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OFFICE CONTACT INFORMATION

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EDUCATION

Ph.D. in Economics, Georgetown University	2019(<i>Expected</i>)
M.A. in Applied Economics, Georgetown University	2012
B.S. in Economics, Central University of Finance and Economics (China)	2011

RESEARCH FIELDS

Industrial Organization, Applied Econometrics, Computational Economics

COMMITTEE

- Prof. John Rust (committee chair), Georgetown University, jr1393@georgetown.edu
- Prof. Francis Vella, Georgetown University, fgv@georgetown.edu
- Prof. Marius Schwartz, Georgetown University, mariusschwartz@mac.com

RESEARCH PAPER

"Simulation-based Estimation of Dynamic Hotel Pricing" (Job Market Paper)

This paper studies the dynamic price setting behavior of a focal luxury hotel (Hotel0) in a major US city with a confidential database of Hotel0's daily operations over a 37-month period. Hotel pricing is a challenging high-dimensional problem since hotels must not only set prices for each current date, but also quote prices for a range of future dates, customer types and room types. We formulate a computationally-tractable dynamic programming (DP) model for Hotel0's pricing decision. The DP model captures major factors underlying revenue management (RM) practice, i.e. competition, inventory dynamics, market segmentation, etc. The data records full path of Hotel0's occupancy but not that of competing hotels, which constitutes the major censoring problem in the estimation of aggregate demand dynamics. To overcome this issue, we maintain the assumption that Hotel0 has been pricing optimally and implement Method of Simulated Moments (MSM). The estimated model is successful in fitting Hotel0's observed pricing behavior and booking dynamics. We further compare revenue earned by Hotel0 under different pricing schemes. Optimal dynamic pricing scheme delivers 11% more revenue than constant pricing scheme; 9% more than if pricing above optimal level by 20%; 3% more than if pricing below optimal level by 20%.

"Semi-parametric Instrument-Free Demand Estimation: Relaxing Optimality and Equilibrium Assumptions"

with Sungjin Cho, Gong Lee, John Rust, *R&R Journal of Econometrics*

We analyze the problem of demand estimation when consumer demand is characterized as a stochastic process that results from a compound arrival/choice process: consumers arrive at a market according

to a stochastic arrival process and make independent discrete choices of which of several alternatives to purchase. Overall demand is derived from microaggregation of individual consumer choices, and thus will not lead to a simple static linear aggregate demand curve that has been traditionally used in the literature on demand estimation. We are interested in estimating more realistic stochastic nonlinear models of the demand for hotels in order to study the pricing decisions of a particular luxury hotel, hotel 0, located in a major US city. There is substantial weekly and seasonal variation in arrival rates of customers wishing to book rooms at one of the seven hotels in the local market in which this hotel operates. Given limited capacity, the variation in customer demand leads to strong positive correlation between hotel prices and occupancy since the hotels raise prices substantially on days they expect to sell out, and set much lower prices on days where they expect to have unsold rooms. The endogeneity of pricing decisions results in upward sloping demand curves when ordinary least squares is used to estimate a traditional linear model of demand. We show there are no obvious instrumental variables that are successful in dealing with the endogeneity problem using the standard instrumental variables estimation approach. We introduce a semi-parametric two-step method of simulated moments estimator that can consistently estimate the parameters of the stochastic process for consumer demand that is instrument-free and does not rely on the maintained assumption that hotel prices are in equilibrium or even the assumption that individual hotels set their prices optimally.

WORK IN PROGRESS

"Essay on Dynamic Pricing in Steel Market"

CONFERENCE AND SEMINAR PRESENTATIONS

International Association of Applied Econometrics (IAAE) Conference, Montreal	2018.7
China Meeting of Econometric Society (CMES), Shanghai	2018.6
DC Industrial Organization Conference (DCIO), Washington D.C.	2018.5
Brownbag Seminar of Applied Microeconomics, Georgetown University	2018.5

TEACHING EXPERIENCE

Teaching Assistant, Department of Economics, Georgetown University 2012 - 2018

- Principles of Microeconomics, Intermediate Microeconomics, Economic Statistics, Global Equity Capital Markets

OTHER EXPERIENCE

Research Assistant, McDonough School of Business, Georgetown University	2014
Intern Analyst, Guosen Securities, Beijing	2011

AWARDS

Graduate Student Scholarship, Georgetown University	2013 - 2018
Graduate Student Fellowship, Georgetown University	2012 - 2013
National Scholarship, Ministry of Education of China	2008

COMPUTER LANGUAGE & SOFTWARE

C/C++, Matlab, Perl, PostgreSQL, STATA, OpenMP, R

PERSONAL INFORMATION

Citizenship: China
Language: Chinese(native), English(proficient)