

KAREN WU

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Office Contact Information

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Education

University of Chicago, Ph.D. Economics *2020–present*

Princeton University, A.B. Economics, summa cum laude *2016–2020*

References

Professor Ben Brooks (Chair)
University of Chicago
Kenneth C. Griffin Department of Economics
babrooks@uchicago.edu

Professor Philip J. Reny
University of Chicago
Kenneth C. Griffin Department of Economics
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Professor Doron Ravid
University of Michigan
Department of Economics
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Research and Teaching Fields

Primary: Microeconomic Theory
Secondary: Industrial Organization

Job Market Paper

Collusion-Robust Auction Design

Abstract: I study how a revenue-maximizing principal allocating a single good should optimally design her auction in the presence of collusion. The principal evaluates mechanisms according to the worst-case revenue that could arise from collusive or non-collusive play. The principal's optimal mechanism is to post a price and run an efficient knockout auction in-house. Once the principal controls for the *cost function*, a function induced by the form of the mechanism she sets, the principal's interests and the bidders' interests are aligned. As part of the solution, the principal solves a constrained surplus-maximization problem. Posting a price and running the efficient knockout in-house remains the optimal mechanism when the principal additionally hypothesizes that colluders are maximizing their joint surplus or are constrained by interim truth-telling constraints. With surplus-maximizing colluders, posting a price without running the knockout in-house is also an optimal mechanism.

Working Papers

Unique Implementation in Team Production

Abstract: A principal sets bonuses for agents to ensure that the induced game will have a unique outcome where all agents work rather than shirk. I explore three notions of outcomes: (1) Nash equilibrium (2) correlated equilibrium (3) rationalizability. It is weakly more expensive for the principal to uniquely implement working under (1) than under (2) which in turn, is more expensive than implementing under (3). I show that when the production technology is anonymous, these weak inequalities in cost hold at equality. When I weaken the assumption of anonymity to a condition I call *aligned marginal contributions*, there can be a gap between uniquely implementing under Nash compared to correlated equilibrium, but there remains no gap between implementing under correlated equilibrium compared to rationalizability. Finally, I provide a sufficient condition under which there is a strict gap between achieving unique correlated equilibrium and unique rationalizable strategies.

Welfare Effects of Market Research

Abstract: I study how an upstream market research firm provides information about demand conditions to a downstream product market. Demand can be *high* or *low*. The market research firm provides private signals to atomistic firms that compete with each other by producing quantities of an undifferentiated product. The market research firm chooses its information to maximize the fee it collects. I solve for equilibria of this game and demonstrate that the market research firm chooses an equilibrium to maximize the joint producer surplus. In environments where uncertainty about demand is small and strategic externalities between producers are weak, full information maximizes consumer, producer, and total surplus. In other environments, consumer, producer, and total surplus are not necessarily aligned.

Awards, Scholarships, and Grants

Lee Prize for Quantitative Methods Exam (\$5,000)	2021
University of Chicago Social Sciences Division Fellowship	2020–present

Teaching Experience

Decision and strategy (honors undergraduate)	TA for Prof. Ben Brooks	Winter 2024
Price Theory II (graduate)	TA for Prof. Ben Brooks	Winter 2024
Price Theory III (graduate)	TA for Prof. Lars Stole	Spring 2023
Price Theory II (graduate)	TA for Prof. Phil Reny	Winter 2023
Microeconomics (executive MBA, in London)	TA for Prof. Lars Stole	Fall 2023
Microeconomics (executive MBA, in Singapore)	TA for Prof. Lars Stole	Fall 2023
Price Theory III (graduate)	TA for Prof. Lars Stole	Spring 2022

Research Experience and Other Employment

Research Assistant for Prof. Ben Brooks, University of Chicago	2022–2024
Research Assistant for Prof. Doron Ravid, University of Chicago	2022

Conferences 35th Stony Brook Game Theory Festival

Presentations UChicago Student Theory Workshop, Northwestern Theory Summer School

Additional Information

Citizenship	US
Programming Skills	Python, Gurobi
Languages	English (Native)