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DOCTORAL STUDIES	Massachusetts Institute of Technology (MIT) PhD, Economics, Expected completion June 2017 DISSERTATION: "Theory and Empirics of Procurement Mechanisms" DISSERTATION COMMITTEE AND REFERENCES

Professor Glenn Ellison
MIT Department of Economics
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Professor Nikhil Agarwal
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Professor Michael Whinston
MIT Sloan School of Management
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PRIOR EDUCATION	Duke University B.S. in Economics and Physics, *Summa Cum Laude*, High Honors	2012

CITIZENSHIP	USA	**GENDER:**	Male

LANGUAGES	English, Bengali

FIELDS	Primary Field: Industrial Organization	
	Secondary Fields: Theory, Economics of Innovation	
TEACHING EXPERIENCE	14.271 Industrial Organization I (MIT, Graduate)	2015
	Teaching Assistant to Professor Glenn Ellison	
	Econ 201 Honors Thesis in Econometrics (Duke, Undergraduate)	2012
	Teaching Assistant to Professor George Tauchen	
	Econ 105 Intermediate Microeconomics (Duke, Undergraduate)	2009-11
	Teaching Assistant to Professor Curtis Taylor	
RELEVANT POSITIONS	Research Assistant to Professors Nikhil Agarwal and Paulo Somaini	2014
	Research Assistant to Professor Glenn Ellison	2013
FELLOWSHIPS, HONORS, AND AWARDS	*Review of Economic Studies* Tour	2017
	NSF Graduate Research Fellowship	2014-17
	George P. and Obie B. Shultz Grant	2015-16
	John Krob Castle 1963 Fellowship	2014-15
	MIT Presidential Fellowship	2012-13
	Duke University	
	Faculty Scholar	2012
	Daphne Y. Chang Award for Best Thesis in Physics	2012
	Julia Dale Award for Mathematics	2012
	Chief Student Marshal	2011
	Barry M. Goldwater Scholarship	2011
	Phi Beta Kappa	2010
	Angier B. Duke Memorial Scholarship	2008-12

PROFESSIONAL ACTIVITIES

Referee: *Journal of Industrial Economics*, *Journal of Economic Theory*

Invited Presentations (including scheduled)

2017: Northwestern (Economics), Indiana (Kelley), Princeton (Economics), Duke (Fuqua), Yale (Economics), Columbia (Economics and GSB), IIOC Conference (Boston), UMass Amherst (Resource Economics), *Review of Economic Studies* Tour (Bonn, Bologna, Southampton), UCLA (Economics)

2016: UC Berkeley (Haas)

PUBLICATIONS

"Regulating Bidder Participation in Auctions," *RAND Journal of Economics*, **45(4), 2014** (With James W. Roberts and Andrew Sweeting)

In the standard model of procurement auctions with endogenous and free entry, too many or too few suppliers may enter because their entry decisions are not coordinated. We show how an alternative "entry rights auction" mechanism, where an initial auction is used to allocate rights to participate in a second auction for the contract, may improve efficiency depending on how much information suppliers have about their costs when they decide whether to enter. In an empirical application, using data from highway procurement auctions in Oklahoma and Texas, we show that entry is moderately selective and predict that the entry rights auction mechanism would both increase efficiency and reduce procurement costs significantly.

"Selective Entry and Auction Design," *International Journal of Industrial Organization,* **43, 2015** (With Andrew Sweeting)
This article examines how different auction designs perform when entry is endogenous and selective, by which we mean that bidders with higher values are more likely to enter. In a model where potential bidders are symmetric, we show that three alternative designs can significantly outperform the "standard auction with simultaneous and free entry" when entry is selective. When bidders are asymmetric, we show that the level of bid preference that maximizes a seller's revenues is significantly affected by the degree of selection. We also describe recent empirical and econometric work that shows that the degree of selection can be identified and estimated using standard types of auction data.

RESEARCH PAPERS

"An Empirical Model of R&D Procurement Contests: An Analysis of the DOD SBIR Program" (Job Market Paper)
This paper develops a new empirical model of a multistage R&D contest for a procurement contract and uses it to study the design of the Small Business Innovation Research program in the Department of Defense. Firms' incentives to innovate depend on the cost of research, the intensity of competition, and the rewards from securing the procurement contract. The cost of research, the distributions of project values and delivery costs, and the fraction of the surplus shared by the procurer are nonparametrically identified and can be tractably estimated using data on the procurement contract amount and the firms' R&D expenditures. Estimates suggest that there is fairly low variation in the values of projects developed by different firms and that most of the variation in the procurement contract is attributable to differences in delivery costs, which are drawn later in the research process. Further, the DOD currently provides high-powered incentives, sharing approximately three-quarters of the surplus from the innovation with the supplier. Increasing the number of competitors in later stages of the contest, lowering the share of the surplus firms receive in procurement, and mandating that firms share intellectual property would all increase total social surplus. However, since the DOD pays for research expenditures but only partially internalizes the gains from improved innovations, many socially beneficial design changes would actually reduce its profits from the contest. Together, these results suggest that at the estimated parameters, the DOD may have an incentive to skew the design of the contest significantly away from the socially optimal one.

"Imperfect Public Monitoring with a Fear of Signal Distortion," Revise and Resubmit, *Journal of Economic Theory* (With Lucas Manuelli and Ludwig Straub)
This paper proposes a model of signal distortion in a two-player game with imperfect public monitoring. We construct a tractable theoretical framework where each player has the opportunity to distort the true public signal and each player is uncertain about the distortion technologies available to the other player. We show that when players evaluate strategies according to their worst-case guarantees—i.e., are ambiguity-averse over certain distributions in the environment—perceived continuation payoffs endogenously lie on a positively sloped line. We then provide examples showing that, counterintuitively,

identifying deviators can be harmful in enforcing a strategy profile and that signal distortion can sustain cooperation when it is impossible in standard settings. We show that the main result and examples are robust to a number of natural modifications to our setting. Finally, we finally extend our model to a repeated game where our concept is a natural generalization of strongly symmetric equilibria. In this setting, we prove an anti-folk theorem, showing that payoffs under our equilibrium concept are under general conditions bounded away from efficiency.

"Rank-Based Elicitation Schemes for Relative Likelihoods of Events" (With Benjamin N. Roth)
This paper studies whether rank-based scoring rules, in which agents are asked to order events by their likelihoods, can elicit truthful rankings. Such mechanisms are commonly used in the field since they only require agents to compare probabilities of similar events to each other rather than to numerical probabilities, which may be difficult for agents with low numeracy. We first show that commonly-used rank-based scoring rules need not elicit truthful rankings from agents who are not risk-neutral. We then provide a variation of a rank-based scoring rule that incentivizes agents to rank arbitrary sets of events truthfully, regardless of risk preferences. This scheme can elicit approximate *numerical* probabilities as well. We provide a simple implementation of this scheme using a series of questions that ask agents about the relative likelihoods of pairs of events. Finally, we conduct numerical experiments that show that this scheme elicits probabilities to high precision using relatively few questions.

RESEARCH IN PROGRESS **"An Empirical Model of Learning and Deterrence in Dynamic Research Contests"**