Suraj Malladi

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EDUCATION

University of Chicago | Chicago, IL
B.S. Mathematics (Honors), B.A. Economics | Graduated: June 2014

Stanford Graduate School of Business | Chicago, IL
PhD Candidate in Economic Policy and Analysis | Expected Graduation: September 2020

AWARDS

Becker Friedman Institute Award for Academic Achievement in Microeconomics
Becker Friedman Institute at the University of Chicago | May 2014

George P. Shultz Scholar Award
Stanford Institute for Economics Policy Research | Dec 2017

RESEARCH

"*Judged in Hindsight: Regulatory Incentives in Approving Innovations*" (working paper).

Abstract: I study how limited information and ex-post evaluation by third parties affect how regulators design approval rules for innovations. I consider a model in which the regulator designs approval rules to minimize criticism for approval errors and for imposing a costly approval process on innovating firms. I consider how a principal (e.g., a politician or legislative body) can optimally delegate authority to the regulator to influence the design of approval rules downstream. The effectiveness and ease of delegation hinge on how the regulator orders the importance of approval errors and costs relative to the principal. When the regulator faces more pressure to reduce errors, the principal suffers no agency costs under the optimal delegation rule. Moreover, this rule takes a simple form and can be implemented without detailed knowledge of the firm's preferences. When the regulator instead faces more pressure to reduce approval costs, the principal cannot avoid agency frictions in general, non-interval delegation rules may be optimal, and the form of these rules are sensitive to the details of regulators' preferences.

"*Just a Few Seeds More: Value of Network Information for Diffusion*," with Mohammad Akbarpour and Amin Saberi (R&R at *American Economic Review*).

Abstract: When communicating information to individuals is costly, policymakers try to identify the best 'seeds' to prompt a cascade of information within a social network. Here we show that, for a frequently studied diffusion process, randomly seeding $s + x$ individuals can prompt a larger cascade than optimally seeding the best s individuals, for a small x. Given these findings, practitioners interested in communicating a message to a large number of people may wish to compare the cost of identifying optimal seeds with the cost of informing a few additional people.

"*Learning through the Grapevine: The Impact of Message Mutation, Transmission Failure, and Deliberate Bias*," with Matthew Jackson and David McAdams (working paper).

Abstract: We examine how well agents learn when information reaches them through chains of noisy person-to-person relay. If noise only takes the form of random mutations and transmission failures, then there is a sharp threshold such that a receiver learns fully if she has access to more chains than the threshold and nothing with fewer. Moreover, simple information processing rules can perform as well as fully Bayesian learning. However, if some agents deliberately distort message content, learning may be impossible with any number of chains, even if the fraction of such biased individuals is small. This can explain why people become stuck at potentially different priors, despite a significant body of primary evidence pointing to one answer (e.g., disagreement on the effects of vaccination or the reality of global warming). We show that a planner can recover partial learning without having to inspect or fact-check messages by limiting the number of contacts to whom agents can pass along a given message, a policy some messaging platforms are starting to use.

"*Persuading Skeptical Farmers to try Innovations*" (in progress).

Abstract: Incentivizing agents to adopt new farming technologies in developing countries has proven challenging, as farmers face ambiguity over the efficacy of these technologies. In such settings, subsidies fail to encourage adoption when actual adoption is unobservable. Insurance contracts fail when outputs can be hidden. We consider a principal-agent setup with multiple identical agents, where the principal would like to incentivize agents to adopt a new technology over a known "safe" technology. Agents are ambiguity averse and may collude against the principal by hiding their outputs. We prove existence and completely characterize optimal (i.e., budget-minimizing) contracts in this environment. Optimal contracts take the form of simple fixed prize contests over output. This contest is optimal whether the principal knows the new technology is good or simply wants to encourage experimentation. It is also optimal whether agents believe their joint outcomes of using the new technology are perfectly correlated, independent, or follow any distribution with the same marginal distribution for each agent. In this sense, the contract is robust to the planner's knowledge and agent's beliefs, making it a more versatile market design proposal.

"*Fair Auctions with Asymmetrically Informed Bidders*," with Aranyak Mehta and Uri Nadav (in progress).

Abstract: Agents often arrive to auctions with different levels of information about their own value for the object sold. In such settings, it may be optimal to charge different reservation prices to discriminate between bidders. But it is often infeasible to expressly treat different bidders in the same auction differently, particularly in online settings. We characterize optimal nondiscriminatory mechanisms in the presence of informational asymmetries and compare them to the revenue of unconstrained optimal auctions. We find the revenue of the unconstrained optimal auction never exceeds between twice to four-thirds of the optimal nondiscriminatory auction's revenue.

"*To Seed or to Learn?*" (in progress).

Abstract: Suppose the costs of seeding are comparable to costs of acquiring network information. A policymaker deciding which policy to undertake faces a chicken-and-egg problem: to know whether or not it is valuable to know something about the network, the she needs to know something about the network. I show how a policymaker who only knows only the costs of seeding and costs of network information but nothing about the network or product virality can choose between careful targeting or random outreach and attain an expected payoff close to the ex-post optimal strategy.

CONFERENCES (AS PRESENTOR)

Judged in Hindsight: Regulatory Incentives in Approving Innovations
- ACM Conference on Economics and Computation (EC, 2020)
- Society for Institutional & Organizational Economics (SIOE, 2020)

Just a Few Seeds More: Value of Network Information for Diffusion
- ACM Conference on Economics and Computation (EC, 2018)
- 2018 Network Science in Economics Conference
- Theoretical Research in Development Economics (ThReD, 2019)
- 2019 NSF/NBER/CEME Mathematical Economics conference

Learning through the Grapevine: The Impact of Message Mutation, Transmission Failure, and Deliberate Bias
- ACM Conference on Economics and Computation (EC, 2020)
- 2019 Network Science in Economics Conference
- 30th International Conference on Game Theory at Stony Brook (2019)
- INFORMS (2019)

Fair Auctions with Asymmetrically Informed Bidders
- University of Chile (invitation to Seminar in Industrial Engineering, 2019)
- Google Research Conference 2018

ACTIVITIES & PROFESSIONAL EMPLOYMENT

Google | Mountain View, CA
Quantitative Analyst Intern | June – September 2018
- Proposed a novel fairness criterion in auctions and characterized optimal auctions in the presence of informational asymmetries and the fairness constraint
- Showed optimal fair auction had a simple implementation and robust revenue improvement properties
- Proposed empirical tests to measure the size of common value components in search ad auctions

AQR (Hedge Fund) | Greenwich, CT
Research Analyst on Commodities Team | August 2014-2015
- Identified and tested potential signals of commodity futures prices
- Implemented trading strategies for European and American crude oil contracts using oil inventory data

AQR (Hedge Fund) | Greenwich, CT
Research Analyst Intern | June – August 2013
- Tested improvements to existing volatility forecast models

Becker Friedman Institute: Price Theory Summer Camp | Chicago, IL
Participant | July 2017

REFEREE

Ad-Hoc Referee for Games and Economic Behavior (2020)
Ad-Hoc Referee for Quarterly Journal of Economics (2020)
Ad-Hoc Referee for Southern Economics Journal (2020)
Ad-Hoc Referee for Operations Research (2018)
Ad-Hoc Referee for Management Science (2018)
Ad-Hoc Referee for American Economic Journal: Microeconomics (2018)