Julian Romero

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Education:

Ph.D. Candidate, Social Sciences, California Institute of Technology, (Expected June 2010)

M.S. Social Sciences, California Institute of Technology, 2007

B.A. Mathematics and Economics with Honors, Northwestern University, 2005

Awards and Honors:

Graduate Fellowship, [SISL] Social and Information Sciences Laboratory	2007-2010
Institute Fellowship, California Institute of Technology	2005-2006
A. Norman Freeman Scholarship, Northwestern University	2003-2005

Fields of Specialization:

Primary Research:	Game Theory, Behavioral Economics, Experimental Economics
Secondary Research:	Applied Microeconmics, Political Economy, Numerical Methods
Teaching:	Microeconomics, Game Theory, Behavioral/Experimental, Political Economy

Working Papers

1. "Bounded Rationality in Repeated Games"
   - Job Market Paper (2009)
2. "Getting Out the (Costly) Vote: Institutional Design for Greater Participation" with Dino Gerardi, Margaret McConnell and Leeat Yariv (2009).
3. "Computational Testbeds for Coordination Games" with Noah Myung (2009).
4. "Dynamics of the Second Price" with Eric Bax (2009).
5. "Comparing Predicted Prices" with Eric Bax (2009).

Work in Progress

1. "Anti-coordination game on Networks" (2008)
2. "Hysteresis in Coordination Games" (2007).

Presentations:

- Institute on Computational Economics, Chicago, IL, July 2007
- ASSA Annual Meeting, New Orleans, LA, January 2008
- 14th Annual Santa Fe Institute Graduate Workshop in Computational Social Science Modeling and Complexity, Santa Fe, NM, June 2008
- SISL Seminar Series, Pasadena, CA, September 2008
- Economic Sciences Association North America Meeting, Tucson, AZ, November 2008
- SISL-Yahoo Economic Theory Workshop, Huntington Beach, CA, March 2009
- Southern California Symposium on Network Economics and Game Theory, Los Angeles, CA, October 2009
- SISL Seminar Series, Pasadena, CA, October 2009
- UCLA, Los Angeles, CA, November 2009
- SISL-Yahoo Economic Theory Workshop, Huntington Beach, CA, December 2009

Research Experience:

- 2004-2005, Research Assistant for Charles Zheng, Northwestern University, Evanston IL
- 2005, Student Intern for Andy Scholand, Sandia National Labs, Albuquerque, NM
- 2006-2009, Research Assistant for Jacob Goeree, John Ledyard and Leeat Yariv, Caltech, Pasadena CA
- 2008, Student Intern for Eric Bax, Yahoo!, Burbank CA

Teaching Experience:

- Teaching Assistant to Tal Schwartz, Introduction to Finance, California institute of Technology, Fall 2006
- Teaching Assistant to Jacob Goeree, Analytical Foundations of Social Sciences (Graduate Game Theory), California Institute of Technology, Winter 2007
- Teaching Assistant to Federico Echinique, Noncooperative Games in Social Sciences, California institute of Technology, Spring 2007

Referee Service:

BE Journal of Economic Theory, Review of Economics Design

References:

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Research Details

Bounded Rationality in Repeated Games (Job Market Paper)

Models of bounded rationality often lead to sharper predictions about real world outcomes than their full rationality counterparts. Full rationality in repeated interactions allows a plethora of equilibrium outcomes. In this paper, I examine the effect of bounded rationality in infinitely repeated games. In particular, does the introduction of boundedly rational agents lead to a smaller set of outcomes in equilibrium?

I show that the number of equilibrium outcomes is smaller when agents are boundedly rational. Importantly, cooperative outcomes are still possible in equilibrium, even when players can't use sophisticated strategies and are not able to perfectly monitor their opponents. The strategy that leads to cooperation is called "Win-Stay, Lose-Shift". Using this strategy, I show that cooperation is possible in equilibrium for a large class of 2x2 games. I also give necessary and sufficient conditions on equilibrium structure for two-player $N \times M$ games. These conditions suggest that in equilibrium, players must be able to cooperate without getting caught in long periods of conflict.

Computational Testbeds for Coordination Games with Noah Myung (2009)

We develop a computational learning algorithm. The agents make their choices in a boundedly rational manner. They randomly sample other actions to determine what to play, they group similar payoffs together to determine what is best, and they make choices from a distribution. A key component to this chapter is that the agents use pattern recognition to make predictions about the actions of their opponents. If their predictions are accurate, they make more accurate choices.

We run computational simulations with agents that use this learning algorithm. The results match experimental data for both minimum effort coordination games and the battle of the sexes game. In particular, these agents are able to alternate between two equilibria in the battle of the sexes game, an outcome that has been observed experimentally. Next, we develop an experimental hypothesis using these simulations, and confirm them using experiments with human subjects.

Getting Out the (Costly) Vote: Institutional Design for Greater Participation with Dino Gerardi, Margaret McConnell and Leeat Yariv (2009)

We examine two commonly discussed institutions inducing voter participation: abstention penalties (used in 32 countries around the world) and lotteries providing a prize to one random participant (as proposed on the 2006 Arizona ballot). We analyze a benchmark rational choice model in which voters vary in their information quality and participation is costly. We illustrate that both institutions can improve collective outcomes, though lotteries are a more effective instrument asymptotically. In an array of lab experiments we empirically assess institutional performance. We find strong evidence for selective participation: lab voters participate more when better informed or when institutionally induced. Furthermore, when subjects are sufficiently experienced, lottery prizes (and not abstention sanctions) improve overall welfare in the lab.

Dynamics of the Second Price" with Eric Bax (2009)

We examine the probability estimates of bids for online advertisements. In any highest bid auction, the winner is more likely to have a bid based on an over-estimate than on an under-estimate of a probability, even if the probability estimates are unbiased. This paper explores the impact of this effect on auction revenue and fairness, and it outlines some methods to improve revenue and fairness.

Comparing Predicted Prices" with Eric Bax (2009)

We examine inefficiencies caused by current methods of awarding ad space in online auctions. In particular, many auctions for online ad space use estimated offer values and charge the winner based on an estimate of the runner-up offer value. By awarding the ad space to the winner, the auctioneer produces more information about the value of the winning offer but not about the runner-up offer. Since price is based on an estimate of the runner-up offer value, failing to improve the estimate can harm revenue for the publisher and auctioneer. Also, failing to improve the estimate of the runner-up value can cause a less valuable offer to be repeatedly selected over a more valuable one, harming fairness for advertisers. This paper explores the dynamics of the second price and shows that learning the second price can improve revenue and fairness.

Hysteresis in Coordination Games" (2007)

I examine equilibrium selection in games with multiple equilibria. I study a class of minimum-effort coordination games based on a cost parameter. I hypothesize that there is path-dependence in the equilibrium selection process. If the cost starts low then increases to the middle, one equilibrium will be selected. If the cost start high and then decreases to the middle, then the other equilibrium will be selected. I run experiments examining this hypothesis, and I find that the players do exhibit hysteresis in the minimum effort coordination game.