

# 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](mailto:joon.ro@utexas.edu)

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## 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
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## Research Interest

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

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

(with Jason Duan)

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.

## **Do Consumers Seek Sequential Variety for Hedonic Goods?: The Case of the Movie Theater Industry**

(with Romana Khan)

While consumers are expected to engage in variety-seeking for a hedonic good, uncertainty about product quality may mitigate this tendency. Exposure to online ratings information is likely to alleviate this uncertainty, and could facilitate greater variety-seeking. We study variety-seeking and the impact of ratings information in the context of movie choice. We investigate two dimensions of variety-seeking: exploratory - the amount of variety consumed, and sequential - the tendency to switch away from what has been recently consumed. We find that positive ratings do not facilitate exploratory behavior; instead they are used to choose from a limited set of preferred genres. For sequential choice, consumers engage in variety-seeking only when watching multiple movies on the same day. When the time since previous movie is more than one day, consumers display inertia in their choice of genres. This suggests that inertia is a general behavioral phenomenon rather than a characteristic of choice in consumer packaged goods. Positive ratings overcome the effects of inertia, as they are more effective when a movie's genre differs from the previously viewed genre.

## **Work In Progress**

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

I extend the model in the first essay to examine the implications of an additional marketing strategy, post-release add-ons. Many video game producers release add-ons called downloadable contents (DLC) for a relatively low price, which extend playing time of their video games. This can be an effective strategy to reduce competition from the used goods market. This is because in order to play the DLC, a consumer must physically have the original copy of the game; hence, forward-looking consumers who anticipate that a 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 profit implications and optimal release-timing of the DLC.

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

I estimate dynamic structural model to quantify the impact of bilateral free trade agreements (FTAs) on consumer welfare and firms' profit in the Korean automobile industry. Due to the significant time gap between the announcement of FTAs and the actual date when 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 consist of automotive characteristics information collected from the web, I use an aggregate 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.

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## 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
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## 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.
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## Colloquia/Presentations

- Ro, J. H., & Duan, J. A. (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
  - Ro, J. H., & Duan, J. A. (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
  - Ro, J. H., & Khan, R. (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
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## Teaching

### Teaching Interests

Principles of Marketing, Marketing Research, Marketing Analytics, and Digital Marketing

### 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, Instructor for *Numerical Computation with Numpy* at 2012 [Software Carpentry](#) Bootcamp at the University of Texas at Austin

## Training

- 2013, Software Carpentry Instructors Study Group
- 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
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## 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 Akerberg)

### 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)
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## Computational Skills

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

### Jason Duan

Assistant Professor of Marketing  
McCombs School of Business  
University of Texas at Austin  
+1 (512) 232-8323  
[Jun.Duan@mcombs.utexas.edu](mailto:Jun.Duan@mcombs.utexas.edu)

### Ty Henderson

Assistant Professor of Marketing  
McCombs School of Business  
University of Texas at Austin  
+1 (512) 232-3746  
[ty.henderson@mcombs.utexas.edu](mailto:ty.henderson@mcombs.utexas.edu)

### Stephen P. Ryan

Associate Professor of Economics  
University of Texas at Austin  
+1 (512) 475-8543  
[sryan@utexas.edu](mailto: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@mcombs.utexas.edu](mailto:leigh.mcalister@mcombs.utexas.edu)

### Raghunath S. Rao

Assistant Professor of Marketing  
McCombs School of Business  
University of Texas at Austin  
+1 (512) 232-3748  
[Raghunath.Rao@mcombs.utexas.edu](mailto:Raghunath.Rao@mcombs.utexas.edu)