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Education

Ph.D. Marketing, May (2014) (Expected)

McCombs School of Business, University of Texas at Austin

M.S. Economics, May 2009

University of Texas at Austin

M.A. Economics, 2007

B.A. English Language and Literature, 2005

B.E. Economics, 2005

Sogang University, Seoul, Korea

Research Interests

- Durable goods, entertainment consumption, resale, word of mouth
- Modeling consumer choice and learning, pricing, and imperfect competition
- Structural models, computational methods, bayesian analysis

Working Papers

Pricing and Resale Market Strategy for Durable Goods: Insight from the Video Game Industry

(with Jason Duan, to be submitted to *Marketing Science* in February 2014)

In this paper, I develop a dynamic structural model of how the used goods market for video games impacts firms' pricing and profits. I simulate profit changes when the resale of the used good is restricted, e.g., through digital distribution of the product. Without used goods transaction data, I explicitly incorporate the supply side in the estimation, and infer sales volume from the observed prices and equilibrium conditions. Using data collected from websites, I find that the effects of prohibiting resale of used goods depend on the video game's demand function: eliminating the used video game market significantly increases the profit for a video game which has high valuation consumers, whereas it only generates small gain in profit for a video game which has only low valuation consumers. In some extreme cases, the existence of the used game market can, interestingly enough, make a video game more profitable. The findings have implications for marketing theory and managerial practice on pricing and on how a firm manages the resale market.

Variety Seeking for Hedonic Goods: Evidence from the Movie Industry

(with Romana Khan, to be submitted to *Marketing Science* in January 2014)

Consumers' uncertainty about product quality may mitigate their tendency to seek variety. Exposure to online ratings is likely to alleviate this uncertainty, facilitating more variety-seeking. In this research, we examine (a) the extent to which consumers seek variety in hedonic goods consumption and (b) the impact of online consumer ratings on their consumption. I use a large dataset of movie-going to estimate a choice model which incorporates state dependence, genre preferences of consumers, and the impact of online consumer ratings. We find that consumers display inertia in genre choice, but that online ratings can overcome the inertia, as the impact of online

consumer ratings are higher when the genre of the subsequent movie differs from the that of the previously viewed one.

Working Projects

A Model of Downloadable Contents: Add-ons and the Used Goods Market

This paper studies how post-release online add-ons, or downloadable contents (DLC) of video games affect used goods supply by (a) quantifying how much profit can be gained with this online marketing strategy and (b) identifying the optimal timing of DLC release.

Implications for Pricing and Consumer Choice of Free Trade Agreements

This paper quantifies the impact of free trade agreements (FTAs) on consumer welfare and firm profits in the context of the international automotive market. Consumers form expectations about price decline due to an FTA which makes it important to model dynamics. Specifically, I use a unique dataset collected from the web to estimate new automotive demands post-FTA announcement and simulate the outcomes under different tariff levels.

Performance and Accuracy of the Radial Basis Function Approximation in Dynamic Programming

Function approximation is an essential component in dynamic programming with continuous state variables, which are frequent in marketing applications. Unlike traditional approximation methods which require data from a regular grid, the radial basis function (RBF) approximation method can approximate a function with scattered data. Thus, it has wider applicability and also can potentially alleviate the *curse of dimensionality*. I investigate the performance and accuracy of the RBF approximation.

Teaching Interests

- Principles of Marketing, Marketing Research, Social Media and Internet Marketing
- Marketing Analytics, Data Mining, Pricing

Teaching Experiences

- (Instructor) 2012, Principles of Marketing, University of Texas at Austin (Average Rating: 4.0/5.0)
 - Nominated for *Fred Moore Assistant Instructor Awards for Teaching Excellence*
- (Teaching Assistantship) University of Texas at Austin
 - Principles of Marketing
 - Marketing Information and Analysis
 - Bayesian Econometrics (Graduate)

Colloquia/Presentations

"A Dynamic Equilibrium Model of Durable Goods Market: Intertemporal Pricing and Durability Extension for Video Games," INFORMS Marketing Science Conference, Boston, MA, 2012.

"A Dynamic Equilibrium Model of Durable Goods Market: Intertemporal Pricing and Durability Extension for Video Games," University of Houston Doctoral Symposium, 2012.

"Quality Uncertainty and Variety Seeking Behavior: the Role of Ratings in the Movie Industry," INFORMS Marketing Science Conference, Houston, TX, 2011.

Invited Talks

- Erasmus University, Rotterdam, Netherlands
- Koç University, Istanbul, Turkey
- Özyegin University, Istanbul, Turkey
- University of Arizona, Tucson, AZ
- University of Delaware, Newark, DE
- University of Rochester, Rochester, NY
- Yale University, New Haven, CT

Honors & Awards

- Student Sponsorship, [SciPy \(Scientific Python\) Conference, 2011](#), 2013
- Bonham Funds, Department of Marketing, UT-Austin, 2010, 2013
- Funding, [Columbia-Duke-UCLA Workshop on Quantitative Marketing and Structural Econometrics](#), 2010
- Brain Korea 21 Scholarship, Ministry of Education and Human Resources Development, Korea, 2006
- Graduate School Department Scholarship, Sogang University, Korea, 2005
- Undergraduate Distinguished Student Scholarship, Sogang University, Korea, 2003-04
- KT&G Marketing League, Selection for Final Contest (Tourism Marketing Strategy Proposal), 2003
- ON Korea Internet Marketing Awards, Bronze Award (Online Marketing Strategy Proposal), 2003

Selected Coursework

Marketing

- Buyer Behavior (Ying Zhang)
- Marketing Models I (Frenkel Ter Hofstede)
- Marketing Models II (Jason Duan)
- Marketing Research Methods (Raghunath S. Rao)
- Marketing Strategy (Raji Srinivasan)
- 2010 Columbia-Duke-UCLA Workshop on Quantitative Marketing and Structural Econometrics

Econometrics

- Econometrics I (Stephen Donald)
- Econometrics II (Jason Abrevaya)
- Econometrics III (Russell W. Cooper, Eugenio J. Miravete)
- Bayesian Econometrics (Rob McCulloch)
- Discrete Choice Theory and Modeling (Chandra Bhat)

Economics

- Microeconomics I (Thomas Wiseman)
- Microeconomics II (Svetlana Boyarchenko)
- Macroeconomics I (Fatih Guvenen)
- Macroeconomics II (P. Dean Corbae)
- Industrial Organization I (Kenneth Hendricks)

- Industrial Organization II (Eugenio J. Miravete)
- Empirical IO Lecture Series (Amil Petrin, Ali Hortascu, Daniel Akerberg)

Operations Research

- Applied Stochastic Processes (John Hasenbein)
- Markov Decision Processes (John Hasenbein)
- Stochastic Optimization (David Morton)

Computational Skills

- General-Purpose Languages: C, Python
- Domain-Specific Languages: Gauss, MATLAB, R
- Others: Git, GNU/Linux, HTML, JavaScript, LaTeX, RegEx, VBA

Software Packages Authored

- **BLP-Python**: a Python with Cython implementation of random coefficients logit model of Berry, Levinsohn and Pakes (1995).
- **Fast Cubic Spline Python**: an implementation of fast spline interpolation algorithm of Habermann and Kindermann (2007) in Python with Cython.

Service

- Ad Hoc Reviewer: Journal of Open Research Software

References

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Raghunath S. Rao

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