

Andrey Fradkin

CONTACT INFORMATION MIT Sloan School of Management
Room E62-412, 30 Memorial Drive, Cambridge, MA 02142
Voice: (201) 921-6279
E-mail: afradkin@mit.edu
Web: www.andreyfradkin.com
Google Scholar: [goo.gl/pTiQBU](https://scholar.google.com/citations?user=pTiQBU)

POSITIONS Summer 2018 - ongoing : Assistant Professor, Boston University Questrom School of Business
2015 - 2018: Postdoctoral Associate, MIT Sloan School of Management
2012 - 2016: Part-time Data Scientist, Airbnb Inc.
2014 - 2015: Postdoctoral Fellow, National Bureau of Economic Research

EDUCATION Stanford University, Stanford, California September, 2008 - June, 2014
Ph.D. in Economics
Duke University, Durham, North Carolina August, 2004 - May, 2008
B.S. with High Distinction in Economics and Mathematics w/ minor in Political Science

RESEARCH FIELDS Industrial Organization, Economics of Digitization, Quantitative Marketing, Labor Economics

PUBLICATIONS **The Welfare Economics of Default Options in 401(k) Plans** (with Douglas Bernheim and Igor Popov)
American Economic Review, September 2015
Default contribution rates for 401(k) pension plans powerfully influence workers' choices. Potential causes include opt-out costs, procrastination, inattention, and psychological anchoring. We examine the welfare implications of defaults under each of these theories. We show how the optimal default, the magnitude of the welfare effects, and the degree of normative ambiguity depend on the behavioral model, the scope of the choice domain deemed welfare-relevant, the use of penalties for passive choice, and other 401(k) plan features. Depending on which theory and welfare perspective one adopts, virtually any default contribution rate may be optimal. Still, our analysis provides reasonably robust justifications for setting the default either at the highest contribution rate matched by the employer or – contrary to common wisdom – at zero. We also identify the types of empirical evidence needed to determine which case is applicable.

The Impact of Unemployment Insurance on Job Search: Evidence from Google Search Data (with Scott R. Baker)
The Review of Economics and Statistics, December 2017
Job search is a key choice variable in theories of labor markets but is difficult to measure directly. We develop a job search activity index based on Google search data, the Google Job Search Index (GJSI). We validate the GJSI with both survey- and web-based measures of job search. Unlike those measures, the GJSI is high-frequency, geographically precise, and available in real time. We demonstrate the GJSI's utility by using it to study the effects of unemployment insurance (UI) policy changes between 2008 and 2014. We find no evidence of an economically meaningful effect of these changes on aggregate search.

Blame the Parents? How Parental Unemployment Affects Labor Supply and Job Quality for Young Adults (with Frederic Panier and Ilan Tojerow)
Forthcoming, Journal of Labor Economics
We study the role of shocks to parental income in determining the labor market outcomes of children entering the labor market. We find that a child whose parent loses a job prior to the child's labor market entry is, on average, induced to work 9 percent more in the 3 years following labor market entry than a child whose parents lose a job after the child's entry. This effect is concentrated on

the extensive margin and decreases in magnitude over time. We find no evidence that these shocks affect the quality of the job that entrants find.

WORKING PAPERS **The Welfare Effects of Peer Entry in the Accommodations Market: The Case of Airbnb**
(with Chiara Farronato)

We study the effects of enabling peer supply through Airbnb in the accommodation industry. We present a model of competition between flexible and dedicated sellers - peer hosts and hotels - who provide differentiated products. We estimate this model using data from major US cities and quantify the welfare effects of Airbnb on travelers, hosts, and hotels. The welfare gains are concentrated in locations (New York) and times (New Years Eve) when hotels are capacity constrained. This occurs because peer hosts are responsive to market conditions, expand supply as hotels fill up, and keep hotel prices down as a result.

Search, Matching, and the Role of Digital Marketplace Design in Enabling Trade: Evidence from Airbnb

(This paper is a major revision of the first part of my thesis: “Search Frictions and the Design of Online Marketplaces.”)

Digital peer-to-peer marketplaces have increased trade in underutilized assets. I use the setting of Airbnb to investigate transaction costs in peer-to-peer markets and the role of search engine design in reducing these costs. I show that search is limited, directed, and often results in the rejection of searchers by hosts due to uncertain seller availability. I document the reasons for these rejections and show that rejections cause searchers to leave the market. I then simulate outcomes with alternative consideration sets and find that, without availability tracking by the search engine, the share of rejected contacts would more than double.

The Determinants of Online Review Informativeness: Evidence from Field Experiments on Airbnb (with Elena Grewal, David Holtz, and Matthew Pearson)

An earlier version appeared as an abstract at ACM EC’15

Reputation systems are used by most digital marketplaces, but their design varies greatly. We use two experimental changes to reviews on Airbnb to study how design choices affect the extent to which ratings and reviews aggregate information. The first change offered guests a \$25 coupon in exchange for submitting a review. The second change implemented a simultaneous reveal review system, which eliminated strategic considerations from reviews. We show how both experiments made the reputation system more informative and use our findings to quantify the relative importance of mechanisms that cause inefficiency in reputation systems.

Search Frictions and the Design of Online Marketplaces

(Superseded by “Search, Matching, and the Role of Digital Marketplace Design in Enabling Trade: Evidence from Airbnb” and “A Simulation Approach to Modeling the Effects of Market Design in Online Platforms”)

Online marketplaces increasingly act as intermediaries in labor, housing, dating, and other matching markets. These marketplaces collect novel data generated by users’ search and communications activity. I study how this data can be used to inform marketplace design and to diagnose inefficiencies on Airbnb, a prominent online marketplace for short-term housing rentals. I show that potential guests engage in limited search, are frequently rejected by hosts, and match at lower rates as a result. I then estimate a micro-founded model of search and matching and use it to show that if frictions were removed, there would be 102% more matches in the marketplace. I propose and evaluate several search ranking algorithms and show that a personalized algorithm would increase the matching rate by 10% over the status quo. However, due to equilibrium effects, an A/B experiment of the type commonly used by internet companies can overstate the true treatment effect of an algorithm by over 100% in some cases.

NON-PEER
REVIEWED
ARTICLES:

Digital Marketplaces

Invited Submission to the New Palgrave Dictionary of Economics

Digital Market Design and Inequality

In preparation for Oxford University Press Volume IV: "More Equal by Design: Economic Design Responses to Inequality". Eds. Scott Duke Kominers and Alex Teytelboym.

IN PROGRESS: **Licenses vs. Reviews: Evidence from an Online Services Marketplace** (with Erik Brynjolfsson, Chiara Farronato, and Brad Larsen)

A Simulation Approach to Modeling the Effects of Market Design in Online Platforms
(This paper is a major revision of the second part of my thesis: "Search Frictions and the Design of Online Marketplaces.")

Employees as Investors: An Empirical Analysis of the Start-up Job Market
(with Christian Catalini)

COMPUTER AND COMPUTATIONAL SOCIAL SCIENCE CONFERENCE PRESENTATIONS: *Search, Matching, and the Role of Digital Marketplace Design in Enabling Trade*, The Second International Conference on Computational Social Science (IC2S2'16)
Search Frictions and the Design of Online Marketplaces, The Third Conference on Auctions, Market Mechanisms, and Their Applications (AMMA'15)
Bias and Reciprocity in Online Reviews: Evidence from Field Experiments on Airbnb. The Sixteenth ACM Conference on Economics and Computation (EC'15).

PRESENTATIONS / CONFERENCES
2018: University of Chicago
2017: University of Toulouse, University of Minnesota, Microsoft Research, Hong Kong University, Third Workshop on Marketplace Innovation, Searle Conference on Internet and Innovation, 15th ZEW Conference on The Economics of Information and Communication Technologies, INFORMS, Clemson University, London Business School, University of Texas (Dallas), University of British Columbia, University of Pennsylvania, Duke University, Boston University
2016: ASSA 2016, Boston College, Searle Conference on Internet and Innovation, Summer Institute in Competitive Strategy, NBER Summer Institute (Digitization and IO), Travel & Tourism Conference, HCEO Market Design Approaches to Inequality (U. Chicago), Northwestern U., Workshop on Information Systems (WISE), UMass. Amherst (Hotel Admin.), Institute for the Future (IFTF)
2015: Toulouse Network on Information Technology (Microsoft Research), MIT, Berkeley Crowdfunding Conference, NBER Summer Institute (Digitization, Labor Studies), FTC Sharing Economy Workshop, President's Council of Advisors on Science and Technology - Technology and the Future of Cities, Wharton, U. Chicago Harris School, U. Rochester Business School, Cornell School of Hotel Administration, Sciences Po, UCLA Anderson, Harvard (EconCS), Ebay Data Labs, NBER Productivity Seminar, Society of Labor Economists Conference (SOLE)
2014: Harvard Business School, Columbia Business School, NBER Summer Institute (Digitization), University of Illinois - Urbana Champaign, Microsoft Research, Airbnb Tech Talk, Square Inc., Conference on Digital Experimentation at MIT (CODE), Northeastern University
2013: NET Institute Conference, ASSA 2013
2011: Google Economics Group

REFEERING AND SERVICE
Econometrica, Quarterly Journal of Economics, American Economic Review, Management Science, Journal of Labor Economics, Journal of Public Economics, AEJ-Policy, Journal of Economics and Management Strategy, Journal of Industrial Economics, Journal of Applied Econometrics, Program Committee of the 25th World Wide Web Conference (WWW'16), Manufacturing and Service Operations Management, ICIS

Economic Frontiers Podcast - Economic Frontiers is a podcast about the frontier of economics research regarding technology, innovation, and digitization. Each episode brings in a leading researcher or research team for a discussion of their work and its broader implications.

MIT On-Demand Economy Workshop and Conference - Co-organized conference bringing together academics, technology leaders, and policy makers to discuss how technology is changing matching in the labor market.

SCHOLARSHIPS,
HONORS AND
AWARDS

Scholarships: NET Institute Fellowship, Shultz Fellowship Award, George P. Shultz Scholar, Haley-Shaw Fellowship Scholar
Awards: Allen Starling Johnson, Jr. Best Undergraduate Thesis in Economics Prize

TEACHING
EXPERIENCE

2015 - 2017: Guest lectures: Ph.D. Market Design (Harvard), MBA Marketing Analytics (MIT Sloan, Boston U. Questrom School of Business), MBA Information Economics (MIT Sloan)
2011 - 2012: TA: Advanced Topics in Econometrics (Prof. DeGiorgi), Introduction to Econometrics (Prof. Harding and Prof. Mahajan), Market Design (Prof. Levin).
2007 - 2008: TA: Intermediate Microeconomics (Prof. Yildirim and Prof. Taylor), Financial Markets and Investment (Prof. Eraker), Junior Honors Thesis Seminar (Prof. Tauchen and Prof. Bollerslev).

DATA SCIENCE /
OTHER

A National Survey of the Peer-to-Peer Economy (with Chiara Farronato and Rover.com)
Designed a quarterly national survey to measure the current and expected size of the peer-to-peer economy. The survey also quantifies the importance of barriers to the consumption of peer-to-peer services in the labor, hospitality, transportation, and pets markets.

Ranking Algorithm Design:

Co-designed a proprietary algorithm that uses discrete choice models to rank the listings displayed to Airbnb searchers.

Search Experimentation Framework:

Co-designed a system that tracks the actions of searchers and evaluates search experiments.

Operations Experiments:

Designed experiments to evaluate the effectiveness of customer support and platform pricing.

Consulting:

Advised on the design of Airbnb's reputation system, pricing recommendations, marketing strategy, and academic collaboration policy.

Media:

Co-created the Airbnb Hospitality Index and the Airbnb Global Citizenship Index. This work was covered in Le Monde, El Pais, the Telegraph, and other media outlets.