Andrey Fradkin

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POSITIONS

2015 - ongoing: 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
  Committee: Jonathan Levin, Liran Einav, Caroline Hoxby, Luigi Pistaferri

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, 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.

WORKING PAPERS

Market Structure with the Entry of Peer-to-Peer Platforms: The Case of Hotels and Airbnb (with Chiara Farronato)
We study the entry of Airbnb in the accommodation industry to understand the determinants and effects of peer-to-peer growth. We first describe the large heterogeneity of Airbnb?s penetration across 50 major US cities (through 2014) and demonstrate that much of this heterogeneity can be explained by proxies for the costs of hotels, the costs of peer hosts, and demand volatility. Second, we show that, on average between 2011 and 2014, a 10% increase in the size of Airbnb reduced hotel revenue by 0.38%. This effect, mostly due to a reduction in hotel prices rather than occupancy, is greatest in cities with low hotel capacity relative to the size of demand. Third, we estimate a structural equilibrium model and use it to study the effects of Airbnb on market outcomes and welfare. On one end of the spectrum, we find that in New York City in 2014 Airbnb increases consumer surplus by 3% and that over 46% of Airbnb bookings would not have resulted in hotel bookings had Airbnb not been available. On the other end of the spectrum, we find that in Las Vegas the aggregate effect of Airbnb is negligible and that 18% of Airbnb bookings constitute market expansion.

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 enabled exchange for underutilized assets and time. In this paper, I investigate the transaction costs that previously prevented trade and the role of search engine design in reducing these costs. The setting of my paper is Airbnb, which has enabled the market for short-term rentals of private residences in urban areas. I use data on search, communication, and transactions to show that this market is characterized by a large set of options, heterogeneity in searcher preferences, and uncertain availability. Consequently, search is limited, time consuming, and sometimes results in failed transaction attempts due to rejections of searchers by hosts. I show that without an appropriately designed search engine, these costs would be far greater. If the search engine did not track availability, rank results, and allow for the use of filters, the share of inquiries that would be rejected by hosts would increase by 144% and the share of individuals who choose the outside option without sending an inquiry would increase by up to 8%. Lastly, I show how searcher outcomes can be improved from the status quo (as of 2014) by algorithms that redirect searchers towards listings that are more likely to accept those searchers.

The Determinants of Online Review Informativeness: Evidence from Field Experiments on Airbnb (with Elena Grewal, David Holtz, and Matthew Pearson)
Reputation systems are used by virtually all digital marketplaces but their design varies greatly across websites, even within the same industry. Furthermore, because reviews are a public good, reputation systems are imperfectly informative. We use the setting of Airbnb to study how design choices affect the ability of ratings and reviews to aggregate information. We first show that online reviews are highly correlated with anonymous and private ratings as well as other signals of transaction quality. We then study two experimental changes to the reputation system of Airbnb. The first change offered guests a $25 coupon to submit a review. The second change implemented a simultaneous-review system, which prevented strategic reciprocity in reviews, making those reviews more informative. Using the experimental results, we quantify the extent of sorting due to the fact that those with worse experiences were less likely review and the extent of misreporting due to strategic reciprocity in the control group. We find that the aggregate effect of sorting on average ratings is an order of magnitude larger than the effect of strategic reciprocity.

The Impact of Unemployment Insurance on Job Search: Evidence from Google Search Data (with Scott Baker)
Revise and Resubmitted at The Review of Economics and Statistics
Job search is a key choice variable in theories of labor markets but has proven difficult to measure directly. We develop a new measure of job search activity based on Google search data, the Google Job Search Index (GJSI). We validate the GJSI by showing that it displays similar behavior to both survey and web browsing based measures of job search. Unlike those measures of job search, the GJSI is high-frequency, geographically precise, and available in real time. We demonstrate the utility of the GJSI by using it to study the effects of the unemployment insurance (UI) expansions between 2008 and 2011 on job search. We find no evidence of economically meaningful decreases in aggregate search activity due to these UI expansions.

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.

Blame the Parents? How Financial Incentives Affect Labor Supply and Job Quality for Young Adults (with Frederic Panier and Ilan Tojerow)
Submitted
Young adults entering the labor force typically have little access to unemployment insurance or other formal insurance mechanisms. Instead, they rely on family insurance in the form of parental support to smooth consumption. We study the labor supply and job quality responses of Belgian young adults to decreases in parental support caused by parental job displacements. Our estimates correct for unobserved heterogeneity by using the timing of parental shocks before and after labor market entry. We find that a child whose parent loses a job prior to the child's labor market entry is, on average, induced to work 6% more in the 3 years following labor market entry than a child whose parents lose a job after the child's entry (where labor market entry is defined as the end of the childs full-time education). This effect is concentrated on the extensive margin, meaning that the child finds a job faster, and disappears within four years of entry. We find no evidence that parental support affects the quality of the initial job that entrants find.

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)
	The Economics of Peer-to-Peer Markets 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.
REFEREED CONFERENCE PRESENTATIONS:	*Search, Matching, and the Role of Digital Marketplace Design in Enabling Trade*, The Second International Conference on Computational Social Science
	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	2017 (Scheduled): University of Toulouse, University of Minnesota
	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
	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

REFEEERING AND SERVICE	Econometrica, Quarterly Journal of Economics, 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 **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 - 2016: Guest lectures: Ph.D. Market Design (Harvard), MBA Marketing Analytics (MIT Sloan), 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.