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Fields of Concentration:

Game Theory
Microeconomic Theory

Desired Teaching:

Microeconomics
Game Theory

Comprehensive Examinations Completed:

2013 (Oral): Microeconomic Theory, Finance
2012 (Written): Microeconomics, Macroeconomics

Dissertation Title: *Essays on Dynamic Games*

Committee:

Professor Johannes Hörner
Professor Larry Samuelson
Professor Eduardo Faingold

Expected Completion Date: May 2017

Degrees:

Ph.D., Economics, Yale University, 2017 (expected)
M.Phil., Economics, Yale University, 2014
M.A., Economics, Yale University, 2013
M.A., Economics (*cum laude*), Collegio Carlo Alberto and Università di Torino, 2011
B.A., Economics and Business (*cum laude*), Università di Torino, 2008

Fellowships, Honors and Awards:

University Dissertation Fellowship, Yale University, 2016
Carl Avid Anderson Prize Fellowship in Economics, Yale University, 2014
Cowles Foundation Fellowship, Yale University, 2011-2015
Yale University Doctoral Fellowship, 2011-2016
Allievi Scholarship for honors students, Collegio Carlo, 2009-2011
Optime Prize for outstanding graduates of Università di Torino, Unione Industriale, 2009

Teaching Experience

Teaching Fellow, Yale University
Game Theory (online course), Prof. Zvika Neeman, Summer 2015 and Summer 2014
Mathematical Economics: Game Theory, Prof. Zvika Neeman, Spring 2014
Intermediate Microeconomics, Prof. Larry Samuelson, Fall 2013
Residential College Math and Science Tutor, Yale University, 2014-2015

Working Papers

“Queueing to Learn,” November 2016, *Job Market Paper*
“Dynamic Communication with Biased Senders,” with Alex Smolin, October 2016, revise and resubmit, *Games and Economic Behavior*
“Learning and Payoff Externalities in an Investment Game,” October 2015, revise and resubmit, *Games and Economic Behavior*

Work in Progress:

“Reputation in asymmetric partnerships”

Conference Presentations:

GAMES 2016, the 5th World Congress of the Game Theory Society, Maastricht, July 2016
The 27th International Conference on Game Theory, Stony Brook, July 2016
North American Summer Meeting of the Econometric Society, Philadelphia, June 2016
The 26th International Conference on Game Theory, Stony Brook, July 2015

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References:

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Dissertation Abstract

My dissertation analyzes the strategic implications of private learning in dynamic settings.

Queueing to Learn (Job Market Paper)

Queues and waiting lists are common tools for allocating scarce resources when monetary payments are precluded. Examples include scheduling access to shared research facilities or assigning tutors to students. In these examples, agents appraise their valuation only when allocated the good: researchers discover new results that foster additional experimentation when they use the facility; a student assesses his need for further help after meeting the tutor. How does learning affect the efficiency of different queueing disciplines?

In my model, a continuum of forward-looking agents compete for a scarce resource. Over time, agents decide whether and when to queue to be served. Valuations fluctuate over time, independently across agents; each agent faces an experimentation problem as he learns his prevailing valuation when served. The congestion generated by scarcity has two effects. First, agents undergo costly queueing to be allocated the good. Second, with imperfectly persistent valuations, congestion hinders agents' ability to benefit from what they have learnt at the last consumption experience. At the same time, the length of the queue is determined endogenously by the agents' strategic behavior.

I analyze the problem of a designer who seeks to maximize efficiency by offering a queueing discipline (or a menu thereof). First, I show that in the absence of transfers well-known queueing disciplines arise as optimal. When screening improves upon a pooling discipline, the designer optimally offers a menu of two queues: agents can choose between joining a first-come-first-served queue, or one where they are served in random order. Second, I demonstrate that strategic renegeing enables the designer to implement the optimal menu with a single queueing discipline.

The auxiliary problem in which the designer is constrained to disciplines that deter renegeing uncovers the main economic forces at play. A trade-off between thickness and congestion arises endogenously. On the one hand, the service-in-random-order discipline generates a thick pool of returning customers. On the other hand, the first-come-first-served discipline minimizes queue length. While a first-come-first-served discipline is optimal when the waiting cost is large, it has two disadvantages. First, agents have incentives to join the queue early on, if they anticipate that their valuation will be higher by the time they are served, and this generates congestion. Second, it lowers the value of the information acquired at each consumption experience: because valuations are mean-reverting, this information is most valuable in the short run, but when agents are served in order of arrival, it always takes time to reach the head of the line. Service in random order alleviates these problems while preventing strategic renegeing: it is optimal when the welfare gains from serving high valuation agents are large.

Plainly, when offered a screening menu, agents join the first-come-first-served queue to ensure future service while growing optimistic, and they choose to be served in random order after a positive past consumption experience. In this case, in designing a single queue, deterring renegeing is suboptimal: the opportunity of renegeing and rejoining allows agents to "engineer" personalized waiting time distributions. It guarantees enough flexibility to (virtually) implement the optimal menu with a single queueing discipline.

Learning and Payoff Externalities in an Investment Game

The existing literature has separately studied how either payoff externalities, or information externalities generate strategic incentives to delay risky investments. In this paper, I study the interaction between these two externalities, and their implication for the learning dynamic. In an irreversible investment game, each player learns about the quality of a common value project by observing a private signal and the action of the opponent. There is a second-mover advantage: as in the case of the launch of a new technology, the follower's investment is likely to generate higher profits. I characterize the set of symmetric equilibrium payoffs allowing for different tie-breaking rules. In the unique non-atomic equilibrium, players' strategies coincide with the equilibrium play in a stochastic war of attrition. In contrast to existing models, payoff externalities enhance the learning dynamics: learning is complete if and only if the second-mover advantage is large enough.

Dynamic Communication with Biased Senders (with Alex Smolin)

In static cheap-talk games, the misalignment of interests limits the amount of information that can be truthfully transmitted. Communication is coarse, and babbling is the unique equilibrium if the sender is extremely biased. In this paper, we show that if players interact repeatedly, there are equilibria in which the receiver makes perfectly informed decisions in almost every period. We analyze dynamic games in which senders with state-independent payoffs communicate to a single receiver. The senders' private information evolves according to an aperiodic and irreducible Markov chain. We prove an analog of a folk theorem — that any feasible and individually rational payoff can be approximated in a perfect Bayesian equilibrium if players are sufficiently patient. We conclude that repeated interaction can overcome strategic limits of communication.