

Research Statement

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I am an applied microeconomist with expertise in Economics of Education, Market Design, and Industrial Organization, with a specific emphasis on Empirical School Choice. I combine design-based reduced-form analysis with tools from empirical Industrial Organization to gain insights into students' decision-making processes throughout their academic journeys. These decisions, such as choosing primary and secondary schools, enrolling in college, and selecting a college major, are not innate, and various factors contribute to shaping them. By gaining a deeper understanding of these decisions, my interest extends to designing pertinent policy interventions to mitigate educational disparities across demographic groups.

Specifically, my current research agenda includes: (1) finding theory-based solutions to inferring students' preferences from observed data, the fundamental first step in empirical data analysis, (2) understanding various factors that affect school choices at different academic stages and their policy implications, and (3) the analysis of college major choice.

Job market paper: My job market paper, entitled "[Leveraging Uncertainties to Infer Preferences: Robust Analysis of School Choice](#)" (under review) and coauthored with [Yeon-Koo Che](#) (Columbia) and [Yinghua He](#) (Rice), investigates how to infer students' "true" preferences from school choice data in a general deferred-acceptance matching environment while accounting for students' documented strategic mistakes. In empirical research of school choice, inferred preferences serve as the foundation for demand estimation and counterfactual analyses of policy interventions such as those aimed at mitigating school segregation---an important issue in large urban school districts like New York City (NYC). However, students often make 'strategic mistakes': they do not truthfully report their preferences even when they have incentives to do so. These strategic mistakes make it implausible to interpret students' reported preferences on their applications as their true preferences. While some have proposed to solve this problem by interpreting assigned schools as students' favorite feasible schools based on the stability hypothesis, these solutions crucially rely on the assumption that students can clearly recognize the schools that are feasible for them. This assumption is at odds with real-world uncertainties (e.g., due to tie-breaking lotteries), which prevent students from having complete knowledge about the set of feasible schools. This raises questions about the validity of existing solutions and their theoretical foundations. In response, we propose a novel and theoretically founded approach called the 'Transitive Extension of Preferences from Stability' (TEPS). TEPS is robust to documented strategic mistakes and can be applied to almost all school choice settings with and without uncertainties. Our key insight is that the uncertainties applicants face make strategic mistakes that involve incorrectly ranking potentially feasible schools costly for the student. Therefore, students would avoid such strategic mistakes by correctly expressing their preferences for those schools, thereby providing researchers with a unique opportunity to reliably infer relevant preferences. The family of TEPS methods we propose is designed to accommodate strategic mistakes with varying degrees of payoff consequences. Additionally, we outline a data-driven procedure for selecting an efficient and consistent preference estimator. The application of our approach to school choice data from Staten Island, NYC, highlights the importance of accounting for strategic mistakes in preference inference and estimation, particularly when predicting the effects of desegregation reforms.

Working papers: I have three other complete drafts investigating different aspects of students' academic choices. All three are currently in the submission phase to academic journals.

1. "[A Dynamic Framework of School Choice: Effects of Middle Schools on High School Choice](#)"

with [Minseon Park](#) (Yale SOM postdoc), extended abstract in [ACM EC'22](#)

This paper investigates the dynamic relationship between school choices made at different educational stages and its implications for racial segregation across schools. The dynamic nature of school choices is widely recognized by parents and policymakers. For example, parents often know that choosing the 'right' middle schools leads to good high schools and colleges, and policymakers often view the multiple stages as alternative venues of policy intervention. However, the dynamic nature of school choices has been largely neglected in the literature, which has focused on each school choice stage in isolation, resulting in a lack of empirical evidence and an appropriate framework. Using NYC middle and high school choice data, this paper first establishes causal evidence that a student's attended middle school affects her subsequent high school application and assignment using the tie-breaking feature of the admissions system. Based on this finding, the paper develops a novel dynamic framework of school choice, in which students applying to middle schools are aware that their choices may affect the high schools they eventually attend through their high school applications and priority standings. Finally, motivated by the recently proposed reforms in NYC, we evaluate the desegregation effects of removing geographic and merit priority rules, when such a reform is implemented at alternative educational stages. Our findings highlight that early intervention in the admissions system can effectively desegregate schools in later stages through the dynamic linkage of school choices. A policy exploiting these dynamics can be a powerful tool for diversifying and desegregating the student body.

2. [“Location Choice, Commuting, and School Choice”](#)

with [Minseon Park](#), extended abstract in [ACM EC’23](#), under review

This paper investigates another equally crucial dynamic aspect of school choice: the interplay between families’ decisions on where to live and which schools to apply to. While it is well known that residential segregation is the main source of school segregation, little is known about how households choose where to live in response to the design of centralized school choice system. Thus, we explore the impact of public school assignment reforms by developing and estimating a unified framework of residential location and school choice. In our model, households decide where to live by taking into account that residential location determines the admission chances to their preferred schools, commuting distances, and other neighborhood amenities including housing costs. As a result, residential location choices are endogenous to changes in the school choice system. Our counterfactual analysis of a reform introducing purely lottery-based admissions to lower- and mid-Manhattan schools shows that the policy would reduce the cross-racial gap in attended school quality by 7% if households’ residential locations were kept constant. However, if families are allowed to move in response to the policy, the effect is reduced by half. This finding emphasizes the necessity of factoring in households’ endogenous residential location choices into assessing the desegregation effects of proposed policy reforms.

3. [“Prestige Seeking in College Application and Major Choice”](#)

with [Yeon-Koo Che](#), [Jinwoo Kim](#), [Se-jik Kim](#) (SNU), and [Olivier Tercieux](#) (PSE)

This paper investigates the effect of applicants’ prestige concern on their college major choice and its welfare implications. Prestige concerns play a significant role in educational settings. Admission to a highly competitive program signals an individual’s hidden qualities, leading to a significant wage premium of elite college graduates that cannot be explained solely by the value added for students of similar qualities. A key feature of such prestige concerns, often neglected by existing literature, is the competition agents face in signaling. Competition for a prestigious program creates a feedback loop by increasing its prestige (or signaling value), intensifying the competition even further. We develop a model of prestige seeking in college applications that captures this phenomenon. In our model, students with idiosyncratic ‘major fit’ compete for qualities and prestige values of college programs, as defined by the average test scores of enrollees. Equilibrium analysis shows that the aforementioned feedback loop results in a program with negligible quality advantage enjoying significant prestige. Furthermore, comparative statics show that applicants sacrifice their major fit in pursuit of prestige, leading to student/program mismatches at the societal level. Subsequently, the analysis of major choice data from Seoul National University in South Korea provides empirical evidence consistent with our theory. We identify two groups of students; one group is subject to prestige concerns in a way the other is not due to institutional reasons. Relative to the latter group, the former group with prestige concerns (1) exhibits a preference for the Economics major, the highest-prestige major in South Korea, but (2) subsequently performs poorly in the core major courses, suggesting that they trade off their major fits for prestige.

Work in Progress:

[“Information, Match Quality, and the Design of Student-School Assignment Mechanisms”](#)

with [Chao Fu](#) (University of Wisconsin-Madison) and [Minseon Park](#), grant application in process

We study the importance of school quality, peer traits, and student-school match quality in producing student outcomes. Education involves substantial interactions between schools and students/parents, underscoring the importance of match quality: the alignment of school and student needs, specialties, etc. However, the ability and cost of acquiring information on match quality vary among households, raising equity concerns with the potential to harm those with higher costs or limited capabilities. Our study focuses on NYC, where before 2019, schools could prioritize students attending open house information sessions. While this rule provided students with a better chance of getting into preferred schools by participating in the sessions, it drew criticism for exacerbating racial and income segregation, as disadvantaged households (e.g., single parents) often lacked the free time to attend open houses. The rule was ultimately banned in 2019. We will employ a combination of design-based causal inference, surveys, and structural modeling to evaluate the impact of the 2019 ban and other policies on equity and efficiency. Preliminary reduced-form analysis is complete, and a grant application to conduct student surveys is currently underway.