Quantitative Marketing and Economics
2008 Conference Schedule

October 10-11, 2008
New York University, Stern School of Business

Sponsored by
James M. Kilts Center for Marketing, GSB, University of Chicago
Marketing Science Institute (MSI)

Friday, October 10

12:00 pm – 12:45 pm Lunch

12:45 pm – 1:00 pm Welcome

1:00 pm – 2:00 pm Session 1

Equilibrium Price Dynamics in Perishable Goods Markets: The Case of Secondary Markets for Major League Baseball Tickets
Andrew Sweeting (Duke)

This paper analyzes the dynamics of prices in two online secondary markets for Major League Baseball tickets. Controlling for ticket quality, prices tend to decline significantly as a game approaches. The paper describes and tests alternative theoretical explanations for why this happens in equilibrium, considering the problems of both buyers and sellers. It shows that sellers cut prices (either .fixed prices or reserve prices in auctions) because of declining option values, reflecting their ability to resell tickets at a later date, rather than because of changes in the elasticity of demand or because sellers learn about demand. Many cases of observed early buying can be rationalized by uncertainty about future availability and prices once it is recognized that tickets are differentiated products. There is also evidence that uncertain future availability may lead to early buying by consumers who need to make complementary investments (or .plans.) to go a game.

Discussant: Brett Gordon (Columbia)

2:00 pm – 3:00 pm Session 2

In-Store Media and Channel Management
Anthony Dukes (USC) and Yunchuan Liu (UIUC)

We study the effects of retailer in-store media on distribution channel relationships. With modern communication technology, retailers can open in-store media (ISM) in their stores and allow manufacturers to advertise in-store. We show that ISM has an important role in coordinating a distribution channel on advertising volume, product sales, and mitigating supplier competition. Improved channel coordination is achieved through the internalization of advertising decisions from commercial forms of media (i.e., radio, TV, newspaper, etc.). We show how a retailer may strategically subsidize

manufacturers on their advertising through ISM to better coordinate the channel. This subsidization is optimal even if ISM is more effective than commercial media. With manufacturer competition, a retailer can strategically use a "competitive premium" to ration excessive advertising between competing suppliers in a category. When manufacturers are asymmetric with pre-advertising brand awareness, a retailer has an incentive to price discriminate by charging lower prices to manufacturers whose brand awareness is higher, mitigating wastefully duplicative advertising. In addition, retailer ISM can benefit social welfare even when in-store media is less effective than commercial media. However, if in-store media effectiveness is very low, a retailer may introduce in-store media for its own benefit to the detriment of social welfare.

Discussant: Yuxin Chen (NYU)

3:00 pm – 3:30 pm Break

3:30 pm – 4:30 pm Session 3

Music for a Song: An Empirical Look at Uniform Song Pricing and its Alternatives
Ben Shiller (Wharton) and Joel Waldfogel (Wharton)

Economists have well-developed pricing theories that challenge the wisdom of the common practice of uniform song pricing. This paper explores the profit and welfare implications of various alternatives, including song-specific pricing, various forms of bundling, two-part tariffs, nonlinear pricing, and third-degree price discrimination, using survey-based data on nearly 500 students' valuations of 50 popular songs in early January, 2008. We find that various alternatives – including simple schemes such as pure bundling and two-part tariffs – can raise both producer and consumer surplus. Revenue could be raised by nearly 10 percent relative to profit-maximizing uniform pricing and by over a fifth relative to current $0.99 uniform pricing. Moreover, revenue could be increased by a tenth while maintaining consumer surplus at the high level accompanying current $0.99 uniform song pricing. While person-specific uniform pricing can raise revenue by three quarters, none of the non-discriminatory schemes raise revenue's share of surplus above 35 percent. Even with sophisticated pricing, much of the area under the demand curve for this product cannot be appropriated as revenue.

Discussant: Ram Rao (UT Dallas)

4:30 pm – 5:30 pm Session 4

A Model of Image Advertising
Dina Mayzlin (Yale) and Jiwoong Shin (Yale)

In November 2004, American Express launched a new campaign called "My Life. My Card." The first spot featured Robert De Niro reciting a "love letter" to New York City. The advertising ends with the words, "My life happens here. My card is American Express." While the advertising is very striking in its execution (it features images of Ground Zero, for example), it does not directly mention any of the benefits of owning an American Express card, such as the card's excellent rewards program. Hence, despite its ability to put forth compelling economic arguments in favor of its product, Amex chose to air a purely "image-based" advertising. Here, we address the question of why and when a firm may choose to expend resources on vague image-based advertising as opposed to a more informative attribute-based message. We show that image advertising can serve as a signal of quality in the sense that the high quality firm engages in image advertising, while the medium quality firm engages in attribute-based

advertising. This seemingly counter-intuitive result stems from the fact that the high quality firm purposefully withholds information from the consumer in order to motivate her to engage in own search about product quality, which is likely to result in a positive signal. We contrast this to the equilibrium where both the medium and the high type engage in attribute-based advertising. Therefore, the advertising message is important in enabling signaling; in other words, some ways of "burning money" are more effective than others.

Discussant: Dmitri Kuksov (Washington University St. Louis)

6:30 pm Reception/Dinner **Golden Unicorn**
18 East Broadway, New York, NY 10002

Saturday, October 11

8:00 am – 9:00 am **Breakfast**

9:00 am – 10:00 am **Session 1**

Competition and Diversity: Historical Evidence from U.S. Newspapers
Matthew Gentzkow (Chicago), Jesse Shapiro (Chicago) and Michael Sinkinson (Harvard)

Using a newly constructed dataset on US daily newspapers from 1869 to 2004, we study the determinants of newspapers' political affiliations, with an emphasis on the strategic effect of competitors' affiliations. In estimating the effect of competitors' choices, we correct for the role of market unobservables using a strategy that exploits the high degree spatial correlation in market characteristics. Our estimates allow us to quantify the effect of competition on ideological diversity in newspaper markets, and to estimate how the role of competition in fostering diversity changed over time.

Discussant: Ken Wilbur (USC)

10:00 am – 11:00 am **Session 2**

$1 Discount or $1 Reward? The Effect of Consumers' Preferences on Reward Programs
Federico Rossi (North Carolina)

The effectiveness of consumers' reward programs has been the object of recent criticism. Researchers have questioned the ability of reward schemes to 'lock-in' their consumers, and stressed the high costs of such investments. Despite these claims, for several industries such as airlines, hotels, gas stations and credit cards, reward programs today represent a prevalent and apparently successful form of investment. In this paper I investigate why, in markets such as travel, firms have an advantage when they use reward programs that they might not have in other markets. I develop and estimate a structural dynamic model of consumer purchase and redemption choice in order to compare the value that consumers attach to rewards with the value of money they spend on their purchases. I find that there exists a significant portion of

frequent consumers who extract more value from one dollar worth of rewards than from one dollar bill paid for the good purchased. This result is consistent with the idea that in these markets an important segment of customers are employees who travel for work and make purchase decisions using the money of their employer. In this situation, the reward scheme can exploit the principal-agent separation between employer and employee by inducing the latter, who is the recipient of the rewards, to choose higher-priced goods. I estimate the model on a unique dataset provided by an Italian chain of retail gasoline stations. Instead of using reported information on the nature of consumers, in my analysis I rely exclusively on revealed preferences to identify consumers who *de facto* behave as employee-agents. The results show a significant presence of such consumers, which can make the reward program investment particularly effective compared to other policies such as price reduction.

Discussant: Jean-Francois Houde (University of Wisconsin)

11:00 am – 11:30 am Break

11:30 am – 12:30 pm Session 3

A Simple Nonparametric Estimator for the Distribution of Random Coefficients in Discrete Choice Models
Patrick Bajari (Minnesota), Jeremy T. Fox (Chicago), Kyoo il Kim (Minnesota), and Stephen Ryan (MIT)

We propose an estimator for discrete choice models, such as the logit, with a nonparametric distribution of random coefficients. The estimator is linear regression subject to linear inequality constraints and is robust, simple to program and quick to compute compared to alternative estimators for mixture models. We discuss three methods for proving identification of the distribution of heterogeneity for any given economic model. We prove the identification of the logit mixtures model, which, surprisingly given the wide use of this model over the last 30 years, is a new result. We also derive our estimator's non-standard asymptotic distribution and demonstrate its excellent small sample properties in a Monte Carlo. The estimator we propose can be extended to allow for endogenous prices. The estimator can also be used to reduce the computational burden of nested fixed point methods for complex models like dynamic programming discrete choice.

Discussant: Andres Musalem (Duke)

12:30 pm – 1:30 pm Lunch
The 2nd Annual QME best paper prize in honor of the late Professor Dick Wittink will be awarded.

1:30 pm – 2:30 pm Session 4

Demand Estimation with Social Interactions and the Implications for Targeted Marketing
Wesley R. Hartmann (Stanford)

This paper develops a model for the estimation and analysis of demand in the context of social interactions. Decisions made by a group of customers are modeled to be an equilibrium outcome of an empirical discrete game, such that all group members must be satisfied with chosen outcomes. The game-theoretic approach assists estimation by allowing us to account for the endogeneity of group members' decisions, while also serving as a managerial tool that can simulate equilibrium outcomes for the group when the firm alters the marketing mix to the group. The model builds upon the existing literature on empirical models of discrete games by introducing a random coefficients heterogeneity distribution.

Monte Carlo simulations reveal that including the heterogeneity resolves the endogenous group formation bias commonly noted in the social interactions literature. By estimating the heterogeneous equilibrium model using Bayesian hierarchical MCMC, we can also recover some parameters at the individual level to evaluate group specific characteristics and targeted marketing strategies. To validate the model and illustrate its implications, we apply it to a data set of groups of golfers. We find significant social interaction effects, such that 69% of the median customer lifetime value is attributable to the customer, while the other 31% is attributable to the customer's affect on members of his group. We also considered the targeted marketing strategies and show that group-level targeting increases profit by 1%, while targeting within groups can increase profitability by 20%. We recognize that customer backlashes to targeting could be greater when group members receive different offers, so we suggest some alternatives that could retain some of the profitability of within group targeting while avoiding customer backlashes.

Discussant: Jia Panle (MIT)

2:30 pm – 3:30 pm Session 5

The Timing of Version Releases in R&D-intensive Industries: A Dynamic Duopoly Model
Ron N. Borkovsky (University of Toronto)

The strategic timing of version releases is a prevalent issue in many R&D-intensive industries. In such industries, a firm accumulates R&D successes for some time be- fore strategically deciding to incorporate these improvements into a new version (or new generation) of its product. This paper presents a dynamic model of duopolistic competition that endogenizes each firm's decisions over how much to invest in R&D and when to release successive generations of its product. We uncover a wide variety of qualitatively different equilibria that demonstrate that the *nature* of the benefits of leadership .i.e., the magnitude of the benefits and the rate at which they set in as a lead grows plays a key role in determining firms' equilibrium behavior. We find that if the benefits of leadership are sufficiently high, firms engage in preemption races characterized by intense investment and frequent version releases. Alternatively, firms may accommodate one another in order to alleviate the burden of costly R&D activities and version releases; in a phase of accommodation, the market leader releases new versions less frequently, while the follower curtails its investment. Finally, we show that changes in the cost of releasing a new version and in the inherent uncertainty that characterizes the version release process affect equilibrium behavior and industry structure in interesting and non-trivial ways; most notably and perhaps counter intuitively, we find that an increase in the expected cost of releasing a new version can actually increase the frequency with which firms release new versions.

Discussant: Allan Collard-Wexler (NYU)

3:30 pm – 4:00 pm Break

4:00 pm – 5:00 pm Session 6

Expected Firm Altruism and Brand Extensions
Julio J. Rotemberg (Harvard)

This paper studies quality choice in a model where consumers expect firms to be somewhat altruistic towards those customers to whom they have sold goods in the past. Because some consumers who expect altruism from a supplier react with anger when they can reject the hypothesis that new actions by this supplier are inconsistent with this altruism, existing firms have some advantages over new ones. Consistent with numerous marketing studies, existing firms (or brands) can face a larger demand for new

products than new entrants. Moreover, the failure of new products can reduce the demand for a brand's existing products even if the quality of these existing products is well understood by consumers. Moreover, the model can explain why new products can be subject to loyalty switches, where one brand has an advantage in introducing product A and a disadvantage in introducing product B, while the opposite is true for a different brand. Lastly, the model predicts that a firm that is seen as caring for only a subset of quality sensitive customers can have an advantage in introducing a product relative to a firm that is seen as more widely altruistic.

Discussant: Ganesh Iyer (Berkeley)