

Siqi Pan**Matching Theory and Behavioral Market Design**

My research interests mainly lie in the design and implementation of matching markets where transfers are not available, such as college admissions, school choice, and certain labor markets. My results contribute to the literature from both a theoretical and a behavioral perspective, and may have policy implications for the design of some real-life matching markets.

In my job market paper, “The Instability of Matching with Overconfident Agents: Laboratory and Field Investigations,” I focus on centralized college admissions markets where students are evaluated and allocated based on their performance on a standardized exam. A single exam’s measurement error causes the exam-based priorities to deviate from colleges’ aptitude-based preferences: a student who underperforms in one exam may lose her placement at a preferred college to someone with a lower aptitude. The previous literature proposes a solution of combining a Boston algorithm with pre-exam preference submission. Under the assumption that students have perfect knowledge of their relative aptitudes before taking the exam, the suggested mechanism intends to trigger a self-sorting process, with students of higher (lower) aptitudes targeting more (less) preferred colleges. However, in a laboratory experiment, I find that such a self-sorting process is skewed by overconfidence, which leads to a welfare loss larger than the purported benefits. Moreover, the mechanism introduces unfairness by rewarding overconfidence and punishing underconfidence, thus serving as a gender penalty for women. I also analyze field data from Chinese high schools; the results suggest similar conclusions as in the lab.

My second paper, “Exploding Offers and Unraveling in Two-Sided Matching Markets,” studies the unraveling problem prevalent in many two-sided matching markets that occurs when transactions become inefficiently early. In a two-period decentralized model, I examine whether the use of exploding offers can affect agents’ early moving incentives. The results show that when the culture of the market allows firms to make exploding offers, unraveling is more likely to occur, leading to a less socially desirable matching outcome. A market with an excess supply of labor is less vulnerable to the presence of exploding offers; yet the conclusion is ambiguous for a market with a greater degree of uncertainty in early stages, which depends on the specific information structure. While a policy banning exploding offers tends to be supported by high quality firms and workers, it can be opposed by those of lower quality. This explains the prevalence of exploding offers in practice.

In an ongoing project, “Constrained School Choice and Information Acquisition,” I investigate a common practice of many school choice programs in the field, where the length of students’ submitted preference lists are constrained. In an environment where students have incomplete information about others’ preferences, I theoretically study the effect of such a constraint under both a Deferred Acceptance mechanism (DA) and a Boston mechanism (BOS). The result shows that ex-ante stability can only be ensured under an unconstrained DA, but not under a constrained DA, an unconstrained BOS, or a constrained BOS. In a lab experiment, I find that the constraint also affects students’ information acquisition behavior. Specifically, when faced with a constraint, students tend to acquire less wasteful information under DA, and they distribute more efforts to acquire information over less preferred schools under BOS. Overall, the constraint has a negative effect on efficiency and stability under both mechanisms.

I am also interested in various topics in industrial organization. My joint work with Huanxing Yang, “Targeted Advertising on Competing Platforms,” investigates targeted advertising in two-sided markets. Each of the two competing platforms has single-homing consumers on one side and multi-homing advertising firms on the other. We focus on how asymmetry in platforms’ targeting abilities translates into asymmetric equilibrium outcomes, and how changes in targeting ability affect the price and volume of ads, consumer welfare, and advertising firms’ profits. We also compare social incentives and equilibrium incentives in investing in targeting ability.