KAI HAO YANG

https://kaihaoyang.com
khyang@uchicago.edu
+1 (312) 459-3943

Office Contact Information
Saieh Hall for Economics
1126 E 59th St.
Chicago, IL 60637, USA

Placement Co-Director: Professor Ufuk Akcigit, uakcigit@uchicago.edu, (773) 702-0433
Professor Alessandra Voena, avoena@uchicago.edu, (773) 702-9127
Graduate Student Coordinator: Robert Herbst, fherbst@uchicago.edu, (773) 834-1972

Academic Appointments

July 2020 - June 2021	Postdoctoral Associate, Cowles Foundation, Yale University
July 2021 -	Assistant Professor, School of Management, Yale University

Education

The University of Chicago, 2014 - 2020

Ph.D. Candidate in Economics
Dissertation Title: *"Essays on Informational Monopoly"*
Expected Completion Date: June 2020

B.A. in Political Science (*Summa Cum Laude*), National Taiwan University, 2012

References

Professor Philip Reny (Chair)
The University of Chicago
preny@uchicago.edu
(773) 702-8192

Professor Emir Kamenica
Booth School of Business
emir.kamenica@ChicagoBooth.edu
(773) 834-8690

Professor Ben Brooks
The University of Chicago
babrooks@uchicago.edu
(773) 702-4862

Professor Doron Ravid
The University of Chicago
dravid@uchicago.edu
(773) 702-1569

Research Fields

Microeconomic Thoery: information design, mechanism design, auction theory

Teaching Experience

Instructor

Graduate

Summer 2018,'17	Mathematical Methods for Economics - PhD Math Camp [Notes]

Undergraduate

Winter 2019,'18	Elements of Economic Analysis II - Intermediate Microeconomics [Notes]

Teaching Assistant

Graduate

Fall 2019,'18,'17	The Economics of Information, Professor Milton Harris *
Winter 2018	Price Theory II, Professor Roger Myerson & Professor Philip Reny
Spring 2017	Price Theory III, Professor Balázs Szentes
Winter 2017	Price Theory II, Professor Roger Myerson

Undergraduate

Spring 2019,'18,'17	Decision and Strategy, Professor Benjamin Brooks
Fall 2016	Elements of Economic Analysis I, Professor Doron Ravid
Spring 2016	Analysis of Collective Decision Making, Professor Richard Van Weelden

*(Marked with *: Booth School of Business; All Others: Department of Economics, University of Chicago.)*

Research Experience and Other Employment

2018 - 2019	Research Assistant for Professor Philip Reny, Department of Economics, University of Chicago

Honors, Scholarships and Fellowships

2019 - 2020	Dissertation Fellowship, Department of Economics, University of Chicago
2019	Outstanding Graduate Lecturer for Microeconomics Award, Department of Economics, University of Chicago
2014 - 2019	Top University Strategic Alliance Fellowship, University of Chicago & Ministry of Education Taiwan
2017	Best TA Award for PhD First-Year Core, Department of Economics, University of Chicago
2017	Outstanding Paper in Third Year Research Seminar , Department of Economics, University of Chicago

Conference and Seminar Presentations

2019	Northwestern Kellogg (MEDS), Chicago Booth, Yale SOM, Stanford GSB, ASU Carey, UC Berkeley, National Taiwan University, Academia Sinica, the 18th Annual Berkeley-Columbia-Duke-MIT-Northwestern IO Theory Conference (UC Berkeley Haas), Young Economist Symposium/EconCon (Columbia), the 30th International Conference on Game Theory (Stony Brook), Econometric Society North America Summer Meetings (University of Washington - Seattle), Midwest Economic Theory Conference (Indiana University - Bloomington)
2018	Young Economist Symposium/EconCon (NYU), the 29th International Conference on Game Theory (Stony Brook), SAET - Society for the Advancement of Economic Theory Annual Conference (Academia Sinica), Midwest Economic Theory Conference (Drexel University)
2017	The 28th International Conference on Game Theory (Stony Brook)

Workshop Organizations

2019	Student Theory Group Workshop, Department of Economics, University of Chicago

Refereeing Activities

Journal of Political Economy

Job Market Paper

"Selling Consumer Data for Profit: Optimal Market-Segmentation Design and its Consequences"

[Link to Paper], [Supplemental Materials]

Abstract: A data broker sells market segmentations created by consumer data to a producer with private production cost who sells a product to a unit mass of consumers with heterogeneous values. In this setting, I completely characterize the revenue-maximizing mechanisms for the data broker. In particular, every optimal mechanism induces *quasi-perfect price discrimination*. That is, the data broker sells the producer a market segmentation described by a cost-dependent cutoff, such that all the consumers with values above the cutoff end up buying and paying their values while the rest of consumers do not buy. The characterization of optimal mechanisms leads to additional economically relevant implications. I show that the induced market outcomes remain unchanged even if the data broker becomes more active in the product market by gaining the ability to contract on prices; or by becoming an exclusive retailer, who purchases both the product and the exclusive right to sell the product from the producer, and then sells to the consumers directly. Moreover, vertical integration between the data broker and the producer is Pareto-improving, since consumer surplus is zero under any optimal mechanism.

Additional Research Papers

"Equivalence in Business Models for Informational Intermediaries"
First Draft: 04/15/2018; Last Update: 11/21/2019.
[Link to Paper], [SSRN]

Abstract: An intermediary has the technology to provide information about a product to consumers and serves as a platform through which transactions between a monopoly and consumers take place. This paper explores the intermediary's revenue maximization problem across all possible business models. By examining the revenue maximizing solutions under three critical business models, I discover that the market outcomes — consumers' expected surplus, producer's expected profit and the intermediary's expected revenue — are equivalent across all business models if and only if the gains from trade are large enough, which provides some insights into, and implications for online selling platforms.

"Buyer-Optimal Information with Nonlinear Technology"
First Draft: 06/20/2017; Last Update: 07/10/2019. (Submitted)
[Link to Paper], [Supplemental Materials], [SSRN]

Abstract: This paper characterizes the buyer-optimal information structure in a monopolistic pricing context in which the seller's production cost is uncertain. It shows that the solutions must lie in a family of information structures inducing Pareto-distributed interim expected values. In terms of application, it prescribes an information designer the buyer-optimal information structure when the seller has private information about her production cost. It also provides a compact characterization of the unique symmetric equilibrium when multiple buyers acquire information in an auction setting. In a model that features second-degree price discrimination, this paper further characterizes the buyer-optimal information structures and shows that the optimal menu must contain at most two items under these information structures.

"Informationally Robust Welfare Predictions Under Second-Degree Price Discrimination"
First Draft: 02/25/2018; Last Update: 07/10/2019.
[Link to Paper], [SSRN]

Abstract: In an environment that features second-degree price discrimination, this paper fully characterizes the set of surplus divisions that can arise from all possible information consumers have about their valuation. By extending the techniques developed in a companion paper Yang (2019a), I show that the set of feasible surplus divisions can be characterized by a family of information structures that induce Pareto-distributed interim expected values. Unlike the linear model as in Roesler & Szentes (2017) where posted price is always optimal, the efficient frontier is generically not attainable under any information structures and there are environments in which a (nontrival) subset of the feasible surplus divisions collapses to a one-dimensional set. Nevertheless, the sets of feasible surplus divisions are stable around the linear environments.

"Information, Bargaining Power and Efficiency: Re-examining the Role of Incomplete Information in Crisis Bargaining"
First Draft: 03/20/2016; Last Update: 04/20/2017. [Link to Paper]

Abstract: In this paper, without fully specifying the underlying game form, we showed that the

probability of an inefficient breakdown in any bilateral crisis bargaining model is smaller when the more informed party has more bargaining power. Moreover, introduction of additional private information does not necessarily lead to extra efficiency loss. Several implications can be drawn from these results. Specifically, regarding international security, reducing incomplete information is not the only way to reduce the probability of war. Instead, reallocating bargaining power properly would also be effective in terms of preventing conflicts. Furthermore, these results also provide a formal justification for the power transition theory as the *status-quo* power can be interpreted as the party with more bargaining power when the information structure shifts due to power transition.

"Effectiveness of Counter-proliferation Measures and their Impacts on Security"
First Draft: 09/28/2015; Last Update: 04/20/2017. [Link to Paper]

Abstract: This paper investigates the strategic interactions between the counter proliferator and the proliferator in a nuclear proliferation crisis, as well as their impacts on international security and stability. A baseline model of contest with interdependent values is established and its implications are discussed. Furthermore, we characterize the equilibria in a class of models in a "detail-free" fashion and analyze equilibrium outcomes, with particular attentions to international stability and likelihood of a successful development. It thus yields some results and implications that are robust to game forms and model details and provides several generalizations and insights to the effects of various counter-proliferation measures as well as the consequences of nuclear proliferation.

Short Notes

"A Note on Sequential Hyperstability" (**with Philip Reny**)

Abstract: A set of behavior strategy profiles is *sequentially-hyperstable* if it is a minimal set of strategies for which any perturbed game has a nearby sequential equilibrium strategy profile. We show that every extensive form game with perfect recall has a sequentially-hyperstable set that is contained in a single connected component of Nash equilibria. Furthermore, we also conclude that every normal form game has a connected component of Nash equilibria such that every elements in this set induces a sequential equilibrium outcome in any extensive form game that has this normal form representation.