

ANDREW FERDOWSIAN

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EDUCATION

Princeton University, September 2017 - May 2023

Ph.D. in Economics

- Thesis Title: “When a Match isn’t Forever: Learning Through Transient Matching”
- Advisor: Professor Yariv | Committee Members: Professor Urgun & Professor Lizzeri

MA in Economics, May 2019

Boston College, May 2016

B.S. in Economics and Mathematics, cum laude

RESEARCH INTERESTS

- Microeconomic Theory, Market Design

RESEARCH PAPERS

“When a Match isn’t Forever: Learning Through Transient Matching” (Job Market Paper)

I study transient matching with overlapping generations. Workers are born with incomplete information about preferences, and strategically propose matches. Learning is experiential, workers must match with firms to learn their preferences. Each period, workers choose a firm to propose to; firms hire their top applicants, up to a capacity constraint. I build upon techniques from the bandit literature to characterize the unique equilibrium, wherein firms are evaluated as endogenous bandits. Even when time frictions are vanishing, path dependency remains a feature of equilibrium. Providing information to workers benefits those with lower quality matches through eliminating costly search, in congested markets this increases competition, harming workers with higher quality matches.

“Build to Order: Endogenous Supply in Centralized Mechanisms” with Kwok Hao Lee and Luther Yap

How should the supply of public housing be optimally selected? Commonly used queuing mechanisms treat the supply of goods as exogenous. However, in practice, designers can often control the inflow of goods as well. We study a dynamic matching model where the designer minimizes a convex combination of mismatch count and vacancies. Our framework is directly based on the Singaporean housing allocation process, Build To Order. We show that endogenous supply radically changes the nature of the optimal mechanism. A key feature of the optimal mechanism is that under-demanded housing is overproduced relative to the static benchmark. Though competition over housing leads to a decrease in efficiency when supply is exogenous, competition instead improves matching quality when supply is endogenous. Batching applications artificially generates competition and is optimal when the planner places a high weight on match quality.

“Decentralized Matching with Aligned Preferences” with Muriel Niederle and Leeat Yariv

We study strategic interactions in decentralized matching markets in which firms make directed offers to workers. We focus on markets in which agents have aligned preferences. When agents have complete information or when there are no time frictions in the economy, there exists an equilibrium that yields the stable matching. In the presence of time frictions and preference uncertainty, harsh assumptions on the economy's richness are required for decentralized markets to generate stable outcomes in equilibrium.

“Market Design, Subsidies, and Supply Composition: Interventions for efficient and equitable public housing” with Kwok Hao Lee and Luther Yap

We consider the design of a large-scale public housing program, in which apartments are rationed through lotteries, prices, and wait times. In the Singapore program, to achieve various social objectives, the government builds housing that is owned and occupied by 80% of the resident population. These apartments are rationed by quarterly lottery, sold below market prices and can be resold by their occupants on an aftermarket. To evaluate the trade-off the government faces between efficiency and redistribution, we combine tools from Urban Economics and Industrial Organization to formulate a dynamic choice model over housing lotteries. Our model is estimated on novel data from the actual mechanism. Relative to the actual allocation scheme, shutting down intertemporal risk via a strategyproof mechanism reduces vacancies and wait times, while raising prices on the secondary market. Meanwhile, in isolation, a small supply expansion fails to reduce wait times: young households substitute away from "safe" developments to riskier, more desirable choices. However, when channeled through the strategyproof mechanism, expanding supply relieves the upward pressure on apartment prices in the secondary market

“Geometric Invariants of Numerical Semigroups” with Maksym Fedorchuk and Jian Zhou (2016)

A natural invariant of a unibranch curve singularity is the numerical semigroup of its valuations. In the case when the curve singularity admits a GGM-action, this semigroup also determines the singularity uniquely. The paper [AFS14] proposed a rational-valued function on curve singularities with GGM-action that leads to an ordering of singularities according to their geometric complexity. We explore this function and give a classification of those numerical semigroups for which the values of this function are above a certain threshold.

“DyPy: A Python Library for Simulating Matrix-Form Games” with Anjalika Nande, Eric Lubin, Erez Yoeli, and Martin Nowak (2017)

Evolutionary Game Theory (EGT) simulations are used to model populations undergoing biological and cultural evolution in a range of fields, from biology to economics to linguistics. In this paper we present DyPy, an open source Python package that can perform evolutionary simulations for any matrix form game for three common evolutionary dynamics: Moran, Wright-Fisher and Replicator. We discuss the basic components of this package and illustrate how it can be used to run a variety of simulations. Our package allows a user to run such simulations fairly easily without much prior Python knowledge. We hope that this will be a great asset to researchers in a number of different fields.

HONORS & AWARDS

- Goldfeld Fellowship, 2022
- Dean’s Fund for Scholarly Travel Grant, 2022
- Dietrich Economic Theory Center Grants, 2018 – 2022
- Harvard's Distinction in Teaching Award, 2016
- Boston College: Advanced Standing and Dean’s List, 2016
- Pi Mu Epsilon Induction, 2016
- Undergraduate Research Fellowships, 2014 – 2016

PROFESSIONAL ACTIVITIES

- Invited to Present at the Stony Brook Theory Seminar, 2022
- Presenter at WiET Conference at the University of Chicago, 2022

- Presenter at Stony Brook International Conference on Game Theory, 2021 – 2022
- Referee, American Economic Journal: Microeconomics, 2020 – 2022
- Discussant at Princeton Privacy Workshop, 2018
- Presenter at Yale Human Cooperation Lab, 2017

RESEARCH EXPERIENCE

- Research Assistant, Program for Evolutionary Dynamics, Harvard University, 2014 – 2017
- Research Fellow, Boston College, 2014 – 2016

TEACHING EXPERIENCE

Preceptor of Graduate Microeconomic Theory, Princeton University, 2019—Present

- Course taught by Professors Faruk Gul, Wolfgang Pesendorfer, Pietro Ortoleva, Sylvain Chassang, and Juan Pablo Xandri

Preceptor of Intermediate Microeconomic Theory, Princeton University, 2020

- Course taught by Can Urgan

Teaching Fellow of Game Theory and Social Behavior, Harvard University and Boston College

- Course taught by Erez Yoeli and Moshe Hoffman, 2015 – 2017

Teaching Fellow of Psychology the Invisible Hand, Harvard University, 2017

- Course taught by Bethany Burum

Teaching Assistant of Differential Equations, Boston College, 2016

Teaching Assistant of Honors Linear Algebra, Boston College, 2015

Teaching Assistant of Finite Probability, Boston College, 2014

TECHNICAL SKILLS

Python, Java, Mathematica

REFERENCES

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