# Joon H. Ro

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## Education

- 2014, (Expected) Ph.D. Marketing, University of Texas at Austin, Austin, TX
- 2009, M.S. Economics, University of Texas at Austin, Austin, TX
- 2007, M.A. Economics, Sogang University, Seoul, Republic of Korea
- 2005, B.A. Economics and English Language and Literature, Sogang University, Seoul, Republic of Korea

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## Honors & Awards

- 2011, 2013, SciPy 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, Sogang University
- 2005, Graduate School Department Scholarship, Sogang University
- 2005, Unbong Scholarship Foundation Scholarship, Korea
- 2003-2004, Undergraduate Distinguished Student Scholarship, Sogang University

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## Research Interest

- Discrete Choice Models, Dynamic Structural Models, Durable Goods Market, Network Effects, Used goods market, Imperfect Competition

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# Working Paper

## A Dynamic Equilibrium Model of Durable Goods Market: Intertemporal Pricing and Secondary Market

(with Jason Duan)

This study considers intertemporal price discrimination under the presence of used goods market for the video game industry. The price of a video game generally follows a declining trend because (i) higher valuation consumers purchase the game in the earlier stages after its release and exit the market, leaving only lower valuation buyers and causing the producer to cut the game price and (ii) the existence of used game market causes the producer to cut the price of new game copies to compete with used ones. We propose a dynamic equilibrium model which incorporates intertemporal demand and pricing, expectations and competition in new and used goods market. By exploiting firm's optimal intertemporal pricing policy, our model can recover demand distribution for each game only with new and used prices without observing sales information, which is less commonly available. Policy analysis on marketing strategies include elimination of used goods market, intertemporal price discrimination, different pricing schemes, and myopic consumers.

## Quality Uncertainty and Variety Seeking Behavior: the Role of Ratings in the Movie Industry

(with Romana Khan)

In this paper, we study variety seeking across genres in consumers' choices at movie theaters. While variety seeking encompasses an array of behaviors that promote diversity in choices made, we focus on two components: the tendency to engage in exploratory behavior, and the tendency to seek sequentially varied experiences. Although movies are a hedonic good for which we expect consumers to engage in variety seeking, several factors, uncertainty about movie quality in particular, mitigate this tendency. Online ratings provide signals of movie quality and serve as a mechanism to alleviate this uncertainty. We investigate the extent of variety seeking in movie choices, and the impact of online ratings on variety seeking. Using a unique consumer level panel data of movie-going at theaters, we estimate a movie choice model that accounts for consumers' intrinsic preferences for movie attributes, demographics, state dependence, and online movie ratings. Surprisingly, consumers exhibit positive state dependence (inertia) over genres in their choice of movies. However, higher online ratings diminish positive state dependence and induce consumers to seek more variety. We find considerable heterogeneity in exploratory behavior and sensitivity to online ratings across consumers. Demographic factors account for some heterogeneity, as older consumers show more inertia and less sensitivity to online ratings. Theoretical and managerial implications are discussed.

# Work In Progress

## A Model of Downloadable Contents: Add-on and Secondary Market

I study the profit implications and optimal release schedule of add-on packages in video game industry. An add-on extends the durability of a video game by providing new maps and additional missions. The original disc is required in order to play the add-on and if consumers expect the future release of the add-on, they will hold on the game even after they finished with them. This will effectively reduce the flow of used copy supply, alleviating the threat from the secondary market for producers. I plan to extend the dynamic structural model in the first working paper to include add-on as another control for the firm, and access the profit implications of the add-on and also the optimal release schedule of the add-on.

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

I quantify the consumer welfare gains and supplier profit changes from the FTAs in the Korean Automotive Industry. Recently South Korea has negotiated a couple of major bilateral free trade agreements (FTAs), one with EU and the other with the U.S, which have come into force in 2011 and 2012, respectively. Since there are significant time gap between the announcement of an agreement and the actual date when the agreement enters into effect, durable goods consumers might postpone purchase, expecting future price decline due to the agreement. Thus modeling dynamics is important in the welfare calculation. Utilizing unique, hand-collected automotive characteristics information and aggregate level sales data, I estimate dynamic new durable goods demand model and conduct counterfactual analyses with different levels of tariffs.

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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

### Instructor

- 2012, Principles of Marketing, University of Texas at Austin
    - 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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## Relevant Coursework

### Quantitative Marketing

- Marketing Models I & II
- Marketing Research Methods
- 2010 Columbia-Duke-UCLA Workshop on Quantitative Marketing and Structural Econometrics

### Economics

- Microeconomics I & II
- Macroeconomics I & II
- Industrial Organization I & II
- Computational Economics I

### Econometrics

- Econometrics I, II, & III
- Bayesian Econometrics
- Discrete Choice Theory and Modeling

### Operations Research

- Applied Stochastic Processes
- Markov Decision Processes
- Stochastic Optimization

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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