.

PROFESSIONAL MEMBERSHIP:

American Economic Association (AEA)
 Association of Environmental and Resource Economists (AERE)
 Eastern Economic Association (EEA)

PROFESSIONAL SERVICE:

- 2007 – 2008: President, Association of Graduate Economics Students (AGES), Department of Economics, University of Connecticut.
- 2006 – 2007: Faculty Liaison Officer, AGES, Department of Economics, University of Connecticut.
- Spring 2006: Graduate Student Senator, Department of Economics, University of Connecticut.

REFERENCES:

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RESEARCH ABSTRACTS

Zinnia Mukherjee
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“Controlling Stochastic Externalities with Penalty Threats: The Case of Bycatch” (*Dissertation Chapter and Job Market Paper*)

Previous literature has shown that when there is a deterministic relation between abatement choices and outcome, penalty threats can be designed to induce polluting firms to undertake efficient abatement measures voluntarily. We develop a simple game theoretic model to investigate whether a similar policy can be designed and applied to reduce stochastic bycatch. The policy would induce fishers to undertake efficient avoidance measures voluntarily to reduce interactions between fishing vessels and bycatch species. Our findings indicate that both when the performance standard (a threshold of allowable bycatch mortalities per fishing season) is set at the firm level and the industry level, the penalty threat is sufficient in inducing risk neutral agents to undertake the first best level of avoidance activity voluntarily. The optimal threshold, which determines the marginal benefit associated with an efficient choice in the voluntary period, depends on the degree of variability in the actual bycatch level and the discount factor. The net impact of environmental uncertainty on the optimal threshold is ambiguous and depends on the underlying distribution of bycatch mortalities, given the efficient level of avoidance measures. These findings identify and emphasize the information requirements of environmental policies involving penalty threats, which determine their effectiveness in inducing the first best choices voluntarily. These requirements do not arise in the absence of stochasticity. While in principle this policy can be designed to induce the efficient behavior, successful implementation of the policy requires a strong monitoring system to evaluate firm performance. Also, even when the environmental target is met voluntarily by the group, free-riding is not eliminated in equilibrium.

“Economic Impact of the TED Regulation - A U.S. Approach to Reduce Stochastic Sea Turtle Bycatch” (*Dissertation Chapter*)

In the United States, sea turtle bycatch by commercial shrimp trawlers has been a primary threat to the marine turtle population for several decades. In 1987 the U.S. government passed a federal bycatch regulation, which requires all shrimpers to use ‘turtle excluder devices’ (TEDs) while fishing in U.S. waters. Since 2003, the regulation has been made more stringent to make it more effective in protecting all species of sea turtles. The objective of this paper is two-fold. First, we develop a theoretical model of the fishing industry to analyze the effects of having a more stringent TED regulation on industry supply and profit. The model incorporates three key aspects that are important in identifying the effects of a more stringent regulation on the shrimp industry: (i) fishers have other alternatives apart from using TEDs to avoid bycatch, (ii) monitoring of fishing vessels is imperfect, and (iii) the industry competes with foreign firms to meet domestic market demand. The theoretical model shows that the net effect of a more stringent TED regulation on industry supply is ambiguous. However, it unambiguously leads to lower industry profit. Second, we use an instrumental variable approach to estimate the effect of this regulation on the aggregate domestic shrimp supply. The GMM estimation results indicate that the regulation has resulted in a 13% harvest loss during the period 1989 through 2006. However, when the indirect effect of TEDs on aggregate supply (reflected through fishers’ choice of avoidance activities) is considered, the margin of loss is smaller and is approximately equal to 11%.

“Unilateral Conservation Policies in an Open Economy - The Case of Endangered Species Protection” (*Dissertation Chapter*)

Sarmiento (2006) and Rausser et al., (2008) show that the unilaterally imposed policy of Hawaiian long-line swordfish fishery closure over the period 2001 - 2004, aimed to reduce sea turtle bycatch, resulted in an additional sea turtle interactions in other parts of the world. We develop a simple theoretical model of two countries, to identify the factors that determine the magnitude of the trade induced leakage of environmental damage that stems from unilaterally imposed bycatch reduction policies. Our results indicate that the net change in global bycatch level is sensitive to a wide range of both supply and demand side factors, such as relative difference in spatial and temporal distribution of both the target and bycatch species in the two countries, difference in fishing technology adopted by the two countries, home country's elasticity of demand for the target species, difference in output price in home and foreign markets, and the two countries' respective trade policies for the target species. The worldwide bycatch level is higher when the policy imposing country imports bycatch related products from countries where fishers harvest in an open access resource management regime compared to management systems with limited access for fishers. When firms compete in an imperfectly competitive market environment, the effect of an unilateral bycatch policy on equilibrium fishing effort (and global bycatch) chosen by firms in either countries is ambiguous. A key contribution of this paper is that it provides an analytical framework for empirical research that aim to measure the trade induced leakage of environmental damage that stems from unilaterally imposed conservation policies.

“Economic Effects of Marine Hypoxia and Fishing Effort Allocation: The Case of the Long Island Sound,” (*Project funded by UConn CESE Multidisciplinary Research Award for Graduate Students*) - work in preliminary stages

The Long Island Sound system is affected by marine hypoxia, a seasonal phenomenon when the dissolved oxygen level in some parts of the sound system falls to a critically low level. Among other factors, nutrient waste disposal from Connecticut, New York State (NYS) and New York City (NYC) is a major contributory factor in the development of the hypoxic zone. In this paper, we develop a bio-economic discrete choice model to analyze how fishers decide to allocate their fishing effort among various fish species, where some species are more sensitive than others to hypoxic conditions. Also, we use a multivariate logistic model to estimate the impact of nutrient discharges on the level of dissolved oxygen at different locations in the sound at different times in the year. We account for the fact that the dissolved oxygen level at any particular point in the sound depends on both the volume of nutrient loadings from polluting sources and the distance of the polluting sources from any particular point in the sound. The changes in the spatial patterns of hypoxia over time have some implications on the stock (and hence, harvest) of various commercially valuable species that survive in different locations in the sound.