Joon H. Ro

Department of Marketing, McCombs School of Business, University of Texas at Austin

Phone: +1 (512) 529-4596, Fax: +1 (512) 471-1034, Email: joon.ro@utexas.edu

(Updated on December 01, 2013)

Education

- 2014, (Expected) Ph.D. Marketing, University of Texas at Austin, Austin, TX
  - Dissertation Committee: Jason Duan and Leigh McAlister (Co-advisers), Ty Henderson, Raghunath S. Rao, Stephen P. Ryan (Economics)
- 2009, M.S. Economics, University of Texas at Austin, Austin, TX
- 2007, M.A. Economics, Sogang University, Seoul, South Korea
- 2005, B.A. Economics and English Language and Literature, Sogang University, Seoul, South Korea

---

Research Interest

- Dynamic Structural Models, Bayesian Econometrics, Discrete Choice Models, Learning Models
- Durable Goods Market, Network Effects, Used Goods Market, Marketing Analytics, Digital Marketing

---

Working Papers

Pricing and Resale Market Strategy for Durable Goods: A Dynamic Equilibrium Model of the Video Game Market

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

We study the impact of the used goods market on pricing and profits in the video game industry and the implications of resale restrictions. We develop a modeling framework that incorporates (a) inter-temporal price discrimination by a monopolistic game producer, (b) the used game market, (c) rational expectations on pricing, and (d) market equilibria for both new and used games. We construct the demand function for a game from heterogeneous consumers whose valuations distribute on an interval. Without observing sales data, equilibrium pricing solutions in our model enables us to identify the sales volume of a game in every period as a percentage of its total demand by the varying rate of price decrease after its release. Applying the model to a unique dataset of game prices collected from the Internet, we estimate the game-specific demand for multiple games released in the U.S. market. Policy simulations suggest that the effects of prohibiting resale depend on the game's demand function. Most of the profit comes from high valuation consumers who purchase the game when its price is high. Therefore, eliminating the used game market significantly increases the profit for a game whose demand largely consists of high valuation consumers, whereas it only generates small gain in profit if a game's demand consists mainly of low valuation consumers. In some extreme cases, the existence of the used game market can make a game more profitable.

Variety Seeking in Hedonic Goods Consumption: Evidence from the Movie Theater Industry

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

We study consumers' variety seeking in hedonic goods consumption and the impact of consumer ratings in the context of movie choice. While consumers are expected to engage in variety-seeking when consuming hedonic goods, uncertainty about product quality may mitigate this tendency. Exposure to online ratings information is likely to alleviate this uncertainty, and could facilitate more variety-seeking behavior. Using a unique, individual-level dataset of movie-going, we estimate a choice model which incorporates state dependence, persistent consumer preferences, and the impact of consumer ratings. We find that consumers are likely to seek variety in movie genres when watching multiple movies a day. However, after just a day since the previous movie-watching, consumers start to display positive state-dependence in their choice of genres, meaning they tend to watch similar genres again. This suggests that inertia is a general behavioral phenomenon rather than a unique characteristic of shopping for more utilitarian consumer packaged goods. Importantly, we find that positive movie ratings provided by other consumers can overcome the inertia, as the impact of positive ratings are more prominent when the genre of the subsequent movie differs from the that of the previously viewed one.

Work In Progress

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

I extend the model in my first dissertation essay to examine the implications of an additional marketing strategy, i.e., post-release add-ons. Many video game producers release add-ons called downloadable contents (DLC) for a relatively low price, which extend consumers' video game-playing time. This can be an effective strategy to delay consumers' used goods resale which would in turn reduce competition from the used goods market. This is because, to play the DLC, a consumer must physically have the original copy of the game; forward-looking consumers who anticipate that DLC will be released in the near future will likely to hold on to their disc rather than selling them, effectively reducing the used copy supply. Counterfactual analysis will shed light on how much profit can be gained with this marketing strategy and the optimal timing of DLC release.

Measuring Benefits from Bilateral Free Trade Agreement: A Dynamic Structural Approach

I estimate a dynamic structural model to quantify the impact of bilateral free trade agreements (FTAs) on consumer welfare and firms' profits in the Korean automotive industry. Due to the significant time gaps between the announcement of FTAs and the actual date FTAs enter into effect, consumers may postpone automobile purchases, expecting future price decline once the agreements come into effect. Thus, modeling dynamics is crucial in calculating the impact of such agreements. Using a unique dataset that consists of hand-collected automotive characteristics information, I use a dynamic demand model with random coefficients to estimate new automotive demands and conduct counterfactual analyses under different tariff levels to measure the effects of FTAs.

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 widely used in the literature which require data from a regular grid, the radial basis function (RBF) approximation method can approximate a function with scattered data while maintaining the smoothness of the function. Thus, it has wider applicability and also can potentially alleviate the *curse of dimensionality*. I investigate the performance and accuracy of the RBF approximation compared to other approximations methods such as the cubic spline or the Chebyshev approximation.

Honors & Awards

- 2011, 2013, SciPy (Scientific Python) Conference Student Sponsorship
- 2010, 2013, Bonham Funds, Department of Marketing, University of Texas at Austin
- 2013, Nominated for Fred Moore Assistant Instructor Awards for Teaching Excellence
- 2010, Columbia-Duke-UCLA Workshop on Quantitative Marketing and Structural Econometrics Funding
- 2006, Brain Korea 21 Scholarship, Ministry of Education and Human Resources Development, South Korea
- 2005, Graduate School Department Scholarship, Sogang University, South Korea
- 2005, Unbong Scholarship Foundation Scholarship, South Korea
- 2003-2004, Undergraduate Distinguished Student Scholarship, Sogang University, South Korea

---

Teaching

Teaching Interests

Marketing Research, Marketing Analytics, and Digital Marketing along with other core courses

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*
- 2012, *Numerical Computation with Numpy*, Software Carpentry bootcamp at the University of Texas at Austin

Training

- 2013, Software Carpentry Instructor Training
- 2012, Graduate Teaching Scholars Seminar
- 2012, Supervised Teaching

Teaching Assistant

- University of Texas at Austin
  - Bayesian Econometrics (Graduate)
  - Principles of Marketing
  - Marketing Information and Analysis

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.

Invited Talks

Joon Ro (2013) "Pricing and Resale Market Strategy for Durable Goods: A Dynamic Equilibrium Model of the Video Game Market"

- 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

Colloquia/Presentations

- Joon Ro & Jason Duan (2012) "A Dynamic Equilibrium Model of Durable Goods Market: Intertemporal Pricing and Durability Extension for Video Games," Paper presentation at annual INFORMS Marketing Science Society Conference, Boston, MA
- Joon Ro & Jason Duan (2012) "A Dynamic Equilibrium Model of Durable Goods Market: Intertemporal Pricing and Durability Extension for Video Games," Paper presentation at the University of Houston Doctoral Symposium
- Joon Ro & Romana Khan (2011) "Quality Uncertainty and Variety Seeking Behavior: the Role of Ratings in the Movie Industry," Paper presentation at annual INFORMS Marketing Science Society Conference, Houston, TX

Selected Coursework

Quantitative Marketing

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

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 Ackerberg)

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)

Operations Research

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

Computational Skills

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

References

Jason Duan
Assistant Professor of Marketing
McCombs School of Business
University of Texas at Austin
+1 (512) 232-8323
Jun.Duan@mccombs.utexas.edu

Ty Henderson
Assistant Professor of Marketing
McCombs School of Business
University of Texas at Austin
+1 (512) 232-3746
ty.henderson@mccombs.utexas.edu

Stephen P. Ryan
Associate Professor of Economics
University of Texas at Austin
+1 (512) 475-8543
sryan@utexas.edu

Leigh McAlister
Professor, Ed and Molly Smith Chair
McCombs School of Business
University of Texas at Austin
+1 (512) 471-5458
leigh.mcalister@mccombs.utexas.edu

Raghunath S. Rao
Assistant Professor of Marketing
McCombs School of Business
University of Texas at Austin
+1 (512) 232-3748
Raghunath.Rao@mccombs.utexas.edu