

Hanzhe Zhang's Research Statement

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I am an applied microeconomic theorist who develops and uses price-theoretic and game-theoretic tools to study important economic and social phenomena. I test my theories empirically and experimentally and apply them to a wide range of interdisciplinary, classroom, and public settings.

In the last 3.5 years, since the last promotion, I have published in leading economics journals such as *Journal of Political Economy*, *Review of Economic Studies*, *Journal of Economic Theory*, *Games and Economic Behavior*, *American Economic Journal: Microeconomics*, and *Journal of Development Economics*, and leading interdisciplinary journals such as *Proceedings of the National Academy of Sciences*, *Journal of Financial and Quantitative Analysis*, and *Sustainable Cities and Society*; and my research has been financially supported by leading public and private entities such as National Science Foundation, Amazon, and Anthropic.

My interests include (a) matching and bargaining, especially with applications to labor economics and family economics, (b) mechanism design (such as auctions) in commercial and financial settings, and (c) evolutionary and psychological game theory. These interests continue my PhD thesis “Essays in matching, auctions, and evolution” under Gary Becker and Phil Reny at the University of Chicago. In addition, I received financial support and garnered media attention for my research in (d) science of science and innovation and (e) interdisciplinary settings. This document focuses on my publications, working papers, and ongoing projects in the last 3.5 years.

I. RESEARCH

I.A. Matching and bargaining

My primary topic of interest is two-sided matching, whose well-known and successful applications include the National Resident Matching Program for medical students, school choice, and kidney exchanges. My recent studies include (1) assortative mating, (2) the bargaining aspects of matching markets, and (3) the diverse effects of the marriage market on individuals and the society.

I.A.1. Empirical and theoretical studies of assortative matching (*PNAS* & *JPE*)

Characterizing the extent of assortative mating—partnership and marriage of like types—have interested researchers across many fields—economics, sociology, psychology, biology, to a name a few. I study how likely individuals sort on socioeconomic characteristics such as education and income and biological and phenotypical characteristics such as height and weight.

In [16] (“Assortative mating on blood type: Evidence from China,” *Proceedings of the National Academy of Sciences*, December 2022), my coauthors and I use 1 million Chinese couples to find strong and robust evidence for assortative mating on blood type—one of the most fundamental phenotypes in biological, medical, and psychological studies. To establish the results, we use a set of existing measures of assortative mating in the literature.

However, theoretically, it is unclear what would be the most appropriate measure, and different measures may lead to different conclusions. For example, Eika, Mogstad, and Zafar (2019) and Chiappori, Costa Dias, and Meghir (2020) use different measures and find opposing conclusions about whether assortative mating on education has increased in the US over the recent decades. I take an *axiomatic* approach: start with a set of properties (i.e., axioms) that the measures should satisfy and establish how appropriate the measures are for capturing changes in assortative matching through the lenses of these properties. I find that under natural axioms (e.g., scale invariance, monotonicity, type invariance, and decomposability), the normalized trace (the percentage of pairs who share the same type) is the unique measure that conveys the ordinal and cardinal contents of assortative mating. I also provide characterization results for the commonly used measures of the odds ratio and aggregate likelihood ratios.

My primarily theoretical investigation is merged with the primarily empirical investigation of Chiappori, Costa Dias, and Meghir (2020) and is published as the lead article in the *Journal of Political Economy*, one of the top five journals in economics ([26] “Changes in marital sorting: Theory and evidence from the US,” October 2025). The axiomatic approach to study assortative matching and other socioeconomic outcomes such as intergenerational mobility has gained popularity and is becoming the norm rather than the exception in the literature, evident in recent working papers such as McGee (2026) and Mohan and Vilalta-Bufi (2026).

I.A.2.0 Two-person bargaining (*REStud*)

Before they match, individuals negotiate on the amount they transfer to each other (e.g., dowries in marriage markets, salaries in labor markets, and contracts in financial markets). I study these bargaining processes and outcomes.

To start, I study bilateral bargaining problems. I study reputational bargaining when outside options are present ([19] “Reputational bargaining with ultimatum opportunities,” *Review of Economic Studies*). Two parties negotiate in the presence of external resolution opportunities (e.g., court, arbitration, or war). The outcome of external resolution depends on the privately held justifiability/strength of their claims. A justified party issues an ultimatum for resolution whenever possible, but an unjustified party strategically bluffs with an ultimatum to establish a reputation for being justified. We show that the availability of external resolution opportunities can benefit or hurt an unjustified party in equilibrium. When the chances of being justified become negligible, agreement is immediate and efficient; and if the set of justifiable demands is rich, our solution modifies the Nash–Rubinstein bargaining solution of Abreu and Gul (2000) in a simple way.

I.A.2.1 Bargaining in matching markets (*AEJ:Micro* & *AEJ:Micro*)

Shapley and Shubik (1972), Becker (1973), and Kelso and Crawford (1982) pioneered the so-called transferable utilities matching model that provides predictions on matching as well as bargaining outcomes. It has been the workhorse model of several of my earlier work ([6] “Pre-matching gambles,” *Games and Economic Behavior*, May 2020; [9] “An investment-and-marriage model with differential fecundity: On the college gender gap,” *Journal of Political Economy*, May 2021; and [17] “A marriage-market perspective on risk-taking and career choices,” *European Economic Review*, February 2023).

Whether individuals match and negotiate the transfers in real life as modeled had not been thoroughly tested. To study how the model performs, I collaborate with experimentalists to examine the theoretical predictions of the matching model ([18] “Decentralized matching with transfers: Experimental and noncooperative analyses,” *American Economic Journal: Microeconomics*, November 2024). We provide one of the first comprehensive experimental and theoretical investigations of decentralized matching markets with transfers. Our contributions are threefold. First, our experiment shows that matching patterns and aggregate surpluses are affected by whether efficient matching is assortative and whether equal splits are sustainable; in the canonical theory, neither is predicted to matter. Second, in markets with equal numbers of participants on both sides, individual payoffs in our and others' experiments cannot be explained by existing refinements of the core but are consistent with our noncooperative model's unique prediction. Third, in markets with unequal numbers of participants on the two sides, subjects on the long side of the market do not compete fully; these noncompetitive outcomes are not captured by the canonical theory, but by our noncooperative model.

In addition, the canonical model is static and involves one-to-one matching. In real world, many markets are dynamic and involve many-to-one matching. For example, in labor markets, firms are long-lived, workers are short-lived, and firms may hire several workers at once, who may

produce synergy among them. It has been known that complementarities and peer effects in static many-to-one markets lead to nonexistence of stable matchings and consequently potentially market chaos. My coauthors and I show that in dynamic markets, when firms are sufficiently patient, stability is restored, even with complementarities and peer effects ([28] “Self-enforced job matching,” *American Economic Journal: Microeconomics*). Wage flexibility (i.e., transferable utility) is crucial to our result, as it not only facilitates surplus extraction when firms cooperate in no-poaching agreements but also enhances the threat of punishment through bidding wars.

I.A.3. Marriage and migration (JDE)

Continuing from my earlier work, I examine the role of the marriage market in affecting various individual decisions and consequently the society. In earlier work, I examine how the marriage market affects risk-taking [6]; college investment and marriage age [9]; and career investments [17]. In recent work, I examine the role of the marriage market in migration decisions.

In [22] “Young women in cities: Urbanization and gender-biased migration” (*Journal of Development Economics*, January 2025), my coauthors and I attribute documented gender differences in migration to the marriage incentives. Observationally, young women outnumber young men in cities in many countries during periods of economic growth and urbanization. This gender imbalance among young urbanites is more pronounced in larger cities. We use the gradual rollout of Special Economic Zones across China as a quasi-experiment to establish the causal impact of urbanization on gender-differentiated incentives to migrate. We highlight the role of the marriage market in increasing rural women’s chance of marrying and marrying up in urban areas during rapid urbanization. This paper was covered by VoxChina.

I.B. Evolutionary and psychological game theory (JET; AEJ:Micro r&r; GEB)

I study the intergenerational and long-run effects of the marriage market on preference evolution, which contrasts with the short-run effects considered in the papers described above. This line of research combines my interests in matching and evolutionary economics. In [11] (“Preference evolution in different marriage markets,” *European Economic Review*, 2021), we examine preference evolution under different marriage market arrangements when preferences are influenced by parental preferences and own choices. When everyone has homophilic preferences (that is, they prefer to marry partners with the same traits), assortative matching is critical in determining cultural evolution. When some individuals are heterophilic (preferring individuals with different cultural traits), the analysis is technically challenging, especially when combined with different channels of intergenerational transmission. In [17] (“Heterophily, stable matching, and intergenerational transmission in cultural evolution,” *Journal of Economic Theory*, June 2023), we characterize different cultural processes in settings with different combinations of (i) homophilic and heterophilic marital preferences, (ii) a men-optimal or women-optimal stable matching scheme, and (iii) familial and societal forces of intergenerational transmission. We show that, in the presence of even a small fraction of heterophilic individuals, there is cultural homogeneity in which only one cultural trait survives. Cultural heterogeneity (diversity) arises only when proposers are all homophilic or all members of a cultural group are homophilic.

In our recent paper [33] “A justification for equal sharing” (*American Economic Journal: Microeconomics*, revise and resubmit), we take the evolution one step further. We study the evolution of productive traits under different surplus-sharing norms in one-sided matching markets with heterogeneous agents. Agents form partnerships endogenously, and the output of each partnership depends on the productivity of the matching agents. The division of output is governed by a social norm that specifies how surplus is shared between partners. Our results provide an

evolutionary rationale for the persistence of equal sharing norms alongside market-based institutions.

I explain, from evolutionary and psychological perspectives, behaviors that deviate from rationality. I have examined a wide range of topics: reciprocity, overconfidence, non-Bayesian updating, and the promotion of green building practices. Recently, in [22] “Pay it forward: Theory and experiment,” *Games and Economic Behavior*, October 2025, we investigate the psychological motivations behind pay-it-forward behavior (individuals are more likely to forward kindness to a third party when they have been treated kindly). We find that altruism and indirect reciprocity spur people to pay kind actions forward, which informs how kindness begets further kindness; inequity aversion limits the amounts given, even when an individual knows that her kindness will be paid forward. Our paper elucidates how kind behaviors get passed on between parties that never directly interact, which has implications for the formation of social norms and behavior conduct within workplaces, neighborhoods, and communities.

I.C. Mechanism design in financial and commercial settings (*JFQA* and working papers)

Another topic of my interest is auctions and related selling mechanisms, more precisely, when, and how these mechanisms should be used. In [23] (“Borrowing stigma and lender of last resort policies”, *Journal of Financial and Quantitative Analysis*, February 2025), we study when the lender of last resort—usually the central bank—should use auctions to provide liquidity to banks during periods of financial crisis. During the 2008-2010 financial crisis, banks avoided borrowing from the Federal Reserve’s long-established discount window (DW). In contrast, they actively participated in its special temporary monetary program, the Term Auction Facility (TAF), even though the programs had the same borrowing requirements. We explain how the two programs suffer from different stigma and how the introduction of TAF incentivized banks’ borrowing. We synthesize several data sources to confirm our theory, whereby banks that borrow from the TAF are financially stronger than those that borrow from the DW. The paper was recognized as the best paper in annual meetings of the Midwest and Eastern Finance Associations.

In [30] (“Open versus sealed auctions in online labor markets: Evidence from a natural experiment”, under review), we compare open versus sealed auctions. A major online labor-market platform abruptly switched from open auctions to sealed auctions. Empirically, we find that after the switch from open auctions to sealed auctions, workers bid 42.5% faster and ask for 16.5% lower wages. The actual auction duration decreases by 38.9% and the probability of a successful hire rises by 6.1%. Although employers choose from a 10.3% reduced pool of participating bidders, there is no evidence of a significantly different wage for the chosen workers. Post-project outcomes also improve. These findings highlight the advantages of sealed auctions in improving market efficiency, match quality, and participation retention in online labor markets. In contrast, in open auctions, workers have strong incentives to delay bidding or place initial bids higher than their valuation to learn from competitors’ bids and adjust accordingly.

In [31] “Digital villages,” we document and rationalize why e-commerce platforms support and subsidize suppliers in less developed rural areas to manufacture and sell products online. We argue that, despite platforms’ philanthropic claims, these actions are strategically designed to enhance profitability. By providing early subsidies to young sellers, platforms incentivize entry and reduce learning costs, later recouping these investments as sellers gain experience and increases sales. Using a dynamic model of two-sided markets, we analyze intertemporal and cross-side pricing strategies of a platform with market power. Our findings indicate that sellers’ network externalities and learning-by-doing effects reinforce each other, motivating the platform to

subsidize them. This study bridges two typically distinct areas of the economy: global online platforms and less developed rural regions.

I.D. Science of science and innovation (working papers)

A new strand of research I have engaged in in the last few years, supported by an Amazon grant “Predicting successful scientific collaboration” since 2023, is the emerging field of science of science: the study of researchers and scientists.

In [29] “High and rising institutional concentration of award-winning economists,” we document and attempt to explain a high and rising institutional concentration of award winners in economics, compared to 17 other fields in natural sciences, engineering, and social sciences. We collect nearly 300,000 annual education and career affiliations of nearly 6,000 award-winning researchers across 18 disciplines. All fields, except for economics, exhibit a low and decreasing concentration. We investigate potential reasons for the anomaly, including researcher mobility, reliance on physical assets, the age of fields, the role of prestige, and geographic influence. The findings have garnered much media attention. It was featured major outlets such as the Atlantic, Financial Times, Forbes, and Guardian. I was one of the keynote speakers at the International Conference on the Science of Science and Innovation in the National Academy of Sciences and my coauthor presented it at the NBER.

In [34] “Over a century of economics research collaboration,” we study collaboration patterns among 100,000+ using bibliographic information of nearly 500,000 economics publications and working papers since 1886. We document several new patterns. First, inter-institutional collaboration was U-shaped: declining through the 20th century and rising in the 21st. Second, the experience composition of research teams—the mix of junior and senior economists—has remained stable. Third, returns to collaboration have shifted in waves: solo-author papers were most likely to be highly cited in the 1950s, two-author papers in the 1960s–1980s, three-author papers in the 1990s–2000s, and four-plus-author papers in the 2010s. Researchers respond to these changing returns primarily at the four-plus-author margin. Using COVID as a natural experiment that shifts collaboration costs, we find a polarizing effect: some researchers retreated to solo work while others formed larger teams. We develop a parsimonious theoretical framework of skill complementarity, coordination costs, and heterogeneous responses to cost shocks to rationalize all empirical findings.

Artificial intelligence is the hottest topic recently. My coauthors and I study how AI and the brain interact and whether innovation will get easier. In [32] “Artificial intelligence and the brain: Is innovation getting easier?” we treat AI as a synthesizer of existing knowledge into refined knowledge. The human brain then recombines to generate new ideas. By lowering the cognitive burden of information processing, AI can accelerate discovery, but it may also reduce knowledge spillovers by filtering out valuable information. We show that research productivity varies nonmonotonically with AI efficiency: AI boosts innovation when knowledge is very scarce or very abundant. Yet, it may create a mid-knowledge-level *AI trap* in which faster AI progress slows down innovation and lowers productivity.

I.E. Interdisciplinary projects

We wrapped up our \$1.44 million NSF project “Intelligent social network interventions to augment human cognition for bolstered interdisciplinary interactions in project teams” and produced several papers in the field of construction management: [24] “How homebuyers’ cognition and affect shape their attitude on green buildings”, [20] “Iterative development of dynamic student project team interventions”, and [18] “Profit versus sustainability in bikeshare.”

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