FRIDAY, OCTOBER 21ST  
**KELLOGG SCHOOL OF MANAGEMENT, JAMES L. ALLEN CENTER, 2169 CAMPUS DRIVE, EVANSTON, IL**

**12:00 – 12:45 p.m.**  **LUNCH The Atrium**

**12:45 – 1:00 p.m.**  **OPENING REMARKS Room 164**

*Angela Y. Lee*  - Mechthild Esser Nemmers Professor of Marketing  
- Marketing Department Chair

**1:00 – 2:00 p.m.**  **SESSION 1 Room 164**

*The Welfare Impact of Consumer Reviews: A Case Study of the Hotel Industry*

Gregory Lewis (Microsoft Research and NBER) and **Georgios Zervas** (Boston University / Questrom)

Platforms such as Yelp and TripAdvisor aggregate crowd-sourced information about users’ experiences with products and services. We analyze their impact on the hotel industry using a panel of hotel prices, sales and reviews from five US states over a 10-year period from 2005-2014. Both hotel demand and prices are positively correlated with their average ratings on TripAdvisor, Expedia and Hotels.com, and such correlations have grown over our sample period from a statistical zero in the base year to a substantial level today: a hotel rated one star higher on all the platforms on average has 27% higher demand, and charges 10% more. A natural experiment in our data that caused abrupt changes in the ratings of some hotels but not others, suggests that these associations are causal. Building on this causal interpretation, we estimate a structural model of supply and demand with partially informed consumers, finding that in a counterfactual world without any review information, consumers surplus would fall by 65¢ per room-night ($1.1bn when extrapolating to the US hotel industry as a whole).

*Discussant: Ginger Jin (University of Maryland and Federal Trade Commission)*

**2:00 – 3:00 p.m.**  **SESSION 2 Room 164**

*Does Online Word-of-Mouth Increase Demand? (and How?) Evidence from a Natural Experiment*

Stephan Seiler (Stanford GSB), **Song Yao** (Northwestern / Kellogg), and Wenbo Wang (Hong Kong University of Science and Technology)

We leverage a temporary block of the Chinese microblogging platform Sina Weibo due to political events, to estimate the causal effect of online word-of-mouth content on product demand in the context of TV show viewership. Based on this source of exogenous variation, we estimate an elasticity of TV show ratings (market share in terms of viewership) with respect to the number of relevant comments (comments were disabled during the block) of 0.016. In terms of the behavioral mechanism, we find more post-show microblogging activity increases demand, whereas comments posted prior to the show airing do not affect viewership. These patterns are inconsistent with informative or persuasive advertising effects and suggest a complementarity between TV consumption and anticipated post-show microblogging activity.

*Discussant: Ayelet Israeli (Harvard Business School)*
3:00 – 3:30 p.m.  BREAK  NORTH LOUNGE

3:30 – 4:30 p.m.  SESSION 3  ROOM 164

How Are SNAP Benefits Spent? Evidence from a Retail Panel

Justine Hastings (Brown University and NBER) and Jesse Shapiro (Brown University and NBER)

We use a novel retail panel with more than six years of detailed transaction records for nearly half a million households to study the effect of participation in the Supplemental Nutrition Assistance Program (SNAP) on household spending. The marginal propensity to consume SNAP-eligible food (MPCF) out of SNAP benefits is approximately 0.5. By contrast, the MPCF out of increases in disposable income driven by declines in the gasoline price is less than 0.2. Households entering SNAP reduce their store-brand share of spending by 2 percentage points and their coupon redemption share by 0.8 percentage points for SNAP-eligible items, but exhibit no declines or much smaller declines for SNAP-ineligible items. These patterns obtain even for households for whom SNAP benefits are economically equivalent to cash in the sense that benefits do not cover all food spending. Nonparametric tests reject the hypothesis that households respect the fungibility of money.

Discussant: JP Dube (University of Chicago / Booth)

4:30 – 5:30 p.m.  SESSION 4  ROOM 164

The Value of Usage-Based Insurance beyond Better Targeting: Better Driving

Miremad Soleymanian (University of British Columbia / Sauder), Charles Weinberg (University of British Columbia / Sauder), and Ting Zhu (University of British Columbia / Sauder)

Usage-Based Insurance (UBI) is a recent auto insurance innovation that enables insurance companies to collect individual consumer’s driving data and provide individually targeted price discounts based on each consumer’s driving behaviour. In this paper, using detailed information on insurance premium, retention rates of customers and individual driving behaviour for the UBI adopters, we examine and estimate the effect of the UBI policy on changing the customers’ driving behaviour, which is a potential source of profit improvement for the insurance company beyond better selection among customers and higher retention rates. The key results of our analysis are as follow: First, after controlling for age and gender, we find considerable variation in individual level UBI scores, thus providing evidence that UBI can help the company better estimate a driver’s risk and price accordingly. Second, among the company’s customers, adopters of UBI have higher retention rates than non-adopters; moreover, among UBI customers, safer drivers have higher retention rates. Third, very importantly, our results show that after UBI adoption, the drivers improve their driving behaviour, resulting in lower risk of an accident, providing a meaningful benefit for both the driver and the insurance company. We find that not all components of the UBI measure appear to change over time. In particular, we find that customers decrease their daily average hard brake frequency by an average of 21% after using UBI for six months, but we cannot find any significant effects on the mileage driven by customers after UBI adoption. We also find heterogeneous effects across different demographic groups. For example, younger drivers are more likely to adopt UBI and they also improve their UBI scores faster than older drivers after the UBI adoption. We also find that economic incentives lead to higher adoption rates of UBI and greater improvements in driving behaviour. Our results suggest that UBI is not only beneficial to the insurance company, but also to consumers who become better drivers.

Discussant: Vishal Singh (New York University / Stern)

5:30 – 6:30 p.m.  COCKTAIL RECEPTION  NORTH LOUNGE

6:30 – 8:30 p.m.  DINNER AND DICK WITTINK AWARD  THE ATRIUM
Does Advertising Serve as a Signal? Evidence from Field Experiments in Mobile Search

Navdeep S. Sahni (Stanford GSB) and Harikesh Nair (Stanford GSB)

In a large-scale field experiment, we demonstrate that advertising can serve as a signal that enhances consumers’ evaluations of advertised goods. We implement the experiment on a mobile search platform that provides listings and reviews for an archetypal experience good, restaurants. In collaboration with the platform, we randomize more than 200,000 consumers into exposure or no exposure of ads for about 600+ local restaurants. In conditions in which consumers are exposed to advertising, we also randomly vary the disclosure to the consumer of whether a restaurant’s listing is an ad. This enables us to isolate the effect on outcomes of a consumer knowing that a listing is sponsored – a pure signaling effect. We find that this disclosure increases calls to the restaurant by 77%, holding fixed all other attributes of the ad. The disclosure effect is higher when the consumer uses the platform away from his typical city of search, when the uncertainty about restaurant quality is larger, and for restaurants that have received fewer ratings in the past.

Further, on the supply side, newer, higher rated and more popular restaurants advertise more on the platform. Taken together, we interpret these results as consistent with a signaling equilibrium in which ads serve as implicit signals that enhance the appeal of the advertised restaurants. Both consumers and firms seem to benefit from the signaling. Consumers shift choices systematically towards restaurants that are better rated (at baseline) in the disclosure condition compared to the no disclosure condition, and advertisers gain from the improved outcomes induced by disclosure. Our results also imply that search-platforms would gain from clear sponsorship disclosure, and thus holds implications for platform design.

Discussant: Randall Lewis (Netflix)

Industrial Reorganization: Learning about Patient Substitution Patterns from Natural Experiments

Devesh Raval (Federal Trade Commission), Ted Rosenbaum (Federal Trade Commission), and Nathan E. Wilson (Federal Trade Commission)

Despite their widespread usage, little is known about the predictive accuracy of different discrete choice demand models. To evaluate their performance, we use a series of natural disasters that unexpectedly removed hospitals from consumers’ choice sets. We compare the model predictions of post-disaster behavior to the benchmark of actual post-disaster consumer behavior. Across our different settings, we find that models that allow for flexible interactions between patient characteristics and unobserved hospital quality perform the best and that it is important to use different classes of models. Further, the use of less accurate models could lead to more lax merger enforcement.

Discussant: Rob Porter (Northwestern)
11:30 a.m. – 12:30 p.m.  **SESSION 7 ROOM 164**

*You Get What You Give: Theory and Evidence of Reciprocity in the Sharing Economy*

Davide Proserpio (USC / Marshall), **Wendy Xu** (Boston University), and Georgios Zervas (Boston / Questrom)

This paper provides evidence on the importance of user interaction and behavior in the sharing economy. An analytical framework incorporating reciprocity, the tendency to increase effort in response to others’ increased efforts, is developed. In our model, buyers (sellers) can induce sellers (buyers) to exert more effort by behaving well themselves. We demonstrate that this joint increased effort improves the utility of both parties and influences the market equilibrium. Moreover, we show that reciprocity becomes more salient in the sharing economy, generating trust among strangers and informally regulating their behavior. Finally, we test the predictions of our model using data from Airbnb, a popular peer-to-peer rental accommodation website.

Discussant: Sridhar Moorthy (Toronto / Rotman)

12:30 – 1:30 p.m.  **LUNCH THE ATRIUM**

1:30 – 2:30 p.m.  **SESSION 8 ROOM 164**

*Estimating Customer Spillover Learning of Service Quality: A Bayesian Hierarchical Approach*

**Andrés Musalem** (University of Chile), Yan Shang (Duke / Fuqua), and Jing-Sheng Song (Duke / Fuqua)

"Spillover" learning is defined as customers’ learning about the quality of a service (or product) from their previous experiences with similar yet not identical services. In this paper, we propose a novel, parsimonious and general Bayesian hierarchical learning framework for estimating customers’ spillover learning. We apply our model to a one-year shipping/sales historical data provided by a world-leading third party logistics company and study how customers’ experiences from shipping on a particular route affect their future decisions about shipping not only on that route, but also on other routes serviced by the same logistics company. Our empirical results are consistent with information spillovers driving customer choices. Customers also display an asymmetric response such that they are more sensitive to delays than early deliveries. In addition, we find that customers are risk averse being more sensitive to their uncertainty about the mean service quality than to the intrinsic variability of the service. Finally, we develop policy simulation studies to show the importance of accounting for customer learning when a firm considers service quality improvement decisions.

Discussant: Andrew Ching (Toronto / Rotman)

2:30 – 3:30 p.m.  **SESSION 9 ROOM 164**

*Dynamic Pricing with Multi-Armed Bandits*

**Eric M. Schwartz** (Michigan / Ross), Kanishka Misra (Michigan / Ross), and Jacob Abernathy (Michigan)

Consider the pricing decision for a manager at large online retailer (e.g. Amazon.com) that sells millions of products. The pricing manager must decide on real-time prices for each of these products. Due to the large number of products, the manager must set retail prices without complete demand information. A manager can run price experiments to learn about demand and maximize long run profits. Pricing differs from other areas of online marketing where experimentation is common (such as, online advertising or website design), firms do not randomize prices to different customers at the same time. There are two aspects that make the online retail pricing unique. First, due to the number of products the manager must be able to automate pricing. Second, unlike a traditional retail setting, an online retailer can make frequent price changes. We consider a setting where the manager is unwilling to make strong parametric demand curve assumptions.
For this general setting, we derive a pricing algorithm that balances earning profit immediately and learning for future profits. The proposed approach marries statistical machine learning and economic theory. Our automated policy solves this problem using a scalable distribution-free algorithm. We show that our method converges to the optimal price faster than standard machine learning (multi-arm bandit) solutions to the problem. In a series of Monte Carlo simulations, we show that the proposed approach perform favorably compared to methods in computer science and revenue management.

Discussant: Michael Braun (Southern Methodist University)

3:30 – 4:00 p.m.  BREAK North Lounge

4:00 – 5:00 p.m.  SESSION 10 Room 164

Strategic Ability and Productive Efficiency in Electricity Markets

Ali Hortaçsu (University of Chicago and NBER), Fernando Luco (Texas A&M), Steven L. Puller (Texas A&M), and Dongni Zhu (Texas A&M)

Standard oligopoly models of short-run price competition in oligopoly settings predict that large firms can exercise market power and generate inefficiencies. However, productive inefficiency can also arise from other sources as well, such as in the presence of heterogeneity is strategic sophistication. This paper studies such a setting in the Texas electricity market, in which bidding behavior of some firms persistently and significantly deviates from Nash-equilibrium bidding. We leverage a unique dataset that contains information on bids and valuations to identify and estimate levels of strategic sophistication. We do this embedding a Cognitive Hierarchy model into a structural model of bidding behavior. (Preliminary) results show that larger firms have higher levels of strategic sophistication than smaller firms, though there is significant heterogeneity across firms. We then use the estimated distribution of types of strategic sophistication to perform counterfactual calculations about market efficiency under different scenarios that increase strategic sophistication of low-type firms either exogenously or through mergers with more sophisticated firms. We find that exogenously increasing sophistication of small firms increases productive efficiency. Furthermore, mergers that do not generate cost synergies and increase concentration may also increase efficiency.

Discussant: Avi Goldfarb (Toronto / Rotman)