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Fields of Concentration:

Primary Field: Industrial Organization

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Desired Teaching:

Industrial Organization, Econometrics, Microeconomics

Comprehensive Examinations Completed:

2019 (Oral): Industrial Organization (*with distinction*), Econometrics (*with distinction*)

2018 (Written): Microeconomics, Macroeconomics

Dissertation Title: *Essays on the Industrial Organization of Digital Industries*

Committee:

Professor Katja Seim (Chair)

Professor Steven Berry

Professor Philip Haile

Degrees:

Ph.D., Economics, Yale University, 2023 (expected)

M.Phil., Economics, Yale University, 2020

M.A., Economics, Yale University, 2018

B.Sc., Pure Mathematics and Economics, Memorial University of Newfoundland, 2016

Fellowships, Honors and Awards:

Governor General's Award (first in graduating class), Memorial University of Newfoundland

Research Grants:

Doctoral Fellowship, Social Science and Humanities Research Council (2021)

Teaching Experience:

Fall 2020, Teaching Assistant to Prof. Donald Andrews, Econometrics I (Graduate), Yale University
Spring 2020, Teaching Assistant to Prof. Yuichi Kitamura, Econometrics III (Graduate), Yale University
Fall 2019, Teaching Assistant to Prof. Timothy Armstrong, Introduction to Probability Theory and Statistics (Undergraduate), Yale University

Research and Work Experience:

Research Assistant to Prof. Fiona Scott Morton and Prof. Dirk Bergemann, Yale University, January 2021–May 2022
Research Assistant to Prof. Yuichi Kitamura, Yale University, January 2021–May 2022
Research Assistant to Prof. Soheil Ghili, Prof. Michael Whinston, and Prof. Igal Hendel, Yale University, February 2018–May 2020
Research Assistant to Prof. Matthew Gentzkow and Prof. Jesse Shapiro, Stanford University, June 2016–June 2017

Publications:

“Market Design for Personal Data” with Katja Seim, Dirk Bergemann, Jacques Crémer, David Dinielli, Carl-Christian Groh, Paul Heidhues, Maximilian Schaefer, Monika Schnitzer, and Fiona M. Scott Morton, *Yale Journal on Regulation*, forthcoming.

Working Papers:

“Price Controls in a Multi-Sided Market,” (November 2022), *Job Market Paper*
“Sources of Limited Consideration and Market Power in E-Commerce,” (October 2022)
“Cross-Channel Competition and Complementarities in US retail” with Hiroki Saruya, (October 2022)
“Demand with Network Externalities: Identification and an Application to the Dating Websites Industry,” (October 2022)

Seminar and Conference Presentations:

Young Economist Symposium (Princeton University), August 2021
5th Doctoral Conference on the Economics of Digitization (Ifo Institute), June 2022
Young Economist Symposium (Yale University), August 2022
Invited Amazon Core AI Presentation, September 2022

Referee Service:

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References:

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Dissertation Abstract

Price Controls in a Multi-Sided Market [Job Market Paper]

This paper evaluates caps on the commissions that food delivery platforms (e.g., DoorDash) charge to restaurants. Many US cities have enacted commission caps to protect restaurant profits. I estimate the effects of these caps on prices, platform usage, consumer welfare, restaurant profits, and platform profits. To do so, I assemble a collection of datasets including panel data on consumer restaurant orders, the universe of restaurants on each platform, and records of platform fees.

All else equal, commission caps benefit restaurants that partner with platforms. Caps may therefore entice restaurants to join platforms and thereby benefit consumers who value variety in platforms' restaurant listings. A reduction in platform commissions may also lead restaurants to lower their prices on platforms, further benefitting consumers. Commission caps, however, have potential harms: they may lead platforms to raise their consumer fees, thereby reducing consumer ordering on platforms and consequently platforms' value to restaurants. As a first pass, difference-in-difference estimates suggest that caps raised fees by 9–22% across platforms, reduced the number of orders placed on platforms by 6%, and induced a 4.0 percentage-point increase in the share of restaurants that join an online platform.

To analyze the effects of caps in greater depth, I develop a structural model of the food delivery industry to evaluate commission caps. In the model, platforms first set commission rates and restaurants subsequently choose which platforms to join. Restaurants then simultaneously set profit-maximizing prices that may differ between direct-from-restaurant orders and orders placed on platforms. Platforms also set fees charged to consumers. Last, consumers place orders from restaurants. A consumer's choice of which platform to use, if any, depends on platform fees, restaurant prices, and the variety of nearby restaurants on each platform. I use variation in fees and restaurant networks within metro areas and the panel structure of my transactions data to estimate the model.

The estimated model implies that commission caps raise restaurant profits while reducing consumer welfare and platform profits. Restaurants' gains are about 3% of the sum of consumer and restaurant surplus from platforms, whereas consumer and platform losses are about 5% and 4% of this joint surplus, respectively. Young and unmarried consumers experience greater-than-

average losses from caps. Thus, caps intended to redistribute surplus from platforms to local restaurants meet this objective, but at a cost to consumers that exceeds both restaurants' gains and platforms' losses. A tax on platforms' commission revenues whose proceeds are remitted to restaurants can achieve the restaurant profit gains of a cap without negative effects on total welfare.

Sources of Limited Consideration and Market Power in E-Commerce

This paper empirically evaluates the contributions of search frictions and pre-search seller differentiation to limited consumer search and to markups in e-commerce. The internet facilitates consumer learning about product offerings, and it allows firms sell products without physical stores. These conditions seem capable of inducing high consumer awareness and cut-throat price competition. In practice, though, consumers exhibit severely limited consideration in online markets and often pay significantly above the minimum available price for a product. High search costs could explain these facts, as could pre-search seller differentiation: consumers with little aversion to search may not visit a store they believe they are unlikely to purchase from based on information known prior to search. I assess these alternative explanations for limited search using a model of sequential consumer search and retailer price competition. I estimate this model on data describing browsing and transactions in contact lens e-commerce. My approach exploits the panel nature of my data to estimate the extent of state dependence and consumers' persistent unobserved tastes for sellers. I find that per-search seller differentiation, not search costs, is primarily responsible for limited consideration and market power in contact lens e-commerce.

Cross-Channel Competition and Complementarities, with Hiroki Saruya

We estimate the effects of offline stores on online spending using data on US store locations and on internet browsing and transactions. The direct effect of a multi-channel retailer's offline stores on its online sales depends on two opposing forces: (i) a negative cannibalization effect and (ii) a positive cross-channel complementarity, which may reflect offline customer service for items purchased online or brand awareness effects of offline stores. The direct effects of an offline store on rival retailers' online sales similarly depend on (i) a negative business-stealing effect and (ii) a positive showrooming effect, which arises when offline stores bolster consumer interest in a product category. Our empirical approach captures consumer heterogeneity through variables characterizing the categories of websites that consumers visit, which proxy for unobserved tastes, as well as the demographic profiles of consumers' neighbourhoods. Our estimates for 2007–2008 imply that a multichannel retailer's online sales fall by 1.1–3.8% on average when a rival adds an offline store. These sales increase by 7.1–32.3% when the retailer adds an offline store of its own, suggesting that cross-channel complementarities exceed cannibalization effects. Additionally, our estimated effects of offline stores on rivals' online sales vary across retailers and categories. Notably, offline stores often boost Amazon's sales, suggesting the relevance of showrooming effects.

Demand with Network Externalities: Identification and an Application to the Dating Websites Industry

This paper characterizes the identifiability of demand models with network externalities and studies the role of network externalities in the dating websites industry. Network externalities often arise in differentiated products markets, and especially in platform markets. I show that demand

models with network externalities are generally not identified with market-level data alone. This result reflects the impossibility of independently varying product characteristics and market shares at the market level. However, straightforward extension of results in Berry and Haile (2022) establishes that demand models with network externalities are identified under reasonable conditions with microdata linking consumers' decisions and characteristics. Guided by my identification findings, I estimate demand for dating websites using online browsing microdata to understand how network externalities shape the effects of recent consolidation in the industry. Under my preferred estimates, a user of a site values a 10% increase in the site's usership at \$6.34/month. I additionally find that welfare losses from increased prices outweigh the gains from network externalities associated with monopolization.