PEARL Z. LI

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EDUCATION

Ph.D. in Economics, Stanford University, 2018–
Expected Completion: June 2024
Dissertation: *"Essays on the Design of Equitable Markets"*

M.A. in Mathematics, University of Pennsylvania, 2015–2016

B.A. in Mathematics and Economics, University of Pennsylvania, 2012–2016

DISSERTATION COMMITTEE

Prof. Paulo Somaini (primary)
Stanford Graduate School of Business
soma@stanford.edu

Prof. Liran Einav
Economics Department, Stanford University
leinav@stanford.edu

Prof. Matthew Gentzkow
Economics Department, Stanford University
gentzkow@stanford.edu

Prof. Lanier Benkard
Stanford Graduate School of Business
lanierb@stanford.edu

RESEARCH AND TEACHING FIELDS

Industrial Organization, Market Design, Urban Economics

RESEARCH PAPERS

Value Pricing or Lexus Lanes? The Distributional Effects of Dynamic Tolling (with Cody Cook). Job Market Paper. November 2023.

Abstract: This paper studies the welfare and distributional effects of dynamically priced highway toll lanes. To quantify the equilibrium effects of tolling, we develop and estimate a model of driver demand, the road technology, and the pricing algorithm. The demand model features heterogeneous drivers choosing both where and when to drive, as well as uncertainty about prices and travel times. A key welfare channel is the option value of tolling: even drivers who infrequently take the priced lanes can benefit from having the option but not the obligation to pay for speed. The model is estimated using data on toll transactions, historical traffic conditions, and driver characteristics from the I-405 Express Toll Lanes in Washington State. Relative to a world in which the same number of highway lanes are all free, status-quo tolling increases aggregate welfare and benefits drivers in all income quartiles, driven in large part by the option value. Moreover, we find that drivers in the bottom income quartile gain the most under status-quo tolling. Low-income drivers

have the longest I-405 commutes and they face low prices relative to their time savings from the priced lanes. They also have high option values of tolling because they are more price-sensitive, so they are more likely to be marginal when deciding between the priced and unpriced lanes. Finally, we show how simple revisions to the pricing algorithm can increase aggregate welfare and achieve redistributive goals.

Where to Build Affordable Housing? Evaluating the Tradeoffs of Location (with Cody Cook and Ariel J. Binder). November 2023.

Abstract: How does the location of affordable housing affect tenant welfare, the distribution of assistance, and broader social objectives such as racial and economic integration? Using administrative data on households living in units funded by the Low-Income Housing Tax Credit (LIHTC), we first show that tenant characteristics such as income, race, education, and family structure vary widely across neighborhoods, despite common eligibility thresholds. To quantify the welfare implications, we develop and estimate a residential choice model in which households choose from both market-rate and affordable housing options, where the latter are priced below-market and must be rationed. Moving a new development to a neighborhood with less poverty and better access to good schools and jobs increases aggregate tenant welfare and reduces both racial and economic segregation. However, it is also more costly to provide and disproportionately benefits more moderate-need, non-Black/Hispanic households. This change in the distribution of assistance arises in part because of the rationing process: households that only apply for assistance in opportunity-rich neighborhoods crowd out other households willing to apply anywhere. Relative to the choice of where to build, policy levers available post-construction—such as lowering the eligibility thresholds—have only limited effects on outcomes.

Identification Using Revealed Preferences in Linearly Separable Models (with Nikhil Agarwal and Paulo Somaini). NBER Working Paper No. 31868. November 2023.

Abstract: Revealed preference arguments are commonly used when identifying models of both single-agent decisions and non-cooperative games. We develop general identification results for a large class of models that have a linearly separable payoff structure. Our model allows for both discrete and continuous choice sets. It incorporates widely studied models such as discrete and hedonic choice models, auctions, school choice mechanisms, oligopoly pricing and trading games. We characterize the identified set and show that point identification can be achieved either if the choice set is sufficiently rich or if a variable that shifts preferences is available. Our identification results also suggest an estimation approach. Finally, we implement this approach to estimate values in a combinatorial procurement auction for school lunches in Chile.

PUBLICATIONS

DSGE Forecasts of the Lost Recovery (with Michael Cai, Marco Del Negro, Marc Giannoni, Erica Moszkowski, and Abhi Gupta). *International Journal of Forecasting*, Volume 35, Issue 4. October 2019.

WORK IN PROGRESS

(Re)allocation Mechanisms For Durable Goods: Theory and Evidence from Affordable Housing (with Cody Cook)

Abstract: Unlike many other goods allocated through centralized mechanisms, affordable housing is durable: who receives a unit today affects the supply of units available to reallocate in the future. We build a dynamic

model of the allocation mechanism that endogenizes the arrival rate of vacant units. Households in the model make decisions on both whether to apply and, if allocated a unit, whether to move out each period. Policy changes that affect the move-out rate (e.g., giving households more choice when applying or allowing tenants to swap units) lead to a tradeoff between providing longer stays in subsidized housing to fewer households or shorter stays to more households. Optimal policy depends on dynamic considerations such as how match quality, need, and any treatment effects on households evolve over time. To take the theory to the data, we are working on a data-sharing agreement with New York City, where units are allocated through centrally-run lotteries.

Designing Against Market-Induced Discrimination in Online Advertising Auctions

Abstract: 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 propose an alternative ad allocation mechanism that is robust to this phenomenon, which I call market-induced discrimination. First, I solve for the mechanism which maximizes producer (advertiser and platform) surplus subject to a fairness constraint. The optimal fair mechanism is a second-score auction in which job advertisers' bids on men (women) are effectively taxed (subsidized). Next, I extend the model to include consumer preferences and surplus. I show that under certain realistic conditions, the fair mechanism achieves a greater total social surplus than the (producer surplus-maximizing) VCG mechanism. I use this result to argue that the fair mechanism is a tractable alternative to the socially optimal mechanism.

RELEVANT POSITIONS

2023–	Special Sworn Status, United States Census Bureau
2019–20	Research Assistant for Paulo Somaini, Stanford University
2016–18	Senior Research Analyst, Federal Reserve Bank of New York
2015	Summer Research Analyst, Federal Reserve Bank of New York
2014	Research Assistant for Jerry Kim, Columbia University
2013–14	Research Assistant for David Abrams, University of Pennsylvania

TEACHING EXPERIENCE

2020–23	Teaching Assistant, Stanford University, Econ 137 (UG Decision Modeling and Information), x2
2023	Course Assistant, Stanford University, OIT 274 (MBA Data and Decisions)
2021–22	Teaching Assistant, Stanford University, Econ 257 (PhD Industrial Organization I), x2
2021	Teaching Assistant, Stanford University, Econ 136 (UG Market Design)
2015	Teaching Assistant, University of Pennsylvania, Math 116 (UG Honors Calculus I)
2013–15	Teaching Assistant, University of Pennsylvania, CIS 120 (UG Programming Languages and Techniques I), x3

SCHOLARSHIPS, HONORS, AND AWARDS

2023–24	B.F. Haley and E.S. Shaw Fellowship for Economics, Stanford Institute for Economic Policy Research
2023–24	Dissertation Fellowship, Stanford Institute for Research in the Social Sciences
2022	George P. Shultz Graduate Fellowship, Stanford Institute for Economic Policy Research
2018–19	Enhancing Diversity in Graduate Education Fellowship, Stanford University
2018–19	Economics Department Fellowship, Stanford University
2016	Phi Beta Kappa, University of Pennsylvania
2016	Bernard Shanbaum Prize, Economics Department, University of Pennsylvania
2015	Simon Kuznets Fellowship Award, Penn Institute for Economic Research

EXTERNAL PRESENTATIONS

2023	WEAI Graduate Student Workshop, Urban Economics Association

OTHER INFORMATION

Citizenship: USA

Last Updated: November 2023