HAOMIN YAN
4 Copley Place, 7th Floor
Boston, MA 02116
Phone: (240) 583-9370
Email: yanhaomin@gmail.com
Website: https://haominyan.weebly.com/

EMPLOYMENT

Economist, Wayfair, August 2019 – present
Senior Consultant, FTI Consulting, July 2018 – August 2019

EDUCATION

Ph.D. Economics, University of Maryland at College Park, 2018
M.A. Economics, University of Maryland at College Park, 2015
B.A. Economics and Mathematics, Smith College, *Summa Cum Laude*, 2013

FIELDS OF SPECIALIZATION

Primary: Auction Theory, Market Design, Microeconomic Theory
Secondary: Industrial Organization, Applied Microeconomics

DISSERTATION

Essays on Auction Design
Committee: Prof. Lawrence Ausubel (Chair), Prof. Daniel Vincent, Prof. Emel Filiz-Ozbay, Prof. Ginger Zhe Jin, Prof. Mohammad Hajiaghayi

JOB MARKET PAPER

"Position Auctions with Interdependent Values," *Under Review*, March 2020

This paper extends the theoretical study of position auctions to an interdependent values model in which each bidder's value depends on its opponents' information as well as its own information. Position auctions are used by major search engines to allocate multiple advertising links on search result pages. In this paper, I examine efficiency and revenues of three position auction formats: Generalized Second Price (GSP) auctions, VCG-like auctions, and Generalized English Auctions (GEA). I find that both the GSP auction and the VCG-like auction with one-dimensional bidding language can be inefficient under interdependent values, which contrasts previous literature that favors the GSP auction for its simplicity. I next show this inefficiency problem can be fully resolved by adopting a multi-dimensional bidding language that allows bidders to bid differently across positions. Moreover, the dynamic GEA that implicitly adopts a multi-dimensional bidding language always implements efficiency in an ex-post equilibrium. Then I provide a revenue ranking of the three efficient position auctions and characterize the optimal position auction subject to no reserve price under interdependent values. I find that under independent signals and a set of regularity conditions, the three efficient position auctions also implement the optimal revenue subject to no reserve price.

OTHER RESEARCH PAPERS

"Position Auctions with Multi-unit Demands," *Revision requested at Games and Economic Behavior*, July 2019

This paper studies the design of position auctions when bidders have multi-unit demands for advertising slots. I propose an ascending clock auction with two stages: allocation stage and assignment stage. The allocation stage determines the quantity of positions assigned to each advertiser using a generalized version of the Ausubel Auction with "Clinching" rule under the context of differentiated items. The assignment stage determines the ranking of advertisements using a generalized version of the Generalized English Auction under the context of multi-unit demands. I show that this two-stage ascending clock auction can implement the efficient outcome in an ex-post perfect equilibrium under pure private values. Moreover, I also construct a VCG position auction that allows for multi-unit demands with position-specific payment rule and show that the two-stage ascending clock auction is outcome equivalent to the VCG auction.

"Auctions with Quantity Externalities and Endogenous Supply," *Revision requested at International Journal of Industrial Organization*, April 2019

This paper studies the design of license auctions when the number of licenses allocated in the auction determines structure of the downstream market. I first show that a sequence of conditional reserve prices that specify minimum acceptable bid at each supply level can be used to determine supply endogenously. Then I construct a static auction called multi-dimensional uniform-price auction that allows the auctioneer to condition reserve price on supply and allows bidders to condition bids on supply. I also construct a dynamic auction called Walrasian clock auction that adjusts supply through a tatonnement process. I show that both proposed auctions can implement the efficient market structure in a dominant strategy equilibrium. I next characterize the optimal auction and show that the two proposed auctions can yield the optimal revenue under a sequence of optimal reserve prices.

"Information Provision in Procurement Auctions with Endogenous Investments," working paper, 2017

This paper analyzes an auctioneer's optimal information provision strategy in a procurement auction in which horizontally differentiated suppliers engage in pre-auction cost-reducing investments. In this paper, I characterize the bidders' equilibrium investment strategies under three different information provision schemes: public disclosure, private disclosure, and concealment of preferences over bidders' product characteristics. I find that pre-auction investments are strategic substitutes among bidders. Providing more information about the auctioneer's preference encourages those favored bidders to invest more, which results in a more dispersed distribution of costs in the auction. Then I compare the expected revenues in a second-score auction under these three information provision schemes. I show that concealment is optimal with two bidders, while public disclosure is optimal with a sufficiently large number of bidders.

"Selling Heterogeneous Commodities under Interdependent Values," work in progress, 2019

TEACHING EXPERIENCE

Instructor, Intermediate Microeconomic Theory and Policy (undergraduate), University of Maryland, Summer 2017
Teaching Assistant, Intermediate Microeconomic Theory and Policy (undergraduate), University of Maryland, Spring 2016, Spring 2017 and Spring 2018
Teaching Assistant, Principles of Microeconomics (undergraduate), University of Maryland, Fall 2014, Spring 2015, Fall 2015 and Fall 2016
Teaching Assistant, Corporate Finance (undergraduate), Smith College, Fall 2012
Master Math Tutor, Differential Equations, Linear Algebra, Discrete Mathematics, Calculus I and II, Smith College, Fall 2011-Spring 2013
Grader, Intermediate Microeconomics and Linear Algebra, Smith College, Fall 2011
Teaching Assistant, Advanced Calculus (undergraduate) and Linear Algebra (undergraduate), Sinoway International Education Summer School, East China Normal University, Summer 2011

GRANTS AND AWARDS

Roger and Alicia Betancourt Fellowship in Applied Economics, Fall 2017
Jacob K. Goldhaber Travel Grant, Fall 2017
Graduate Assistantship, University of Maryland, Fall 2014-Spring 2017, Spring 2018
Graduate Fellowship, University of Maryland, Fall 2013-Spring 2014
Sidney S. Cohen Prize for Superior Academic Achievements in Economics, Smith College, 2013
Samuel Bowles Prize for the Best Research Paper in Economics, Smith College, 2013
Phi Beta Kappa Honor Society, inducted 2013
Mu Sigma Rho National Statistics Honor Society, inducted 2013
Student Mathematics Problem Solving Competition, First Prize, Smith College, 2012
Arthur Ellis Hamm Prize for Highest Academic Average in First-Year Undergraduate Studies, 2011
First Group Scholar, Smith College, Fall 2010-Spring 2013
Dean's List, Smith College, Fall 2010-Spring 2013
TOEFL Scholarship, ETS, Fall 2010
Chinese Mathematical Olympiad, Regional First Prize, 2007

CONFERENCE AND SEMINAR PRESENTATIONS

11th Conference on Economic Design, Budapest, Hungary, 2019
Midwest Economic Theory Conference, Indiana University Bloomington, 2019
Seminar Presentation, Wayfair, 2019
Seminar Presentation, Bates White Economic Consulting, 2019
Seminar Presentation, FTI Consulting and Compass Lexecon, 2018
Seminar Presentation, US Naval Academy, 2017
Seminar Presentation, University of Maryland at College Park, 2017
Midwest Economic Theory Conference, Southern Methodist University, 2017
12th Annual Economics Graduate Students Conference, Washington University in St. Louis, 2017
Young Economists Symposium, Yale University, 2017
Panel Presentation, Celebrating Collaborations, Smith College, 2013
Women in Mathematics in New England (WIMIN12) Conference, Smith College, 2012

CONSULTING EXPERIENCE

Business Development, Outcome Analysis of the US Incentive Auction, March 2019 – May 2019
Business Development, On the Application of Auctions in the Energy Sector, February 2019
Mock Auction War Room Support, Swiss 5G Auction, December 2018
Litigation Support, On Employment Termination Dispute, December 2018
Auction Activity Rule Analysis, Canadian 600 MHz Auction, November 2018
Antitrust Case Review, On the Competition Effect Associated with Big Data, October 2018
Market Design Advisory, On the Design of Internet Protocol Captioned Phone Service (IP CTS) Rate-Setting Mechanism, October 2018
Market Design Advisory, On the Provision of Hepatitis C Medicines for NHS England, October 2018
Litigation Support, On the Collusive Bidding Pattern in the US AWS-3 Auction, September 2018
Bidder Support, US mmWave Auction, August 2018
Valuation Analysis, On the Valuation of US C Band Spectrum, August 2018
Auction Software Management and Bid Analysis, US CAF-II Auction, July 2018 – August 2018

OTHER RESEARCH AND WORK EXPERIENCE

Research Assistant, Prof. Mahnaz Mahdavi, Smith College, September 2012-May 2013
Summer Intern, Conway Innovation and Entrepreneurship Center, May 2012-August 2012
Voluntary English Teacher, Wuding Middle School, Yunnan, China, August 2011
Summer Intern, Huaxia Bank, May 2011-July 2011

LANGUAGES

Mandarin Chinese (native), English (fluent)

SKILLS

Stata, Python, R, SQL, Matlab, Latex, MS Excel, MS Word, MS PowerPoint

REFERENCES

Prof. Lawrence Ausubel	University of Maryland	ausubel@econ.umd.edu	(301) 405-3495
Prof. Daniel Vincent	University of Maryland	dvincent@umd.edu	(301) 405-3485
Prof. Emel Filiz-Ozbay	University of Maryland	filizozbay@econ.umd.edu	(301) 405-3474