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Education

Ph.D., Economics, Pennsylvania State University, USA, 2019 (expected).

M.A., Economics, Pennsylvania State University, USA, 2015.

M.A., Economics, New Economic School, Russia, 2013.

B.A., Business administration, Higher School of Economics, Russia, 2011.

Research Fields of Interest

Mechanism design, Contract theory, Information design, Repeated games.

Working Papers

"On Dynamic Pricing"(Job Market Paper) *with Rohit Lamba.*

Abstract: This paper studies a canonical model of dynamic price discrimination- when firms can endogenously discriminate amongst consumers based on the timing of information arrival and/or the timing of purchase. A seller and buyer trade repeatedly. Buyer's valuation for the trade is private information and it evolves over time according to a renewal Markov process. The seller offers a dynamic pricing contract which options a sequence of forwards. As a first step, we show that this relatively simple dynamic pricing contract achieves the optimum in the two period repeated sales model. We then show that this contract is (a) the optimum when a single object is sold at a fixed time and (b) the optimum under strong monotonicity in the repeated sales model. The gap between the full optimum and our mechanism of simple dynamic pricing instruments is explained through buybacks. Moreover, the general optimal contract is shown to be backloaded and a theoretical bound is provided for the fraction of optimal revenue that can be extracted by the seller from using our mechanism: it achieves more than 70% of the total profit uniformly across distributions, and more than 90% for standard ones such as the power distribution. The construction of the mechanism and bounds is then extended to multiple players to study repeated auctions. At every step of the analysis a mapping is established between the pricing model (indirect mechanisms) and the dynamic mechanism design toolkit (direct mechanisms). In this process, novel tools are developed to study dynamic models of mechanism design when global incentive constraints bind.

"A Theory of Dynamic Contracting with Financial Constraints" *with Rohit Lamba.*

Abstract: We study a dynamic principal-agent model where the agent has access to a persistent private technology but is strapped for cash. Financial constraints are generated by the periodic interaction between incentives (private information) and a strong notion of feasibility (being strapped for cash). This interaction produces dynamic distortions that are a sum of two effects: backloading of incentives and illiquidity. Bad technology shocks increase distortions and monotonically push the optimal contract further

away from efficiency. An endogenous number of good shocks is required for the contract to become liquid, and then eventually efficient. Efficiency is an absorbing state that is reached almost surely. Persistence of private information increases the variance of total economic surplus generated by the model, and decreases the rate at which surplus converges to its efficient value. The key predictions continue to hold in the continuous time setting. A simple economic implementation of the optimal contract is also provided.

"Of Restarts and Shutdowns: Dynamic Contracts with Unequal Discounting" *with Rohit Lamba.*

Abstract: A large supplier (principal) contracts with a small firm (agent) to repeatedly provide working capital in return for payments. The total factor productivity of the agent is private and follows a Markov process. Moreover, the agent is less patient than the principal. We solve for the optimal contract in this environment. Distortions are pervasive and efficiency unattainable. The optimal contract is characterized by two key properties: restart and shutdown, which capture various aspects of contracts offered in the marketplace. The optimal distortions are completely pinned down by the number of low TFP shocks since the last high shock. Once a high shock arrives, the contract loses memory and repeats the same cycle, we call this endogenous resetting feature restart. If ex ante agency frictions are high, the principal commits to not serving the low type, we call this shutdown. The principal prefers a patient agent if the interim agency friction, as measured by the persistence of the private information is large, and she prefers an impatient agent if it is small. Finally, when global incentive constraints bind, we (i) provide the complete recursive solution, and (ii) characterize a simpler incentive compatible contract that is approximately optimal.

Work in Progress

"Competition in Persuasion with Verifiable Information" *with Ce Liu.*

"Optimal Dynamic Allocation with Costly Verification" *with Rohit Lamba and Yunan Lee.*

"Firm Dynamics with Inefficient Intermediation" *with Rohit Lamba.*

Employment

Research Assistant for Prof. Syed Nageeb Ali. *Spring 2016*

Graduate Teaching Assistant

Game Theory, for Prof. Kalyan Chatterjee. *Spring 2017*

Microeconomics, for Prof. Vijay Krishna. *Fall 2017*

Game Theory, for Prof. Syed Nageeb Ali & Rohit Lamba. *Fall 2016*

Macroeconomics, for Prof. Ruilin Zhou & Shouyong Shi. *Fall 2014*

Undegraduate Teaching Assistant

Advanced Game Theory, for Prof. Kalyan Chatterjee. *Spring 2015*

Advanced Game Theory, for Prof. Joris Pinkse. *Fall 2015*

Introduction to Microeconomics, for Prof. Dave Brown. *Fall 2013-Spring 2014*

Conferences

NSF/NBER/CEME Mathematical Economics Conference

November 2018

2018 China Meeting of the Econometric Society

June 2018

Summer School of Econometric Society in Seoul at Hanyang University

August 2017

Cornell/Penn State Macroeconomics Conference

April 2018

Work in Progress

"Competition in Persuasion with Verifiable Information" *with Ce Liu.*

"Optimal Dynamic Allocation with Costly Verification" *with Rohit Lambda and Yunan Lee.*

"Firm Dynamics with Inefficient Intermediation" *with Rohit Lamba.*

Computer Skills & Languages

Matlab, R, Python, Julia, SQL, Stata

Languages

English (fluent), Russian (native)

References

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