

## Andrey Fradkin

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CURRENT POSITIONS	2015 - : Postdoctoral Associate, MIT Sloan School of Management 2012 - ongoing: Part-time Data Scientist, Airbnb Inc.	
EDUCATION	Stanford University, Stanford, California Ph.D. in Economics	September, 2008 - June, 2014
	Duke University, Durham, North Carolina B.S. with High Distinction in Economics and Mathematics w/ minor in Political Science	August, 2004 - May, 2008
RESEARCH FIELDS	Primary fields: Industrial Organization, Economics of Digitization, Labor Economics Secondary fields: Behavioral Economics	
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	
PUBLICATIONS	<b>The Welfare Economics of Default Options in 401(k) Plans</b> (with Douglas Bernheim and Igor Popov) <i>Forthcoming at the American Economic Review</i>  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	<b>Search Frictions and the Design of Online Marketplaces</b> 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.	

**Bias and Reciprocity in Online Reviews: Evidence from Experiments on Airbnb** (with Elena Grewal, David Holtz, and Matthew Pearson)

*Presented at ACM EC'15 and NBER Summer Institute*

Reviews and other evaluations are used by consumers to decide what goods to buy and by firms to choose whom to trade with, hire, or promote. However, because potential reviewers are not compensated for submitting reviews and may have reasons to omit relevant information in their reviews, reviews may be biased. We use the setting of Airbnb to study the determinants of reviewing behavior, the extent to which reviews are biased, and whether changes in the design of reputation systems can reduce that bias. We find that reviews on Airbnb are generally informative and 97% of guests privately report having positive experiences. Using two field experiments intended to reduce bias, we show that non-reviewers tend to have worse experiences than reviewers and that strategic reviewing behavior occurred on the site, although the aggregate effect of the strategic behavior was relatively small. We use a quantitative exercise to show that the mechanisms for bias that we document decrease the rate of reviews with negative text and a non-recommendation by .86 percentage points. Lastly, we discuss how online marketplaces can design more informative review systems.

**The Impact of Unemployment Insurance on Job Search: Evidence from Google Search Data** (with Scott Baker)

*Revise and Resubmit at the Journal of Labor Economics*

Job search is a key choice variable in theories of labor markets but has proven difficult to measure directly. We develop and validate the Google Job Search Index (GJSI), a measure of job search based on Google search data. The GJSI is publicly available, high-frequency, and location-specific. We use the GJSI to study the effects of the unemployment insurance (UI) expansions between 2008 and 2011. We show that states with higher potential durations of UI experience decreased search. A calibration exercise suggests that the decrease in job search due to UI expansions had minor effects on unemployment rates.

**Blame the Parents? How Financial Incentives Affect Labor Supply and Job Quality for Young Adults** (with Frederic Panier and Ilan Tojerow)

*Presented at: NBER Summer Institute, Society of Labor Economists World Conference*

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 market response 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 parents lose 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 child's 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:

**Market Structure with the Entry of Peer-to-Peer Platforms: The Case of Hotels and Airbnb** (with Chiara Farronato)

Online marketplaces have reduced entry costs across a variety of industries. These marketplaces allow small and part-time service providers (peers) to participate in economic exchange. For example, Airbnb allows anyone to become a hotelier and Uber allows anyone to become a cab driver. The entry of peer-to-peer competitors has two effects: market expansion and business stealing. The first effect occurs when the peer-to-peer sector supplies price sensitive or niche consumers who were previously under-served. The second effect occurs when the peer-to-peer sector attracts consumers away from conventional suppliers. We study these two effects using data from the hotel industry and Airbnb. We show that the market expansion and business stealing effects differ by location, and attribute this heterogeneity to supply constraints - legal and geographic - relative to the level

of demand. We then derive a simple model of competition between a peer-to-peer marketplace and hotels to explain these findings. In the model, hotels and peer-to-peer suppliers differ in their fixed (higher for hotels) and marginal costs (higher for peer-to-peer suppliers). The model allows us to study how the efficient market structure depends on the level and variability of demand, and to quantify the welfare gains from peer-to-peer entry in the accommodation industry.

**The Effects of Online Labor Platforms on Consumption Smoothing and Labor Supply**  
(with Scott Baker and Lorenz Kueng)

**Do Occupational Licenses Matter in a Digitized World? Evidence from an Online Services Marketplace** (with Erik Brynjolfsson, Chiara Farronato, and Brad Larsen)

INVITED  
PRESENTATIONS /  
CONFERENCES

2015: 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), ACM EC'15, NBER Summer Institute (Digitization, Labor Studies), Berkeley, ACM AMMA'15  
2014: Harvard Business School, Columbia Business School, National Bureau of Economic Research (Summer Meetings), University of Illinois - Urbana Champaign, Microsoft Research, Airbnb Tech Talk, Square Inc., Conference on Digital Experimentation at MIT, Northeastern University  
2013: NET Institute Conference, Annual Meeting of the AEA (San Diego)  
2011: Google Economics Group

TEACHING  
EXPERIENCE

Stanford University:  
2011 - 2012: Advanced Topics in Econometrics (Prof. DeGiorgi), Introduction to Econometrics (Prof. Harding and Prof. Mahajan), Market Design (Prof. Levin).  
Duke University:  
2007 - 2008: 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. The algorithm creates an ordering according to a listing's perceived quality and probability of converting to a booking after communication.  
**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.  
**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.  
**Consulting:**  
Advised on the design of Airbnb's reputation system and pricing recommendations.