Contact

Name	Pearl Z. Li
Email	pearlzli@stanford.edu
Phone	302-290-5595
Address	1 Henry Adams St, Apt S-503, San Francisco, CA 94103

Education

2018–	Ph.D. Student in Economics, Stanford University Fields: Market Design, Industrial Organization Other Field Courses: Game Theory, Contract Theory, Urban Economics
2015–2016	M.A. in Mathematics, University of Pennsylvania
2012–2016	B.A. in Mathematics and Economics, University of Pennsylvania Minor in Computer Science

Research Overview

I'm broadly interested in the design and functioning of markets where fairness is a goal and inequality is a concern. In online marketplaces, the number of market participants can be huge and interactions are often impersonal (if not completely anonymous) and mediated by algorithms. For these reasons, equity can be a particularly important desideratum in online markets, which are also more often purposefully designed than offline ones. In my research, I use applied theory and structural estimation to evaluate the distributional effects of alternative allocation mechanisms, design fairer and more equitable mechanisms, and quantify the trade-off between efficiency and equity.

Some particular (online and offline) markets I'm interested in include:

- *Online advertising:* Online ads are often allocated via auctions, which are vulnerable to both intentional and unintentional discrimination. What are the welfare implications of discrimination in online advertising markets, and what does a fairer ad allocation mechanism look like? (More on the second question below.) How do users choose to

reveal or conceal information about themselves when they know discrimination is a possibility? For example, how much, if anything, might female users be willing to pay in order to look like male users to advertisers?

- *Transportation:* Economic theory predicts that congestion pricing can completely eliminate traffic congestion, but road pricing is very uncommon in practice. One barrier to its implementation is its potentially unequal impact on the rich and poor, which might render it politically untenable. Which groups of travelers benefit from or are harmed by different types of congestion pricing? Scarce road space is rationed by wait time only in the absence of road pricing, and by price only under true marginal-cost pricing. How effectively do intermediate pricing schemes (such as Singapore's cordon-crossing charge) ration road space using both price and wait time? Is it possible to generate a Pareto improvement *before using toll revenues* by pricing only a subset of lanes?

- *Public housing:* When should housing authorities permit public housing residents to trade units? Match qualities between tenants and units may be poor to begin with, and can worsen if tenants' preferences over units change over time (for example, due to starting a new job on the other side of the city). Allowing trading has clear efficiency benefits for existing tenants, but these may come at the cost of applicants who are still waiting for public housing. Under trading, tenants are more likely to stay in the public housing system after a negative preference shock, which may reduce the vacancy rate and increase the wait time for wait list or lottery applicants. If the marginal tenants who stay in public housing under trading are those with better outside options, allowing trading may reduce the housing authority's ability to target low-income residents.

Research in Progress

"Designing Against Market-Induced Discrimination in Online Advertising Auctions"

Empirical research suggests that women see fewer employment ads than men online, at least in part because they're actually *more* attractive to many advertisers. Perversely, greater competition for women's attention may cause them to see fewer of the ads that they may value more. In this paper, I look for an alternative ad allocation mechanism that is robust to this phenomenon, which I call *market-induced discrimination*. I say a mechanism is fair ("satisfies individual equity") if, after conditioning on a user's values to job advertisers, further conditioning

on the user's gender does not change their probability of seeing a job ad. I derive the constrained-efficient mechanism, a "second-score auction" in which job advertisers' bids on men are effectively taxed and their bids on women are effectively subsidized. I show that this scoring auction is strategy-proof and guarantees at least one-half the total (advertiser and ad platform) surplus achieved by the unconstrained efficient mechanism.

"On the General Structure of Revealed Preference Identification Arguments" (with Nikhil Agarwal and Paulo Somaini)

Revealed preference arguments are commonly used when identifying models involving both single-agent decisions and non-cooperative games. In this paper, we develop general identification results for a large class of models that share a linearly separable payoff structure. Our model allows for both discrete and continuous choice sets, incorporating widely studied models such as discrete and hedonic choice models, auctions, school choice mechanisms, oligopoly pricing, and trading games. Point identification can be achieved either if the choice set is sufficiently rich or if a variable that shifts preferences is available. More generally, we characterize the identified set, and provide assumptions under which the model is identified. Our characterization result also suggests an estimation approach, which we implement to estimate firm values in a combinatorial procurement auction for school lunches in Chile.