"Shielded Innovation" – Proposal for the NBER PIE Grant in Innovation Policy

Main idea

No firm or sector of the global economy is untouched by innovation. In equilibrium, innovators will flock to (and innovation will occur where) the returns to innovative capital are highest. In this project, we first document a startling shift in the United States innovation landscape over the last 30 years: Innovation is now being done more at universities than ever before. The reason, as we will explore both theoretically and empirically, is that there has been a massive shift in the cost of undertaking and commercializing innovation in the private sector. In particular, the incidence of Intellectual Property (IP) litigation has increased drastically in the recent decades; this has led innovators to "shield" themselves in universities, which have reduced litigation risk.

Background

Since 2000, a sharp rise in IP litigation has been driven by the emergence of a new organizational form, often referred to as the *Non-Practicing Entity (NPE)* or *Patent Assertion Entity (PAE)*. NPEs do not produce products; rather, they amass patents just so that they may assert them. The emergence of NPEs has a subtly asymmetric impact on innovation: NPEs claim patent license fees and/or litigate infringement, so it makes most sense for them target firms and organizations that produce commercial products. In other words, NPEs predominantly target *firms* (both large firms like Apple, Pfizer, and Google, and small firms like FindTheBest.com), while *universities* (and other non-commercial innovation hubs) are almost completely shielded from NPE lawsuits.

Universities' role in innovation in the United States has taken a particularly interesting path over the past four decades, marked by a landmark 1980 law. The passage of the Bayh-Dole Act of 1980 essentially allowed non-profit universities the right to all IP developed onsite—even the IP developed using federally granted funds, for which the property rights had previously defaulted to the government. This sparked a boom in applied research at universities, both in terms of investment dollars and resultant spin-out firms and products. For instance, dollars invested by universities in R&D skyrocketed from roughly $10 billion in 1979 to over $66 billion in 2012 (National Science Foundation (2014)), over a 50% larger growth rate than private business R&D over the same time period. Technology companies such as Sun Microsystems, along with blockbuster drug treatments such as Lipitor and Propecia, trace their beginnings to university based innovations.

Contribution and Initial Findings

While the changing nature of university involvement in innovation is a relatively recent development, the ascendance of NPEs is even more recent. NPEs have only really begun to ramp up litigation in the most recent twenty years. Importantly, in the last decade, NPEs have been the major driver of the substantial rise in IP litigation. While NPEs have their proponents and opponents, the increased litigation risk resulting from NPEs is unquestioned. Further unquestioned is the focus of NPE litigation on *producing firms*, i.e., private-sector firms innovating and commercializing products.

We will collect data on all patents granted in the United States over the past four decades and separate those granted to universities from those granted to private entities. We will further classify each patent into a technology class (essentially, the industry to which the patent applies). We will then empirically test whether and how innovation has shifted towards universities and away from both public and private producing firms in years the industries that are targeted by NPEs.

Our initial results show that emergence of NPE-driven litigation pushes innovation to spaces shielded from litigation costs (i.e., spaces where innovation can be conducted at lower threat of litigation). We also find cross-sectional and time-series support for our main result: it is *solely* in the industries targeted by NPEs where we see large shifts of innovation to universities, and *only* following substantial litigation targeting activity by NPEs.

Future Plans and Use of Grant Funding

There is, however, much exciting work to do. We plan to collect rich micro-data on university Technology Transfer Office (TTO) activities, along with micro-level data on individual university academic patentees that transition into starting their own private firms, and the differential paths they take over time and technology classes in response to NPE targeting activity.

We plan to use the NBER Grant to employ Research Assistants to carefully collect, clean, and match this novel data. It will provide critical insight into the shifting landscape of innovation, allowing us to capture and assess the welfare impact of innovation shielding early in its emergence.

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Employment

2015-Present	L.E. Simmons Chaired Professor of Finance, **Harvard Business School**
2014-2015	Professor of Finance, **Harvard Business School**
2011-2014	Associate Professor of Finance & Marvin Bower Fellow, **Harvard Business School**
2007-2011	Assistant Professor of Finance, **Harvard Business School**
2005-2007	Assistant Professor of Finance, **Yale School of Management**

Other Affiliations

2008-present	Research Associate, **National Bureau of Economic Research**
2014-present	Editor, **Management Science**
2008-present	Academic Advisor, **Quadriserv, Inc.**
2009-2012	Associate Editor, **Review of Financial Studies**
2012-2014	Associate Editor, **Management Science**
2011-2014	Associate Editor, **Review of Asset Pricing Studies**
2006-2010	Advisor, **Cake Financial** (acquired by E*Trade)

Education

2001-2005 PhD & MBA in Finance, **Graduate School of Business, University of Chicago**

1997-2001 B.S.E., **Wharton School, University of Pennsylvania**
Concentrations: Finance, Statistics, and Accounting
Summa cum Laude

1997-2001 B.A., **University of Pennsylvania**
Major: Economics, Minor: Mathematics
Summa cum Laude

Honors & Awards

- National Science Foundation CAREER Award ($672,369): Relationships in Finance, 2009-2014.
- National Science Foundation Sci-SIP Award ($385,502): "Assessing the Impact of Non-Practicing Entities on U.S. Innovation, 2015-2018.
- 3 x Winner of Smith Breeden Prize for the Best Paper Published in the Journal of Finance in Asset Pricing (Distinguished Paper), (2007, 2008, 2010).
- Winner of Fama-DFA Prize for the Best Paper Published in the Journal of Financial Economics in Asset Pricing (Distinguished Paper), 2013.
- Invited to testify to the United States Congress on the impacts of Government Spending, 2010.
- Invited to consult the governments of China and Turkey on pensions and innovation.
- Winner of Western Finance Association Best Paper Prize in Quantitative Investments, 2007.
- 2 x Winner of European Finance Association Best Paper Prize (2006, 2007).
- 2 x Winner of First Prize, Crowell Memorial Award for Best Paper in Quantitative Investments, PanAgora Asset Management, (2011, 2014).
- 2 x Winner of First Prize, Chicago Quantitative Alliance Academic Paper Competition (2006, 2010).
- 3 x Winner of Institute for Quantitative Investment Research (INQUIRE) Grant (2009, 2010, 2013).
- Winner of Best Paper Prize of the Center for Research in Security Prices (CRSP) Forum, 2010.
- Winner of Columbia Millstein Center & Investor Responsibility Research Center Grant, 2013.
- Winner of First Prize, Istanbul Stock Exchange 25th Anniversary Best Paper Competition, 2010.
- Winner of Paul Woolley Centre Academic Grant, 2010.
- Winner of First Prize, the Inaugural Hakan Orbay Research Award, 2015.
- Winner of Emerald Citation of Excellence, 2009.
- Winner of BSI Gamma Foundation Grant, Firm Characteristics and Investment Management, 2006.
- Winner of Whitebox Grant for Research in the Behavioral Sciences, 2006.
- Winner of Simon Kuznets Fellowship – Outstanding Undergraduate in Economics, 2000.
- 2001 United States Powerlifting Federation Collegiate National Champion (220 lbs.)

- Set the All-Time World Record in the Squat in the 181 lb. drug-tested division with a squat of 630 lbs (December 2014)

Publications

1. "The Growing Problem of Patent Trolling" (with Umit Gurun and Scott Kominers), *Science*, Vol. 352, No. 6285 (April 29, 2016): 521–522.

2. "Industry Window Dressing" (with Huaizhi Chen and Dong Lou), 2016. *Review of Financial Studies*, forthcoming.

3. "Resident Networks and Corporate Connections: Evidence from World War II Internment Camps" (with Umit Gurun and Christopher Malloy), 2015. *Journal of Finance*, forthcoming.
    - Winner of First Prize, the Inaugural Hakan Orbay Research Award, 2015.

4. "Legislating Stock Prices" (with Karl Diether and Christopher Malloy), 2013. *Journal of Financial Economics* 110, 574-595.
    - Winner of Fama-DFA Prize for the Best Paper Published in the Journal of Financial Economics in the Areas of Capital Markets and Asset Pricing (Distinguished Paper), 2013.

5. "Friends in High Places" (with Christopher Malloy), 2014. *American Economic Journal: Economic Policy* 6, 63-91.

6. "Misvaluing Innovation" (with Karl Diether and Christopher Malloy), 2013. *Review of Financial Studies* 26, 635-666.

7. "Decoding Inside Information" (with Christopher Malloy and Lukasz Pomorski), 2012. *Journal of Finance* 67, 1009-1044.
    - Winner of First Prize, Chicago Quantitative Alliance Academic Paper Competition 2010
    - Winner of Institute for Quantitative Investment Research (INQUIRE) Grant 2009

8. "Complicated Firms" (with Dong Lou), 2012, *Journal of Financial Economics* 104, 383-400.
    - Winner of the First Prize, Crowell Memorial Award, PanAgora Asset Management, 2011
    - Winner of the Best Paper Prize of the Center for Research in Security Prices (CRSP) Forum 2010
    - Winner of First Prize, Istanbul Stock Exchange 25th Anniversary Best Paper Competition 2010
    - Winner of Institute for Quantitative Investment Research (INQUIRE) Grant 2010
    - Winner of Paul Woolley Centre Academic Grant 2010

9. "Hiring Cheerleaders: Board Appointments of 'Independent' Directors" (with Andrea Frazzini and Christopher Malloy), 2012, *Management Science* 58, 1039-1058

10. "Do Powerful Politicians Cause Corporate Downsizing?" (with Joshua Coval and Christopher Malloy), 2011. *Journal of Political Economy* 199, 1015-1060.

11. "The Power of Alumni Networks" (with Christopher Malloy), 2010, *Harvard Business Review* 88, no. 10.

12. "Sell Side School Ties" (with Andrea Frazzini and Christopher Malloy), 2010, *Journal of Finance*, 65, 1409-1437.
    - Winner of the Smith Breeden Prize, Distinguished Paper, for the best paper published in the Journal of Finance 2010

13. "Attracting Flows by Attracting Big Clients" (with Breno Schmidt), 2009, *Journal of Finance*, 64, 1225-1252.
    - Winner of SQA Award, Best Paper in Quantitative Investments, Western Finance Association 2007
    - Winner of BGI Best Paper Prize, Asset Allocation Symposium, European Finance Association 2006

14. "Loyalty Based Portfolio Choice" 2009, *Review of Financial Studies*, 22, 1213-1245.

15. "Shorting Demand and Predictability of Returns" (with Karl Diether and Christopher Malloy), 2009, *Journal of Investment Management*, 7, 36-52.

16. "The Small World of Investing: Board Connections and Mutual Fund Returns" (with Andrea Frazzini and Christopher Malloy), 2008, *Journal of Political Economy*, 116, 951-979.
    - Winner of BGI Award, Best Paper in Asset Pricing, European Finance Association 2007

17. "Economic Links and Predictable Returns" (with Andrea Frazzini), 2008, *Journal of Finance*, 63, 1977-2011.
    - Winner of the Smith Breeden Prize, Distinguished Paper, for the best paper published in the Journal of Finance 2008
    - Winner of Emerald Citation of Excellence Award 2009
    - Winner of First Prize, Chicago Quantitative Alliance Academic Paper Competition 2006
    - Winner of BSI Gamma Foundation Grant 2006

18. "Supply and Demand Shifts in the Shorting Market" (with Karl Diether and Christopher Malloy), 2007, *Journal of Finance* 62, 2061-2096.
    - Winner of the Smith Breeden Prize, Distinguished Paper, for the best paper published in the Journal of Finance 2007

Book Chapters

19. "Empirical Evidence on the Behavior and Impact of Patent Trolls: A Survey" (with Umit Gurun and Scott Kominers), 2015. Prepared for *Patent Assertion Entities and Competition Policy,* Cambridge University Press, edited by D. Daniel Sokol.

20. "Who Chooses Board Members?" (with Ali Akyol), 2013. Prepared for *Advances in Financial Economics, Volume 16,* edited by Kose John, Anil Makhija, and Stephen Ferris.

Working Papers

21. "Playing Favorites: How Firms Prevent the Revelation of Bad News" (with Dong Lou and Christopher Malloy), 2014.
    - Winner of First Prize, Crowell Memorial Award for Best Paper in Quantitative Investments, PanAgora Asset Management, 2014.
    - (*R&R, Journal of Finance*)

22. Shielded Innovation (with Umit Gurun and Scott Kominers), 2015.
    - (*R&R, Review of Financial Studies*)

23. "Patent Trolls: Evidence from Targeted Firms" (with Umit Gurun and Scott Kominers), 2016.

24. "Lazy Prices" (with Christopher Malloy and Quoc Nguyen), 2016.

25. "Mini West Virginias: Corporations as Government Dependents" (with Christopher Malloy), 2014.

26. "The Impact of Forced Migration on Modern Cities: Evidence from 1930s Crop Failures" (with Christopher Malloy and Quoc Nguyen), 2016.

27. "Troll Check? A Proposal for Administrative Review of Patent Litigation" (with John Golden, Umit Gurun, and Scott Kominers), 2016.

HBS Course Materials

- "Domeyard: Starting a High-Frequency Trading (HFT) Hedge Fund," with Matthew Foreman and Christopher Malloy, Harvard Business School Case 215-036.

- "The Complexity of Vanguard's Entry Decision into ETFs," with Christopher Malloy and Tina Tang, Harvard Business School Case 215-031.

- "Seeking Alpha in the Afterlife: CMG Life Services and the Life Settlement Industry," Harvard Business School Case 213-104.

- "Seeking Alpha in the Afterlife: CMG Life Services and the Life Settlement Industry," Harvard Business School Teaching Note 213-149.

- "Tottenham Hotspur plc," with Christopher Malloy and Joshua Coval, Harvard Business School Case 209-059.

- "Tottenham Hotspur plc," with Christopher Malloy and Joshua Coval, Harvard Business School Teaching Note 209-121.

- "Miracle Life Inc," with Christopher Malloy, Harvard Business School Case 210-039.

- "Miracle Life Inc," with Christopher Malloy, Harvard Business School Teaching Note 210-069.

- "PlanetTran," with Christopher Malloy, Harvard Business School Case 209-029.

- "PlanetTran," with Christopher Malloy, Harvard Business School Teaching Note 209-120.

- "AQR's Momentum Funds (A)," with Daniel Bergstresser, Randolph Cohen, and Christopher Malloy, Harvard Business School Case 211-025.

- "AQR's Momentum Funds (B)," with Daniel Bergstresser, Randolph Cohen, and Christopher Malloy, Harvard Business School Supplement 211-075.

- "AQR's Momentum Funds," with Daniel Bergstresser, Randolph Cohen, and Christopher Malloy, Harvard Business School Teaching Note 212-083.

- "AQR's DELTA Strategy," with Daniel Bergstresser, Randolph Cohen, and Christopher Malloy, Harvard Business School Case 212-038.

- "AQR's DELTA Strategy," with Daniel Bergstresser, Randolph Cohen, and Christopher Malloy, Harvard Business School Teaching Note 212-084.

- "Dimensional Fund Advisors (DFA)'s Entry into the Retirement Market," with Christopher Malloy, Harvard Business School Case 212-068.

- "Dimensional Fund Advisors (DFA)'s Entry into the Retirement Market," with Christopher Malloy, Harvard Business School Teaching Note 212-069.

- "Quadriserv and the Short Selling Market," with Christopher Malloy, Harvard Business School Case 212-021.

- "Quadriserv and the Short Selling Market," with Christopher Malloy, Harvard Business School Teaching Note 212-037.

- "An Introduction to Short Selling," with Christopher Malloy, Harvard Business School Teaching Note 212-079.

- "Fundamental Analysis in Emerging Markets: Autoweb Holdings," with Christopher Malloy, Harvard Business School Case 212-022.

- "Fundamental Analysis in Emerging Markets: Tren Anuncio Rapido," with Christopher Malloy, Harvard Business School Case 212-023.

- "Fundamental Analysis in Emerging Markets: Autoweb Holdings and Tren Anuncio Rapido," with Christopher Malloy, Harvard Business School Teaching Note 209-121.

- "Business Intelligence Advisors (BIA) Inc.: Finding the Hidden Meaning in Corporate Disclosures," with Christopher Malloy, Harvard Business School Case 212-031.

- "Business Intelligence Advisors (BIA) Inc.: Finding the Hidden Meaning in Corporate Disclosures," with Christopher Malloy, Harvard Business School Teaching Note 212-066.

- "Innovating into Active ETFs: Factor Funds Capital Management LLC," with Kenneth Froot and Scott Waggoner, Harvard Business School Case 211-031.

- "Innovating into Active ETFs: Factor Funds Capital Management LLC," with Kenneth Froot, Harvard Business School Teaching Note 212-085.

- "Stock Pitching at Freelin Capital," Harvard Business School Case 213-086.

- "Stock Pitching at Freelin Capital," Harvard Business School Teaching Note 213-101.

- "The Commoditization of Investment Management," Harvard Business School Module Note 212-086.

Invited Presentations & Discussions

2015: United States Patent and Trademark Office (USPTO), United States Securities and Exchange Commission (SEC), National Bureau of Economic Research, American Finance Association Meeting (Boston, MA), American Economic Association Meeting (Boston, MA), 21st Century Visiting Chinese Government Delegation on Patents and Innovation at the University of Chicago (Chicago, IL), Harvard/MIT/INET/CIGI Workshop on the Future of Global Patent Policy (Cambridge, MA), The Working Papers in Patent Policy at the United States Patent and Trademark Office (USPTO) (Washington, DC), Duke Innovation and Entrepreneurship Seminar, 2nd Annual Istanbul Pension Fund Conference - Optimal Pension System in the Presence of Systemic Risk: Auto-Enrolment & Qualified Default Investment Alternatives (Istanbul, Turkey), West Point-Harvard Business School Cadet Course, Annual Spring Life Settlement Conference (Boston, MA), Swedish Conference on Entrepreneurship and Finance (Lund, Sweden), Yale PhD Summer School in Behavioral Finance, Tsinghua – RFS Entrepreneurial Finance and Innovation around the World Conference (Beijing, China), Tsinghua-Harvard Business School Investment Management Course, Financial Research Association Conference (Las Vegas, NV), Clemson University, University of Edinburgh, Florida State University, Georgia State University, University of Missouri, Purdue University, Rochester University, University of South Florida, Southern Methodist University, Tulane University, Fuller & Thaler Asset Management, Inc.

2014: National Bureau of Economic Research, American Finance Association Meeting (Philadelphia, PA), American Economic Association Meeting (Philadelphia, PA), 21st Century Conference on Innovation at Harvard, Brigham Young University Red Rock Finance Conference, Columbia Law School and IRRC Institute Conference on the Use and Misuse of Stock Prices, Public Company Accounting Oversight Board, Center for Economic Analysis, and Journal of Accounting Research Conference on Auditing and Capital Markets (Washington, DC), University of Bristol, California Advanced Institute for Management, University of Exeter, Massachusetts Institute of Technology, Conference on Network Economics at University of Essex, University of Illinois, University of Pennsylvania Wharton School, Texas Christian University, Tsinghua University, Bentley University, Brandeis University, Harvard Business School, 4th Annual Institutional Investor Life Settlement Conference (New York, NY), 25th Annual Spring Life Settlement Conference (Washington, DC), Prudential Capital Group Annual Analyst Conference.

2013: National Bureau of Economic Research, American Finance Association Meeting (San Diego, CA), 100 Women in Hedge Funds and Morgan Lewis & Bochius Conference on The Fine Line of Insider Trading, University of Miami Behavioral Finance Conference, Yale PhD Summer School in Behavioral Finance, California Advanced Institute for Management, University of Chicago, China Europe International Business School, City University of New York - Baruch College, Cornell University, George Washington University, University of Georgia, Harvard Business School, Harvard Law School, University of Hong Kong, Hong Kong University of Science and Technology, Imperial College London, University of Notre Dame, University of Warwick, Acadian Asset Management, Wellington Asset Management.

2012: American Finance Association Meeting (Chicago, IL), Financial Research Association Conference (Las Vegas, NV), Rodney White Center conference on Household Portfolio Choice and Investment Decisions at University of Pennsylvania Wharton School, Interdisciplinary Center (IDC) Rothschild Caesarea Center Annual Conference (Herzliya, Israel), University of Delaware Weinberg Center For Corporate Governance 2012 Corporate Governance Symposium, University of Alabama, University of Alberta, University of Arizona, Brigham Young University, University of California at Berkeley, Case Western Reserve University, DePaul University, Harvard Business School, Luxembourg School of Finance (LSF), University of Mannheim, University of Miami, Nova School of Business & Economics, Rice University, University of Texas at Dallas, University of Virginia, Washington University, University of Pennsylvania Wharton School, Interdisciplinary Center (IDC) Rothschild Caesarea Center Risk and Alpha Conference (Herzliya, Israel).

2011: National Bureau of Economic Research, American Finance Association Meeting (Denver, CO), Adam Smith Asset Pricing Conference (Oxford, UK), Yale PhD Summer School in Behavioral Finance, Duisenberg School of Finance (DSF), Emory University, Harvard Business School, Arrowstreet Capital Conference, Nomura Global Equity Conference in London, PanAgora Asset Management.

2010: United States Congress, United States Securities and Exchange Commission (SEC), National Bureau of Economic Research, American Finance Association Meeting (San Francisco, CA), Western Finance Association Meeting (Victoria, Canada), Center for Research in Security Prices (CRSP) Forum, Cambridge University Centre for Financial Analysis and Policy Conference on Interconnections in Financial Markets (Cambridge, UK), Istanbul Stock Exchange 25th Anniversary Conference (Istanbul, Turkey), UNC/Risk Management Association Conference on Securities Lending Research (New York, NY), Binghamton University, University of California at Los Angeles, Columbia University, Dartmouth University, Harvard Business School, INSEAD, University of Michigan, University of Missouri, University of North Carolina, Princeton University, University of Texas at Austin, Arrowstreet Capital, State Street Global Advisors.

2009: National Bureau of Economic Research, American Finance Association Meeting (San Francisco, CA), European Finance Association Meeting (Bergen, Norway), Texas Finance Festival (Austin, TX), UBC Summer Finance Conference (Kelowna, BC), Singapore International Conference on Finance (Singapore), Singapore Management University Summer Research Camp (Singapore), Real Colegio Complutense Workshop on Financial Economics (Boston, MA), University of Colorado at Boulder, Erasmus University Rotterdam, Georgia Tech, Harvard Business School, Indiana University, Northeastern University, Singapore Management University, Tilburg University, University of Toronto.

2008: Yale Governance Forum, Financial Research Association Conference (Las Vegas, NV), Bentley College, Harvard Business School, Helsinki School of Economics, London Business School, London School of Economics, University of Maryland, University of Melbourne, University of New South Wales, Northwestern University, Ohio State University, Oxford University, Swedish Institute for Financial Research, Arrowstreet Capital Conference, Society of Quantitative Analysts.

2007: National Bureau of Economic Research, European Finance Association Meeting (Ljubljana, Slovenia), University of Amsterdam, University of Chicago, Harvard University, University of Illinois, Massachusetts Institute of Technology, University of Oregon, Yale University, UC Davis Conference on Financial Markets Research, Asset Pricing Mini Conference at Washington University, AQR Capital Management, Morgan Stanley.

2006: National Bureau of Economic Research, European Finance Association Meeting (Zurich, Switzerland), New York University Stern, Yale University, NYU/NY Federal Reserve Conference on Financial Intermediation, Financial Research Association Conference (Las Vegas, NV), Barclays Global Investors Equity Research Offsite (San Francisco, CA), Chicago Quantitative Alliance, Prudential Equity Conference, Goldman Sachs, Lehman Brothers.

2005: National Bureau of Economic Research, Western Finance Association Meeting (Portland, OR), Financial Management Association (Chicago, IL), Yale Conference on Behavioral Finance, Yale Whitebox Conference, Arizona State University, University of California at Berkeley, Boston College, Columbia University, Cornell University, Duke University, Emory University, Harvard Business School, Indiana University, Massachusetts Institute of Technology, University of North Carolina, University of Notre Dame, Stanford University, University of Texas at Austin, University of Pennsylvania Wharton School, Yale University.

2004: Swedish Institute for Financial Research Conference on Portfolio Choice and Investor Behavior (Stockholm, Sweden), European Finance Association Meeting (Maastricht, Netherlands), University of Chicago, Yale University.

Professional Activities

Referee for *American Economic Review, Journal of Political Economy, Quarterly Journal of Economics, Journal of Finance, Journal of Financial Economics, Review of Financial Studies, Journal of Business, American Economic Journal, Review of Economic Studies, Journal of Financial and Quantitative Analysis, Management Science, Review of Asset Pricing Studies, Financial Management, Review of Finance, The Accounting Review, Journal of Accounting and Economics,* and *Quarterly Review of Economics and Finance.*

Reviewer for: National Science Foundation, Hong Kong Research Grants Council, and Israel Science Foundation.

Organizer of: National Bureau of Economic Research Spring Asset Pricing Meeting 2014, National Bureau of Economic Research Fall Behavioral Economics Meeting 2011.

Program committee: AFA Session Chair 2016, 2015, 2010, WFA 2008-2016, FMA 2006, 2008, EFA 2009-2016, Wash U Corporate Finance Conference 2010-2016, Miami Behavioral Finance Conference 2010-2015, Finance Down Under Conference 2011-2016, SFS Cavalcade 2012-2016.

Teaching Experience

Finance I, Investment Management, *Investment Strategies, Stock Pitching & Investment Management Workshop,* Harvard Business School
MBA & Executive Education Courses, 2007-2015.

Financial Management & Behavioral Finance, Yale School of Management
MBA Courses, 2005, 2006.

Instructor, Graduate School of Business, University of Chicago
Mathematics course for incoming PhD students, 2003.

Personal

Married to: Nicole Cohen, 4 children

Date of Birth: July 6, 1979

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ACADEMIC EMPLOYMENT

University of Texas at Dallas	– Professor of Accounting and Finance	(2016 - Present)
National Bureau of Economic Research	– Research Economist	(2015 - Present)
Harvard Business School	– Visiting Associate Professor	(2014 Spring)
University of Texas at Austin	– Visiting Assistant Professor	(2010 - 2011)
University of Texas at Dallas	– Associate Professor	(2011 - 2016)
University of Texas at Dallas	– Assistant Professor	(2004 - 2010)

OTHER AFFILIATIONS

Associate Editor, *Management Science* (2014 - Present)
Associate Editor, *Journal of International Financial Markets* (2010 - Present)

EDUCATION

Michigan State University	2000 - 2004	Ph.D., Finance
Koc University (Turkey)	1997 - 1999	M.B.A
Bilkent University	1993 - 1997	B.S., Industrial Engineering

RESEARCH PAPERS

Selected refereed publications

[1] Gurun, Umit G., Gregor Matvos, and Amit Seru. "Advertising Expensive Mortgages", **Journal of Finance,** forthcoming**.**

[2] Cohen, Lauren, Umit G. Gurun, and Chris Malloy. "Resident Networks and Corporate Connections: Evidence from World War II Internment Camps", **Journal of Finance,** forthcoming**.**

[3] Butler, Alex, Jess Cornaggia, and Umit G. Gurun. "Substitution between Sources of Finance in Consumer Capital Markets", **Management Science**, forthcoming.

[4] Cohen, Lauren, Umit G. Gurun, Scott Kominers. The Growing Problem of Patent Trolling, **Science**, April 29, 2016.

[5] Gurun, Umit G., Rick Johnston, Stanimir Markov. "Sell Side Debt Analysts and Market Efficiency", **Management Science**, 2016.

[6] Zhi Da, Gurun, Umit G., and Mitch Warachka. "Frog in the Pan: Continuous Information and Momentum", **Review of Financial Studies**, August 2014.

[7] Gurun, Umit G., and Alex Butler. "Don't Believe the Hype: Local Media Slant, Local Advertising, and Firm Value", **Journal of Finance**, April 2012.

[8] Alex Butler, and Umit G. Gurun. "Educational Networks, Mutual Fund Voting Patterns, and CEO Compensation", **Review of Financial Studies**, August 2012, 25 (8): 2533-2562.

[9] Cready, William M., and Umit G. Gurun "Aggregate Market Reaction to Earnings Announcements." **Journal of Accounting Research**, May 2010, 289–334.

Other refereed publications and articles appearing as chapters in edited volumes:

[10] Booth, Geoffrey and Umit G. Gurun, and Harold Zhang, "Financial Networks and Trading in Emerging Bond Markets", March 2014, **Journal of Financial Markets,** 126-157.

[11] Coskun, Ali and Umit G. Gurun, "Do Hedge Funds Follow Post-Earnings Announcement Drift? Evidence from Quarterly Holdings", 2012, **Journal of Derivatives and Hedge Fund,** 8, 3, 236-253.

[12] Umit G. Gurun, Alina Lerman, and Joshua Ronen, "Anticipatory and Implementation Effects of FIN 46 on the Behavior of Different Market Participants", **Asia Pacific Journal of Accounting and Economics**, April 2012.

[13] Ali, Ashiq and Umit G. Gurun. 2008. "Investor sentiment, accruals anomaly, and accruals management", **Journal of Accounting, Auditing and Finance**, Summer 2009: 415 - 431.

[14] Booth, Geoffrey and Umit G. Gurun, "Volatility clustering and the bid-ask spread: Exchange rate behavior in early Renaissance Florence", **Journal of Empirical Finance**, 2008, 131-141

Working papers

[15] Trust busting: The effect of Fraud on Investor Behavior (with Noah Stoffman and Scott Yonker)

- Presented at 2015 NBER Behavioral Finance workshop
- To be presented at 2016 Texas Finance Festival
- To be presented at 2016 WFA

[16] Shielded Innovation (with Lauren Cohen and Scott Kominers)

- Presented at 2015 RFS – Innovation Conference

[17] Patent Trolls: Evidence from Targeted Firms (with Lauren Cohen and Scott Kominers)

- Presented at the 2014 NBER – Innovation Summer Institute
- Presented at 2015 AFA meetings

[18] Benefits of Publicity

- Presented at 2013 AFA meetings

[19] Lender's Response to Peer and Customer Restatements (with Rebecca Files)

[20] Real Estate Holdings of Public Firms and Collateral Discount (with Irem Demirci and Erkan Yonder)

- Winner of 2015 Real Estate Research Institute Grant

[21] Micro-Level Value Creation Under CEO Short-termism (with Jonathan Cohn and Rabih Moussawi)

- Presented 2013 AFA Meetings

[22] Control Rights and Earnings Announcement (with Oguzhan Karakas)

[23] "Troll" Check? A Proposal for Administrative Review of Patent Litigation (with Lauren H. Cohen, John M. Golden, and Scott Kominers).

Book Chapters

[25] Booth, Geoffrey and Umit G. Gurun, 2010, *Arbitrage Risk and High-Volume Return Premium*, in Handbook of Trading: Strategies for Navigating and Profiting from Currency, Bond, and Stock Markets edited by Greg N. Gregoriou, McGraw-Hill, NYC, NY May 2010.

[26] Lauren Cohen, Umit G. Gurun, and Scott Duke Kominers. Empirical Evidence on the Behavior and Impact of Patent Trolls: A Survey. Forthcoming, *Patent Assertion Entities and Competition Policy* (ed. D. Daniel Sokol), Cambridge University Press.

RESEARCH PRESENTATIONS

Conference presentations (including presentations by co-authors)
NBER – 2015 Behavioral Finance
NBER – 2015 Law& Economics
NBER – 2014 Innovation
NBER – 2013 Behavioral Finance
NBER – 2012 International Trade
NBER – 2011-2014 Summer Institute
Western Finance Association – 2011, 2014, 2016*
American Finance Association – 2010, 2012, 2013, 2014, 2015
Texas Finance Festival – 2009, 2016*
Journal of Accounting Research Conference – 2009
Financial Management Association – 2005, 2009, 2010
American Accounting Association Meeting – 2005, 2010, 2011
Wharton Rodney White Center Conference – 2016
(*) Scheduled

Discussions
ITAM- Mexico City, Mexico – 2016*
Federal Reserve Cleveland – Household Finance Conference – 2015
American Finance Association – 2015 (2 Discussions)
Florida State Conference – 2015
RFS Cavalcade Conference – 2015

Talks given at other universities (own presentations only)
2016 : University of Illinois-Chicago, Queen's University, SKKU Korea*
2015 : University of Mannheim, DePaul University, University of Zurich, Sabanci University
2014 : Harvard Business School, University of Colorado-Boulder, HKUST, Brandeis University, Nanyang Technological University
2013 : University of South Florida
2012 : Australia National University, University of Melbourne, Michigan State University
2010 : University of Texas at Austin
2009 : Georgia State University, University of Alabama
2008 : Michigan State University
2004 : University of Texas at Dallas

HONORS, AWARDS, AND RECOGNITION

- **National Science Foundation Award**: 2015-2018, "Assessing the Impact of Non-Practicing Entities on U.S. Innovation" (Co-PI, with Lauren Cohen and Scott Kominers)
- Real Estate Research Institute Grant 2015-2017, "Fire Sales: Good Deals or Price of Low Quality" (with Irem Demirci and Erkan Yonder)
- Distinguished Associate Editor Service Award, Management Science, 2015
- Hakan Orbay Research Award – Best Paper, 2015

- Semifinalist for Best paper in Investments, 2010 *Financial Management Association* meeting
- Michigan State University Graduate School Dissertation Completion Fellowship, 2004
- Frederick S. Addy Fellowship, 2002-2003
- Koc University, Valedictorian, 1999
- Koc and Bilkent University, Merit based full scholarship, 1993 - 1999
- Selected to Turkish Mathematics Olympic team's camps three times, 1990 - 1992

SERVICE

Service on dissertation committees

Chair or Co-Chair:

Ting He (2012), Ali Coskun (2009), Bishal B C (2016)

Member:

Ozer Asdemir (2006), Jiangxia Liu (2006), Mine Ozer(2006), Frank Zhang (2007), Sinan Goktan (2008), Musa Subasi (2012), Abdullah Kumas (2013), Chongyang Chen (2014), Koren Jo (2015).

Service to the profession

Ad Hoc Referee for ***American Economic Review, Journal of Finance, Review of Financial Studies, Journal of Accounting Research, Accounting Review, Journal of Financial and Quantitative Analysis, Management Science, Review of Finance, Review of Accounting Studies, and others.***

2015 National Science Foundation Proposal Reviewer
2015, 2016 FMA Napa Program - Reviewer
2016 Swiss Society for Financial Research Conference - Reviewer
2015, 2016 EFA Conference - Reviewer
2013, 2014 Midwest Finance Association Program - Reviewer
2013, 2014, 2015, 2016 FMA Annual Meeting Program - Reviewer
2013 RFS Cavalcade Program - Reviewer
Organizer Istanbul Stock Exchange's 25th Anniversary Conference paper competition
External dissertation committee member: Imperial Collage, London, U.K.
External retention, tenure, and promotion letter writer for DePaul University, University of Wichita

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Rock Center 219, Harvard Business School
Boston, MA 02163

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Education

Ph.D., Business Economics, Harvard University (2011).

Dissertation: "Matching Models of Markets."
Advisors: A. E. Roth, S. Athey, D. Fudenberg, J. W. Hatfield, A. Shleifer, and E. G. Weyl.

A.M., Business Economics, Harvard University (2010).

A.B., Mathematics, Harvard University, *summa cum laude* (2009).

Minor: Ethnomusicology.
Thesis: "Weighted Generating Functions and Configuration Results for Type II Lattices and Codes."
Advisor: N. D. Elkies.

Academic Appointments

Junior Fellow, Society of Fellows, Harvard University (2013–present).

Lecturer, Department of Economics, Harvard University, and Harvard Business School (2015–present).

Affiliate, Center of Mathematical Sciences and Applications, Harvard University (2015–present).

Associate, Harvard Center for Research on Computation and Society (2013–present).

Research Scientist, Program for Evolutionary Dynamics, Harvard University (2013–present).

Research Economist, National Bureau of Economic Research (2015–present).

Research Scholar, Becker Friedman Institute, University of Chicago (2011–2013).

Visiting Positions

Visiting Fellow, Oxford Martin School (Spring 2016).

Visiting Researcher, Microsoft Research New England (2014–2015).

Guest Researcher, Program for Evolutionary Dynamics, Harvard University (2012–2013).

Other Employment

Social Science Analyst, Economic Analysis Group, US Department of Justice (Summer 2010).

Operations Research Engineering Intern, Google (Summer 2007).

Research Assistant to Susan Athey, Edward Glaeser, William R. Kerr, and Andrei Shleifer, Harvard University (2007–2009).

Academic Activities

Leadership

- *Co-Leader*, Human Capital and Economic Opportunity "Inequality: Measurement, Interpretation, and Policy" Working Group [MIP] (2012–present).

  - *Co-Organizer*, Meeting on Economic Design Responses to Inequality (2016).
  - *Co-Organizer*, Summer School on Socioeconomic Inequality (2015–2016; 2013).
- *Co-Leader*, Human Capital and Economic Opportunity "Measuring and Interpreting Inequality" Working Group [MIE] (2011–2012).
  - *Co-Organizer*, Meeting on Intergenerational Mobility (2012).
  - *Lead Organizer*, Inaugural Meeting (2012).

Organizational

- *Planning Group Member*, "First Japanese-American-German Frontiers of Science [JAGFoS] Symposium," Alexander von Humboldt Foundation, Japan Society for the Promotion of Science, and National Academy of Sciences (2017).
- *Co-Organizer*, "Predictive Cities" exploratory seminar, Radcliffe Institute for Advanced Study (2016).
- *Co-Organizer*, "Conference on Big Data," Harvard Center of Mathematical Sciences and Applications (2015–2016).
- *Co-Organizer*, American Economic Association Meetings sessions:

  "Predictive Cities" (*Papers & Proceedings*, 2016); "Patent Economics" (2015); "Frontiers of Market Design" (*Papers & Proceedings*, 2014); "Whither Affirmative Action?" (2013); "New Challenges for Market Design" (*Papers & Proceedings*, 2012); "Price Theory and Market Design" (2012); "Frontiers of Matching Theory" (2011).
- *Co-Chair*, "Conference on Auctions, Market Mechanisms and Their Applications [AMMA]" (2015).
- *Senior Program Committee Member*, "ACM Conference on Economics and Computation [EC]" (2014–2015).
- *Program Committee Member*, "Workshop on Social and Information Networks" (2015).
- *Program Committee Member*, "International World Wide Web Conference [WWW]" (2015).
- *Co-Organizer*, "CRCS Seminar," Center for Research on Computation and Society [CRCS], Harvard University (2014–2015).
- *Co-Organizer*, "Midway Market Design Workshop [MDW MDW]," Becker Friedman Institute for Research in Economics, University of Chicago (2014).
- *Co-Organizer*, "25th Jerusalem School in Economic Theory: Matching and Market Design" (2014).
- *Program Committee Member*, "12th Meeting of Society for Social Choice and Welfare" (2014).
- *Program Committee Member*, "Symposium on Algorithmic Game Theory [SAGT]" (2014).
- *Co-Organizer*, "Taxation and Matching" workshop, Department of Economics, Sciences Po (2014).
- *Program Committee Member*, "Conference on Web and Internet Economics [WINE]" (2013).
- *Program Committee Member*, "ACM Conference on Electronic Commerce [EC]" (2012–2013).
- *Organizer*, "Workshop in Economic Theory," Department of Economics, University of Chicago (Fall 2012; Fall 2011).
- *Co-Organizer*, "Matching Theory: Economics meets Mathematics" conference, Becker Friedman Institute for Research in Economics and Stevanovich Center for Financial Mathematics, University of Chicago (2012).
- *Program Committee Member*, "Conference on Auctions, Market Mechanisms and Their Applications [AMMA]" (2011).
- *Organizational Chair*, "Matching and Price Theory" conference, Milton Friedman Institute for Research in Economics, University of Chicago (2011).

Professional Service

- *Selection Committee Member*, Joseph Lieberman Award for Significant Contribution to Science and Technology (2015; 2013).

- *Head Tutor*, Harvard Program for Research in Markets and Organizations [PRIMO] (2011).
- *Non-Resident Tutor*, Kirkland House, Harvard University (2009–2011).
- *Paper Reviewer*, Research Science Institute, MIT (2005–2011).
- *Program Assistant*, Harvard College Program for Research in Science and Engineering [PRISE] (2008).

Teaching

Graduate

- *Market Design* (Graduate Seminar)
  - Department of Economics, Harvard University (Fall 2015).
- *Topics in Matching and Market Design* (Graduate Seminar)
  - Department of Economics, University of Chicago (Spring 2013; Winter 2012).
- *Market Design Approaches to Inequality* (Graduate Mini-Course)
  - Chicago Summer School on Socioeconomic Inequality (Summer 2015; Summer 2012–2013).
  - Beijing Summer School on Socioeconomic Inequality (Summer 2013).
- *Matching Theory, Substitutability, and Generalized Matching* (Graduate Mini-Course)
  - Hebrew University Summer School in Economic Theory (Summer 2014).
- *Recent Advances in Generalized Matching Theory* (Tutorial, with John William Hatfield)
  - "Matching Problems: Economics meets Mathematics" conference (June 4, 2012).

MBA

- *The Entrepreneurial Manager* (MBA Course)
  - Harvard Business School (Spring 2016).
- *Online Marketing at Big Skinny* (Case Session)
  - The Online Economy – Strategy and Entrepreneurship, Harvard Business School (September 20, 2011; September 28, 2010).

Grants and Fellowships

Star Family Challenge for Promising Scientific Research Grant: "Computer Vision-Automated Surveys for Urban Science and Economic Development" (with Edward L. Glaeser, Rema Hanna, Benjamin Olken, and Nikhil Naik, 2016–2017).

Radcliffe Exploratory Seminar Grant: "Predictive Cities: Leveraging New Data and Methods to Improve Urban Quality of Life" (with Edward L. Glaeser, Michael Luca, and Mitchell B. Weiss, 2016–2017).

NSF Science of Science and Innovation Policy [SciSIP] Grant: "Assessing the Impact of Non-Practicing Entities on U.S. Innovation" (with Lauren Cohen and Umit G. Gurun, 2015–present).

NSF Social and Economic Sciences [SES] Grant: "Preferences in Matching Market Design" (2015–present).

Oxford Martin School Visiting Fellowship (2016).

International Growth Centre [IGC] Small Projects Grant (with Edward L. Glaeser, Rema Hanna, Benjamin Olken, and Nikhil Naik, 2015–2016).

NSF Interface between Computer Science and Economics & Social Sciences [ICES] Grant: "Understanding the Roles of Intermediaries in Matching Markets" (with Eric Budish, Ali Hortaçsu, and Nicole Immorlica, 2012–2016).

William F. Milton Fund Grant (2014–2015).

Econometric Society Travel Grant (2015).

AMS–Simons Travel Grant (2011–2014).

Human Capital and Economic Opportunity/Institute for New Economic Thinking Research Grant (with Jay Garlapati, 2012–2013).

NSF Graduate Research Fellowship (2009–2011).

Terence M. Considine Fellowship in Law and Economics (2010–2011).

Yahoo! Key Scientific Challenges Program Fellowship (2010–2011).

Harvard Real Estate Academic Initiative Faculty Grant (with E. Glen Weyl, 2009–2011).

Harvard Institute for Quantitative Social Science Travel Grant (2010).

Danielan Fund Research and Travel Grant (2010).

National Defense Science and Engineering Graduate Fellowship (declined, 2009).

Harvard Institute for Quantitative Social Science Summer Scholars Program Fellowship (2008).

Harvard College Program for Research in Science and Engineering Fellowship (2008).

Harvard Mathematics Department Highbridge Fellowship (2008).

Harvard College Program for Research in Science and Engineering Fellowship (2006).

Center for Excellence in Education Research Science Institute Summer Scholarship (2004).

Awards and Honors

Star Family Prize for Excellence in Advising (Winner, 2016; Nominee, 2014).

Derek Bok Center Certificate of Distinction in Teaching (2016).

Kavli Frontiers of Science Fellow (2015).

Case Centre Award (with Benjamin Edelman, Knowledge, Information and Communication Systems Management Category, 2015).

Nominee, John R. Marquand Award for Exceptional Advising and Counseling (2014).

Center for Excellence in Education Alumni Award for Outstanding Achievement in STEM and Business (2013).

Third Place, Romanian Institute of Science and Technology "Best PhD Thesis in Computational Game Theory" Competition (2011).

Yahoo! Key Scientific Challenges Program Selectee (2010).

St. Mark's Institute of Mathematics Great Math Challenge Award (with Paul M. Kominers, 2010).

AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student (2010).

George Caspar Homans Prize (2009).

Thomas Temple Hoopes Prize (2009).

Phi Beta Kappa (2009).

First Place, Robert Fletcher Rogers Prize (2008).

John Harvard Scholarship (2007–2008).

First Place, American Mathematical Society Karl Menger Prize (2005).

Second Place, Mathematics Category, Intel International Science and Engineering Fair (2005).

California Institute of Technology Signature Award in Mathematics (2004).

Publications

Economics Research Papers

- "The Growing Problem of Patent Trolling" (with Lauren Cohen and Umit G. Gurun), forthcoming, *Science*.
- "Contract Design and Stability in Many-to-Many Matching" (with John William Hatfield), forthcoming, *Games and Economic Behavior [Special Issue in Honor of John Ledyard]*.
- "Matching with Slot-Specific Priorities: Theory" (with Tayfun Sönmez), forthcoming, *Theoretical Economics*. (Extended abstract, *Proceedings of the 14th ACM Conference on Electronic Commerce [EC'13]*, (2013): 603–604.)
- "Crowdsourcing City Government: Using Tournaments to Improve Inspection Accuracy" (with Edward L. Glaeser, Andrew Hillis, and Michael Luca), forthcoming, *American Economic Review Papers & Proceedings*, (2016).
- "Agglomerative Forces and Cluster Shapes" (with William R. Kerr), *Review of Economics and Statistics*, 97(4), (2015): 877–899.
- "Design and Implementation of a Privacy Preserving Electronic Health Record Linkage Tool in Chicago" (with Abel N. Kho, John P. Cashy, Kathryn L. Jackson, Adam R. Pah, Satyender Goel, Jörn Boehnke, John Eric Humphries, Bala N. Hota, Shannon A. Sims, Brad A. Malin, Dustin D. French, Theresa L. Walunas, David O. Meltzer, Erin O. Kaleba, Roderick C. Jones, and William L. Galanter), *Journal of the American Medical Informatics Association*, 22(5), (2015): 1072–1080.
- "Multilateral Matching" (with John William Hatfield), *Journal of Economic Theory [Special Issue on the Interface between Computer Science and Economic Theory]*, 156, (2015): 175–206. (Extended abstract, *Proceedings of the 12th ACM Conference on Electronic Commerce [EC'11]*, (2011): 337–338.)
- "Investment Incentives in Labor Market Matching" (with John William Hatfield and Fuhito Kojima), *American Economic Review Papers & Proceedings*, 104(5), (2014): 436–441.
- "Delayed-Response Strategies in Repeated Games with Observation Lags" (with Drew Fudenberg and Yuhta Ishii), *Journal of Economic Theory*, 150, (2014): 487–514.
- "Stability and Competitive Equilibrium in Trading Networks" (with John William Hatfield, Alexandru Nichifor, Michael Ostrovsky, and Alexander Westkamp), *Journal of Political Economy*, 121(5), (2013): 966–1005.
- "On Derivatives Markets and Social Welfare: A Theory of Empty Voting and Hidden Ownership" (with Jordan M. Barry and John William Hatfield), *Virginia Law Review*, 99(6), (2013): 1103–1168.
- "On the Correspondence of Contracts to Salaries in (Many-to-Many) Matching," *Games and Economic Behavior*, 75(2), (2012): 984–989.
- "Testing Substitutability" (with John William Hatfield and Nicole Immorlica), *Games and Economic Behavior*, 75(2), (2012): 639–645.
- "Matching in Networks with Bilateral Contracts" (with John William Hatfield), *American Economic Journal: Microeconomics*, 4(1), (2012): 176–208. (Extended abstract, *Proceedings of the 11th ACM Conference on Electronic Commerce [EC'10]*, (2010): 119–120.)
- "Matching with Preferences over Colleagues Solves Classical Matching," *Games and Economic Behavior*, 68(2), (2010): 773–780.

Economics Short Articles and Conference Papers

- "To Groupon or Not to Groupon: The Profitability of Deep Discounts" (with Benjamin Edelman and Sonia Jaffe), *Marketing Letters*, 27(1), (2016): 39–53.
- "Convergence of Position Auctions under Myopic Best-Response Dynamics" (with Matthew Cary, Aparna Das, Benjamin Edelman, Ioannis Giotis, Kurtis Heimerl, Anna Karlin, Claire Mathieu, and Michael Schwarz), *ACM Transactions on Economics and Computation*, 2(3), (2014): #9.

– "Vacancies in Supply Chain Networks" (with John William Hatfield), *Economics Letters*, 119(3), (2013): 354–357.

– "Holdout in the Assembly of Complements: A Problem for Market Design" (with E. Glen Weyl), *American Economic Review Papers & Proceedings*, 102(3), (2012): 360–365.

– "Discrete Choice Cannot Generate Demand that is Additively Separable in Own Price" (with Sonia Jaffe), *Economics Letters*, 116(1), (2012): 129–132.

– "Course Allocation by Proxy Auction" (with Mike Ruberry and Jonathan Ullman), *Proceedings of the 6th Workshop on Internet & Network Economics (WINE)*, (2010): 551–558.

– "Information Can Wreck Cooperation: A Counterpoint to Kandori (1992)" (with Yuichiro Kamada), *Economics Letters*, 107(2), (2010): 112–114.

Mathematics Research Papers

– "Asymptotic Improvements of Lower Bounds for the Least Common Multiples of Arithmetic Progressions" (with Daniel M. Kane), *Canadian Mathematical Bulletin*, 57(3), (2014): 551–561.

– "Minimal $\mathcal{S}$-Universality Criteria May Vary in Size" (with Noam D. Elkies and Daniel M. Kane), *Journal de Théorie des Nombres de Bordeaux*, 23(3), (2013): 557–563.

– "Weighted Generating Functions for Type II Lattices and Codes" (with Noam D. Elkies), *Quadratic and Higher Degree Forms* (ed. Krishnaswami Alladi, Manjul Bhargava, David Savitt, and Pham Huu Tiep), *Developments in Mathematics*, 31, Springer, (2013): 63–108.

– "Hinged Dissections Exist" (with Timothy G. Abbott, Zachary Abel, David Charlton, Erik D. Demaine, and Martin L. Demaine), *Discrete & Computational Geometry*, 47(1), (2012): 150–186. (Conference paper, *Proceedings of the Twenty-fourth Annual Symposium on Computational Geometry [SoCG'08]*, (2008): 110–119.)

– "Every Large Point Set contains Many Collinear Points or an Empty Pentagon" (with Zachary Abel, Brad Ballinger, Prosenjit Bose, Sébastien Collette, Vida Dujmović, Ferran Hurtado, Stefan Langerman, Attila Pór, and David R. Wood), *Graphs and Combinatorics*, 27(1), (2011): 47–60. (Extended abstract, *Proceedings of the 21st Canadian Conference on Computational Geometry [CCCG'09]*, (2009).)

– "A Categorical Construction of Ultrafilters" (with Daniel Litt and Zachary Abel), *Rocky Mountain Journal of Mathematics*, 40(5), (2010): 1611–1617.

– "A Constant Bound for the Periods of Parallel Chip-firing Games with Many Chips" (with Paul M. Kominers), *Archiv der Mathematik*, 95(1), (2010): 9–13. [Recognized in the St. Mark's Institute of Mathematics Great Math Challenge.]

– "On Congruence Conditions for Primality" (with Sherry Gong), *INTEGERS: The Electronic Journal of Combinatorial Number Theory*, 10(3), (2010): 313–317.

– "Irrational Roots Revisited," *The Mathematical Gazette*, 94(530), (2010): 28.

– "On the Classification of Type II Codes of Length 24" (with Noam D. Elkies), *SIAM Journal on Discrete Mathematics*, 23(4), (2010): 2173–2177.

– "Further Improvements of Lower Bounds for the Least Common Multiples of Arithmetic Progressions" (with Shaofang Hong), *Proceedings of the American Mathematical Society*, 138(3), (2010): 809–813.

– "Improved Bounds on the Sizes of S·P Numbers" (with Paul M. Kominers), *The Mathematical Gazette*, 94(529), (2010): 127–129.

– "Shape Replication Through Self-Assembly and RNase Enzymes" (with Zachary Abel, Nadia Benbernou, Mirela Damian, Erik D. Demaine, Robin Flatland, Robert Schweller, and Martin L. Demaine), *Proceedings of the 2010 ACM-SIAM Symposium on Discrete Algorithms [SODA'10]*, (2010): 1045–1064.

– "Refined Configuration Results for Extremal Type II Lattices of Ranks 40 and 80" (with Noam D. Elkies), *Proceedings of the American Mathematical Society*, 138(1), (2010): 105–108.

– "Configurations of Extremal Even Unimodular Lattices," *International Journal of Number Theory*, 5(3), (2009): 457–464.
– "On Universal Binary Hermitian Forms," *INTEGERS: The Electronic Journal of Combinatorial Number Theory*, 9, (2009): 9–15.
– "Configurations of Rank-$40r$ Extremal Even Unimodular Lattices ($r = 1, 2, 3$)" (with Zachary Abel), *Journal de Théorie des Nombres de Bordeaux*, 20(2), (2008): 365–371.
– "Uniqueness of the 2-universality Criterion," *Note di Matematica*, 28(2), (2008): 203–206.

Musicology Research Papers

– "Leonard Bernstein's Doodles: Reading Outside the Lines at the Library of Congress," *Journal of the Society for American Music*, 3(1), (2009): 26–33. (As an appendix to "Leonard Bernstein's Jewish Boston: Cross-Disciplinary Research in the Classroom" by Carol J. Oja and Kay Kaufman Shelemay.)
– "Leonard Bernstein doodled regularly," In: *Bernstein and Boston: A Documentary Scrapbook* (ed. Emily Abrams Ansari), (2006).

Medicine Research Papers

– "Patterns of failure after involved field radiation therapy for pediatric and young adult Hodgkin lymphoma" (with Minh-Phuong Huynh-Le, Amanda J. Walker, Ido Paz-Priel, Moody D. Wharam, and Stephanie A. Terezakis), *Pediatric Blood & Cancer*, 61(7), (2014): 1210–1214.

Books

– *Success with Science: The Winners' Guide to High School Research* (with Shiv Gaglani, Maria Elena De Obaldia, Dayan Li, and Carol Y. Suh), Research Corporation for Science Advancement, (2011).

Expository Articles and Notes (selected)

– "Empirical Evidence on the Behavior and Impact of Patent Trolls: A Survey" (with Lauren Cohen and Umit G. Gurun), forthcoming, *Patent Assertion Entities and Competition Policy* (ed. D. Daniel Sokol), Cambridge University Press.
– "Big Data and Big Cities: The Promises and Limitations of Improved Measures of Urban Life" (with Edward L. Glaeser, Michael Luca, and Nikhil Naik), forthcoming, *Economic Inquiry [Kavli HUMAN Project Symposium Issue]*.
– "Stability and Competitive Equilibrium in Matching Markets with Transfers" (with John William Hatfield), *ACM SIGecom Exchanges*, 10(3), (2011): 29–34.
– "Sharing the fun of research," *Harvard University Gazette*, (October 27, 2011).
– "Finding Matrices Which Satisfy Functional Equations," *College Mathematics Journal*, 40(4), (2009): 289–292.
– "Endpaper: Math Has This Funny Property" (with Zachary Abel), *The Harvard College Mathematics Review*, 2(1), (2008): 101.
– "Mathematical Minutiae: i Has This Funny Property" (with Zachary Abel), *The Harvard College Mathematics Review*, 2(1), (2008): 75–77.
– "The Harvard College Mathematics Review: A New Undergraduate Expository Journal" (with Daniel Litt), *Math Horizons*, 15(4), (2008): 30–31.

Business Writing (selected)

– "How U.S. laws protecting America's best ideas are killing innovation" (with Lauren Cohen and Umit G. Gurun). *Fortune [Blog]*, (January 22, 2015).
– "The High School Senior's Dilemma: Where Should I Go to College?" (with Michael Luca and Jonathan Smith), *Forbes [Blog]*, (April 22, 2014).
– "Lessons from the GoDaddy Customer Revolt" (with Paul Kominers), *Harvard Business Review [Blog]*, (December 29, 2011).
– "Digital Pioneers on Paper," *Harvard Business Review [Blog]*, (July 11, 2011).
– "To Groupon or Not To Groupon: New Research on Voucher Profitability" (with Benjamin Edelman and Sonia Jaffe), *Harvard Business Review [Blog]*, (January 12, 2011).

Teaching Materials

– "Online Marketing at Big Skinny" (with Benjamin Edelman), Harvard Business School Case N9-911-033 and Teaching Note N9-911-034, (2011) [awarded a Case Centre Award].

Comments and Letters (selected)

– "Enhancing Patent Quality: Screening out Low-Quality Patents and Trolling Litigation," public comment, (2015).

– "Collective decisions on land" (with E. Glen Weyl), *The Economist*, (May 30, 2015).

– "Paying for Tissue: Net Benefits" (with Gary S. Becker), *Science*, 337(6100), (2012): 1292–1293.

– "Professional-School Training Is Invaluable, Even for Scholars," *The Chronicle of Higher Education*, (February 14, 2012).

– "Re: Advance Notice of Proposed Rulemaking: Human Subjects Research Protections: Enhancing Protections for Research Subjects and Reducing Burden, Delay, and Ambiguity for Investigators, Docket ID number HHS-OPHS-2011-0005" (with Salil Vadhan, David Abrams, Micah Altman, Cynthia Dwork, Paul Kominers, Harry R. Lewis, Tal Moran, Guy Rothblum, and Jonathan Ullman), public comment, (2011).

– "Comment on the NRMP's 'Supplemental Offer and Acceptance Program' Proposed to Replace the Post-Match Scramble" (with Peter A. Coles, Clayton R. Featherstone, John William Hatfield, Fuhito Kojima, Muriel Niederle, Parag A. Pathak, and Alvin E. Roth), public comment, (2010).

– "A correspondence note on Myerson's 'Irrationality via Well-ordering'," *Gazette of the Australian Mathematical Society*, 36(1), (2009): 53.

Workshop Papers

– "Fractal Flipbooks" (with Andrea Hawksley), forthcoming, *Proceedings of Bridges 2016: Mathematics, Music, Art, Architecture, Education, Culture*, (2016).

– "Flipbook Polyhedra" (with Andrea Hawksley), *Proceedings of Bridges 2013: Mathematics, Music, Art, Architecture, Culture*, (2013): 619–624.

Refereed Problems and Solutions

– *Pi Mu Epsilon Journal*: 100th Anniversary Problem 1993 (2014); Problem 1213 (with Paul M. Kominers, 2009); Problem 1192 (2008); Solutions to problems 1175 (with Paul M. Kominers, 2008) and 1176 (with Paul M. Kominers, 2008).

– *American Invitational Mathematics Exam (AIME)*: Problem II-10 (2010); Problem II-7 (2009).

– *College Mathematics Journal*: Problem 908 (2009).

– *Mathematics Magazine*: Problem Q987 (2009).

– *The Harvard College Mathematics Review*: Problems S08-2 (with Paul M. Kominers and Justin Chen, 2008), F07-5 (with Paul M. Kominers and Zachary Abel, 2007), F07-2 (with John Hawksley, 2007) and S07-2 (2007).

– *Alfred R. Schmidt Freshman Mathematics Competition*: Exams 22 (with John Rickert, 2010), 20 (with John Rickert and Paul M. Kominers, 2008), 19 (with John Rickert and Paul M. Kominers, 2007) and 17 (with John Rickert, 2005).

– *USA Mathematical Talent Search*: Problem 3/2/18 (2006).

Working Papers (selected)

Economics

– "Patent Trolls: Evidence from Targeted Firms" (with Lauren Cohen and Umit G. Gurun).

– "Shielded Innovation" (with Lauren Cohen and Umit G. Gurun), revision requested, *Review of Financial Studies*.

- "'Troll' Check: A Proposal for Administrative Review of Patent Litigation" (with Lauren Cohen, John Golden, and Umit G. Gurun).
- "Chain Stability in Trading Networks" (with John William Hatfield, Alexandru Nichifor, Michael Ostrovsky, and Alexander Westkamp), revision requested, *Econometrica*.
- "Hidden Substitutes" (with John William Hatfield), revision requested, *American Economic Review*.
- "Strategy-Proofness, Investment Efficiency, and Marginal Returns: An Equivalence" (with John William Hatfield and Fuhito Kojima), revision requested, *Journal of Political Economy*.
- "The Demise of Walk Zones in Boston: Priorities vs. Precedence in School Choice" (with Umut Dur, Parag A. Pathak, and Tayfun Sönmez), revision requested, *Journal of Political Economy*.
- "Stability, Strategy-Proofness, and Cumulative Offer Mechanisms" (with John William Hatfield and Alexander Westkamp).
- "Full Substitutability" (with John William Hatfield, Alexandru Nichifor, Michael Ostrovsky, and Alexander Westkamp).
- "An Empirical Framework for Matching with Imperfectly Transferable Utility" (with Alfred Galichon and Simon Weber).
- "Matching Markets with Taxation of Transfers" (with Sonia Jaffe).
- "Matching with Slot-Specific Priorities: Applications" (with Tayfun Sönmez).
- "Do People Shape Cities, or Do Cities Shape People? The Co-evolution of Physical, Social, and Economic Change in Five Major U.S. Cities" (with Nikhil Naik, Edward L. Glaeser, and César A. Hidalgo).
- "A Theory of Intergenerational Mobility" (with Gary S. Becker, Kevin M. Murphy, and Jörg L. Spenkuch).
- "Paying (for) Attention: The Impact of Information Processing Costs on Bayesian Inference" (with Xiaosheng Mu and Alexander Peysakhovich).
- "Shareholder Decisionmaking in the Presence of Empty Voting and Hidden Ownership" (with Jordan Barry and John William Hatfield).
- "Coasean Keep-Away: Voluntary Transaction Costs" (with Jordan Barry and John William Hatfield).
- "Concordance among Holdouts" (with E. Glen Weyl).

Mathematics

- "Configurations of Extremal Type II Codes" (with Noam D. Elkies).
- "Universal Reconfiguration of (Hyper-)cubic Robots" (with Zachary Abel).

Presentations

Research Lectures

- "Strategy-Proofness, Investment Efficiency, and Marginal Returns: An Equivalence"

  Harvard/MIT Economic Theory Seminar (December 10, 2015); Brown University Economic Theory Seminar (November 16, 2015); Helsinki Center of Economic Research [HECER] Department Seminar (October 9, 2015); World Congress of the Econometric Society (August 21, 2015); Invited Talk, Meeting of COST Action IC1205 on Computational Social Choice (April 14, 2015); Becker Friedman Institute Celebration of the Life and Work of Gary S. Becker (October 30, 2014); 12th Meeting of the Society for Social Choice and Welfare (June 18, 2014); 15th ACM Conference on Electronic Commerce [EC'14] (June 12, 2014); University of Chicago Special Workshop (January 24, 2014); "Frontiers of Market Design" session, AEA Meetings (January 5, 2014); Stanford University Game Theory and Computation Seminar (October 24, 2013).

– "Full Substitutability in Trading Networks"

  NBER Market Design Working Group Meeting (October 23, 2015); 16th ACM Conference on Electronic Commerce [EC'15] (June 16, 2015); 3rd International Workshop on Matching Under Preferences [MATCH-UP] (April 16, 2015).

– "Hidden Substitutes"

  16th ACM Conference on Electronic Commerce [EC'15] (June 16, 2015); Yale University Microeconomic Theory Lunch (April 28, 2015).

– "Patent Trolls: Evidence from Targeted Firms"

  United States Patent and Trademark Office Research Seminar (March 17, 2015); MIT Applied Microeconomics Seminar (March 2, 2015); George Washington University Law School and the United States Patent and Trademark Office "Works in Progress Intellectual Property Colloquium [WIPIP]" (February 7, 2015); "Entrepreneurial Finance" session, AFA Meetings (January 4, 2015); Harvard Law, Economics, and Organizations Workshop (November 24, 2014); University of Chicago Booth School of Business Applied Economics Workshop (November 5, 2014); NBER Summer Institute Workshop on Innovation (July 16, 2014).

– "The Coase Theorem and Voluntary Transaction Costs"

  Amsterdam Center for Law & Economics (October 20, 2014); Centre de Recherches en Economie et Droit (October 16, 2014).

– "Stability and Competitive Equilibrium in Trading Networks"

  University of Pennsylvania Computer Science Theory Seminar (April 25, 2014); Stanford Graduate School of Business Economics Seminar (October 19, 2011); University of Wisconsin–Madison Economic Theory Workshop (September 30, 2011); Milton Friedman Institute "Matching and Price Theory" conference (May 6, 2011); "Frontiers of Matching Theory" session, AEA Meetings (January 7, 2011).

– "Matching Markets with Taxation of Transfers"

  Sciences Po "Taxation and Matching" workshop (March 21, 2014).

– "The Demise of Walk Zones in Boston: Priorities vs. Precedence in School Choice"

  Cornell University Joint Microeconomic Theory and Computer Science Seminar (April 21, 2014); University of Rochester Economic Theory Seminar (March 5, 2013); Harvard/MIT Economic Theory Seminar (February 13, 2013); Yale University Microeconomic Theory Workshop (November 6, 2013); Microsoft Research New England Game Theory & Computation Seminar (October 30, 2013).

– "Designing for Diversity in Matching"

  14th ACM Conference on Electronic Commerce [EC'13] (June 20, 2013); University of Maryland IO/Theory Seminar (May 7, 2013); Second Cambridge Area Economics and Computation Day [CAEC'13] (April 26, 2013); Washington University in St. Louis Economic Theory Workshop (April 16, 2013); NYU Microeconomic Theory Workshop (March 27, 2013); University of Michigan Economic Theory Seminar (March 15, 2013); "Whither Affirmative Action?" session, AEA Meetings (January 5, 2013); Microsoft Research New England Research Seminar (December 18, 2012); University of Chicago Recruitment Seminar (November 15, 2012); University of Illinois at Urbana-Champaign Microeconomics Seminar (November 7, 2012); Boston College Microeconomics Seminar (October 31, 2012); NBER Market Design Working Group Meeting (October 20, 2012); Federal Reserve Bank of Chicago Economics Research Seminar (August 14, 2012); Fourth World Congress of the Game Theory Society [GAMES2012] (July 24, 2012); Econometric Society North American Summer Meetings (June 30, 2012); University of Haifa Economics Workshop (June 18, 2012); St. Andrews School of Economics & Finance Candlemas Seminar (April 26, 2012); University of Chicago Workshop in Economic Theory (April 10, 2012); Measuring and Interpreting Inequality Working Group Inaugural Meeting (February 18, 2012).

– "A Theory of Empty Voting and Hidden Ownership"

  Harvard Law, Economics, and Organizations Workshop (November 26, 2012); University of Chicago Workshop in Applications of Economics (May 21, 2012).

– "Multilateral Matching"

  "Price Theory and Market Design" session, AEA Meetings (January 7, 2012); Columbia Microeconomic Theory Colloquium (October 31, 2011); NBER Market Design Working Group Meeting (October 28, 2011); Maastricht Workshop on Recent Developments in Market Design (September 14, 2011); 12th ACM Conference on Electronic Commerce [EC'11] (June 9, 2011); Harvard SEAS Economics and Computer Science Research Seminar (April 14, 2011); MIT Economic Theory Research Workshop (March 1, 2011); Harvard Workshop on Research in Behavior in Games and Markets (December 1, 2010)Guest Lecture, Harvard Economics 2056a: Market Design (November 19, 2010).

– "Concordance among Holdouts"

  "New Challenges for Market Design" session, AEA Meetings (January 6, 2012); 12th ACM Conference on Electronic Commerce [EC'11] (June 8, 2011); Harvard Law, Economics, and Organizations Workshop (November 15, 2010); Yahoo! Key Scientific Challenges Summit (September 9, 2010); Economic Analysis Group, Antitrust Division, US Department of Justice (August 12, 2010); HBS Market Design Workshop (May 14, 2010); Harvard Workshop on Research in Behavior in Games and Markets (April 21, 2010); Harvard Graduate Student Political Economy Workshop (November 6, 2009); Harvard Law & Economics Seminar (November 5, 2009).

– "Matching in Networks with Bilateral Contracts"

  11th ACM Conference on Electronic Commerce [EC'10] (June 9, 2010); Northwestern EECS Economics Group Theory Seminar (April 5, 2010); HBS Negotiation, Organizations, & Markets Group Research Seminar (February 22, 2010); Stanford Market Design Workshop (January 8, 2010); Harvard SEAS Economics and Computer Science Research Seminar (November 19, 2009).

– "Contract Design and Stability in Matching Markets"

  "Pricing and Contracts" session, AEA Meetings (January 9, 2011); University of Chicago Informal Labor Economics Seminar (April 7, 2010); Guest Lecture, Harvard Economics 2056a: Market Design (November 20, 2009); Harvard Workshop on Research in Behavior in Games and Markets (November 18, 2009).

– "Sticky Content and the Structure of the Web"

  Workshop on Economics of Networks, Systems, and Computation [NetEcon] (July 7, 2009); Harvard SEAS Economics and Computer Science Research Seminar (April 30, 2009).

– "Dynamic Position Auctions with Consumer Search"

  5th Conference on Algorithmic Aspects in Information and Management [AAIM] (June 16, 2009); Harvard SEAS Economics and Computer Science Research Seminar (November 4, 2008).

– "Clubs, Beliefs, and Entrapment"

  AMS Session on Behavioral Sciences, Joint Mathematics Meetings (January 7, 2009).

– "Configurations of Extremal Even Unimodular Lattices"

  MathFest Student Paper Session (August 1, 2008); Brown Symposium for Undergraduates in the Mathematical Sciences (March 8, 2008); Harvard Undergraduate Research Symposium (November 11, 2006); Harvard College Program for Research in Science and Engineering [PRISE] (August 23, 2006).

– "Leonard Bernstein's Doodles: Grasping Genius Through Graphology"

  Guest Lecture, Harvard Freshman Seminar 34m (February 13, 2008); "Leonard Bernstein: Boston to Broadway Symposium," Harvard (October 14, 2006).

– "Word-painting in Gregorian Chant: A Computer-Assisted Study"

  Chant Symposium, Harvard Music 191r: Sources of Gregorian Chant (December 12, 2007).

– "On Universality Properties of Positive-Definite Integral Quadratic Forms"

  Harvard Math 99r: Tutorial on Binary Quadratic Forms (January 6, 2006); Intel International Science and Engineering Fair (May 12, 2005) [awarded the top Karl Menger Prize and the Second Place Grand Award in the mathematics category]; Research Science Institute (July 29, 2004).

Plenary Talks and Invited Addresses

– "Decisionmaking and Behavioral Economics: From Theory and Experiments to Policy," Kavli Frontiers of Science U.S. Symposium (November 5, 2015).

– "Measuring PRISE's Success," Harvard College Program for Research in Science and Engineering [PRISE] Anniversary Celebration (June 19, 2015).

– "The Future of Economic Design," University of Chicago Symposium on Technology and Society (May 2, 2015).

– "Generalized Matching Market Design," Fields Institute Conference on Optimization, Transportation and Equilibrium in Economics (September 15, 2014).

– "Theory, Practice, and Engineering in (Generalized) Matching Market Design," Harvard Center for Research on Computation and Society [CRCS] Lunch Seminar (November 20, 2013).

– "N Things I Wish I Understood About (Differential) Privacy," Simons Foundation Workshop on Applications of Differential Privacy to Economics and the Social Sciences (March 7, 2013).

– "Crisp Printing and Small Type," ScienceMONTGOMERY Award Ceremony (March 20, 2011).

– "Frontiers of Matching Theory," Vassar College Mathematics Colloquium (October 12, 2010).

– "Configurations of Extremal Type II Lattices and Codes," Morgan Prize Lecture, AMS-MAA-SIAM Special Session on Research in Mathematics by Undergraduates, Joint Mathematics Meetings (January 15, 2010).

Expository Lectures (selected)

– "Theory, Practice, and Engineering in Market Design," Distinguished Lecture, Harvard College Program for Research in Science and Engineering [PRISE] (July 22, 2014; July 11, 2013; July 5, 2012).

– "Theory, Practice, and Engineering in Market Design," Becker Friedman Institute Summer Research Experience for Undergraduates, University of Chicago (June 29, 2012).

– "Microeconomics in 50 Minutes," MIT Splash (November 21, 2009).

– "How Much Do You Bid?," Guest Lecture, The Math Circle (May 3, 2009).

– "Why matchmakers?," Guest Lecture, The Math Circle (December 7, 2008).

– "Matchmaker, Matchmaker, Clear Out My House (an introduction to the theory of matching)," Harvard Mathematics Table (November 21, 2008).

– "$C = 15$ (new and old results of quadratic form representation theory)," Harvard Mathematics Table (October 20, 2007) [awarded the top Robert Fletcher Rogers Prize].

Discussant Service

– "Chinese College Admissions and School Choice Reforms: Theory and Experiments" by Yan Chen and Onur Kesten, "Market Design Experiments" session, AEA Meetings (January 3, 2014).

– "Localization and Colocalization within an Urban Area" by Stephen B. Billings and Erik B. Johnson, NBER Summer Institute Workshop on Urban Economics (July 22, 2013).

– "Dynamic Contracting: An Irrelevance Result" by Péter Esö and Balázs Szentes, Cowles Foundation Conference in Economic Theory (June 3, 2013).

– "Optimal Auction Design and Equilibrium Selection in Sponsored Search Auctions" by Benjamin Edelman and Michael Schwarz, "Designing Online Advertising Markets" session, AEA Meetings (January 5, 2010).

Advising

Graduate Students

Name	Degree	Year	Institution	Field(s)	Initial Placement
Hanzhe Zhang	PhD	2015	Chicago	Applied Theory, Market Design	Michigan State University
Jörn Boehnke	PhD	2015	Chicago	Industrial Organization	Harvard CMSA (postdoc)
Kentaro Tomoeda	PhD	2016	Harvard	Theory, Market Design	University of Technology Sydney

Undergraduate Students

Name	Degree	Year	Institution	Field(s)	PhD Institution	Undergrad Thesis Title
Janet Lu	AB, *summa*	2014	Harvard	Market Design	Columbia	"Cardinal Utility and Incomplete Information in School Choice"
Zoë Hitzig	AB, *magna*	2016	Harvard	Evolutionary Game Theory		"The Evolutionary Dynamics of Distributive Justice"

Refereeing

Economics

– *American Economic Journal: Microeconomics*, *American Economic Review*, Cambridge University Press, *Econometrica*, *Economic Theory*, *Economics and Business Letters*, *Economics Letters*, *European Journal of Operational Research*, *Games and Economic Behavior*, *International Journal of Game Theory*, *International Journal of Industrial Organization*, *Journal of Economic Geography*, *Journal of Economic Literature*, *Journal of Economic Theory*, *Journal of Health Economics*, *Journal of Law and Economics*, *Journal of Political Economy*, *Journal of the European Economic Association*, *Journal of Urban Economics*, *Management Science*, *Mathematical Social Sciences*, *Mathematics of Operations Research*, National Science Foundation [NSF], *Operations Research*, *Papers in Regional Science*, *Public Choice*, *Quarterly Journal of Economics*, *RAND Journal of Economics*, *Review of Economic Studies*, *Southern Economic Journal*, Swiss National Science Foundation [SNSF], *Theoretical Economics*, Yale University Press.

Computer Science

– *ACM Conference on Electronic Commerce [EC]*, *Algorithms*, *Artificial Intelligence*, *Conference on Auctions, Market Mechanisms and Their Applications [AMMA]*, *Conference on Web and Internet Economics [WINE]*, *International Workshop on Computational Social Choice [COMSOC]*, *International World Wide Web Conference [WWW]*, *Symposium on Foundations of Computer Science [FOCS]*.

Mathematics

– *American Invitational Math Exam [AIME]*, *American Mathematics Competition [AMC]*, *Applicable Analysis and Discrete Mathematics*, *Current Science*, *Discrete Applied Mathematics*, *Journal of Theoretical Biology*.

Miscellaneous

Science Fair Judging

– *Mathematics Grand Awards Co-Chair*, Intel International Science and Engineering Fair [ISEF] (2013–2015).

- *Mathematics Grand Awards Judge*, Intel International Science and Engineering Fair [ISEF] (2012).
- *ISEF Awards Judge*, ScienceMONTGOMERY (2011).