

## 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 Committee: Jonathan Levin, Liran Einav, Caroline Hoxby, Luigi Pistaferri	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	Industrial Organization, Economics of Digitization, Labor Economics	
PUBLICATIONS	<b>The Welfare Economics of Default Options in 401(k) Plans</b> (with Douglas Bernheim and Igor Popov) <i>American Economic Review</i> , 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	<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.  <b>Bias and Reciprocity in Online Reviews: Evidence from Experiments on Airbnb</b> (with Elena Grewal, David Holtz, and Matthew Pearson) 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)

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.

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

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, often in competition with more traditional suppliers. For example, Airbnb and Uber allow almost anyone to become a hotelier or a cab driver. We first characterize market conditions favoring the entry of peer producers. In the context of the accommodation industry, we verify that across US major cities larger Airbnb presence is associated with low opportunity costs of renting out spare rooms, high investment costs of building hotels, and high demand volatility. We then provide reduced form evidence on the effect of Airbnb entry on hotels revenue, and highlight important city heterogeneity. We then derive and estimate a simple model of competition between a peer-to-peer marketplace and hotels to explain our reduced form findings. This model allows us to determine the efficient market structure conditional on the level and variability of demand, and to quantify the welfare gains from peer-to-peer entry in the accommodation industry.

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

**Search, Matching, and Frictions in a Peer-to-Peer Market: Experimental and Model Based Evidence** (This paper is a major revision of the first part of my thesis: “Search Frictions and the Design of Online Marketplaces.”)

**Micro versus Macro Approaches to Modeling Matching Outcomes in Online Platforms** (This paper is a major revision of the second part of my thesis: “Search Frictions and the Design of Online Marketplaces.”)

**The Economics of Peer-to-Peer Markets**

Invited Submission to the New Palgrave Dictionary of Economics

REFEREED CONFERENCE PRESENTATIONS: *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).

INVITED PRESENTATIONS / CONFERENCES  
2015: Toulouse Network on Information Technology, MIT, Berkeley Crowdfunding Conference, NBER Summer Institute (Digitization, Labor Studies), 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, Northeastern University  
2013: NET Institute Conference, Annual Meeting of the AEA (San Diego)  
2011: Google Economics Group

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 (AS A TA)  
2011 - 2012: Advanced Topics in Econometrics (Prof. DeGiorgi), Introduction to Econometrics (Prof. Harding and Prof. Mahajan), Market Design (Prof. Levin).  
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  
**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. **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.