

Quantitative Marketing and Economics

2007 Conference Schedule

October 12-13, 2007

The University of Chicago Graduate School of Business
Gleacher Center

Sponsored by

James M. Kilts Center for Marketing, GSB, University of Chicago
INFORMS Society for Marketing Science (ISMS)
Springer Science+Business Media

Friday, October 12

Friday's sessions will be held in classroom 100.

12:00 pm – 12:45 pm Lunch

12:45 pm – 1:00 pm Welcome

1:00 pm – 2:00 pm Session 1

The Evolving Food Chain: Competitive Effects of Wal-Mart's Entry into the Supermarket Industry

Emek Basker (Missouri) and Michael Noel (UC-San Diego)

We analyze the effect of Wal-Mart's entry into the grocery market using a unique store-level price panel data set. We use OLS and two IV specifications to estimate the effect of Wal-Mart's entry on competitors' prices of 24 grocery items across several categories. Wal-Mart's price advantage over competitors for these products averages approximately 10%. On average, competitors' response to Wal-Mart's entry is a price reduction of 1–1.2%, mostly due to smaller-scale competitors: the response of the “big three” supermarket chains (Albertson's, Safeway, and Kroger) is less than half that size. We confirm our results using a falsification exercises, in which we test for Wal-Mart's effect on prices of services that it does not provide, such as movie tickets and dry cleaning services.

Discussant: Yeşim Orhun (Chicago)

2:00 pm – 3:00 pm Session 2

Using Expectations Data to Infer Managerial Objectives and Choices

Tat Chan (Washington), Barton Hamilton (Washington) and Christopher Makler

We develop a framework that combines observed market data with self-reported managerial expectations data to jointly estimate the demand function and objective function of the marketing manager at a large university performing arts center. Our methodology helps us to address four critical issues of great concern to many structural econometric models: (1) the endogeneity issue that arises when almost *all* product attributes and marketing policies are correlated with unobserved product

quality; (2) the decision-maker may be uncertain or even biased in her assessment of true product quality; (3) the manager may be biased in her beliefs concerning the impact of her actions on outcomes, generating choices that appear non-optimal; (4) the manager may have objectives other than pure static profit maximization. The availability of expectations data in our application allows us to relax strong behavioral assumptions, such as rational expectations and profit maximization, and test the degree of the manager's bias in her beliefs regarding product appeal and advertising effectiveness. Our findings suggest that the manager has "objectively correct" beliefs concerning certain key economic parameters, such as the price elasticity of demand, and the impact of advertising. However, the manager appears to be biased in her beliefs concerning the appeal of certain product attributes, and departs from static profit maximization by exhibiting special preference for promoting "avant-garde" art. This latter finding is consistent with the mission statement of the center.

Discussant: Andrew Ching (Toronto)

3:00 pm – 3:30 pm Break

3:30 pm – 4:30 pm Session 3

Dynamic Standards Competition and Tipping: The Case of 32/64 Bit Video Game Consoles

Jean-Pierre Dubé and Günter J. Hitsch and Pradeep Chintagunta (Chicago)

We study the dynamics associated with the diffusion of competing, incompatible standards in a market with indirect network effects. Of particular interest is when such markets can "tip" in favor of one standard, i.e. become more concentrated due to the economic mechanism of indirect network effects. We formulate a model of dynamic standards competition, and calibrate the model using data from the 32/64-bit generation of video game consoles, a canonical example of indirect network effects. We show how the (counter-factual) model predictions can be used to measure the extent of tipping, and how tipping depends on the consumers' valuation of software and on consumer expectations.

Discussant: Lanier Benkard (Stanford)

4:30 pm – 5:30 pm Session 4

Enriching Interactions: Incorporating Revenue and Cost Data into Static Discrete Games

Paul Ellickson (Duke) and Sanjog Misra (Rochester)

By focusing on the nexus between firms and consumers, marketers and micro-economists continually confront problems of strategic or social interaction. The decision of where to locate a retail store not only depends on the specific capabilities of the firm in question and the customers to whom it wishes to sell its products, but also on the strategic reactions of its rivals. Similarly, the decision of which gym to join may depend on whether a person's spouse or friends belong, as well as how often they intend to go. Not surprisingly, structural models of strategic and social interaction are gaining traction in both fields, providing insight into a host of issues from the optimal design of ATM networks to the decision of whether and with whom to play golf. However, due to both limitations in data availability and constraints inherent in the modeling approach, researchers have almost exclusively focused on discrete outcomes, treating profit or utility as a latent variable, usually parameterized via a reduced form. While this makes efficient use of the often limited data at hand, it can severely limit the usefulness of the model for performing informative counterfactuals or identifying the deep parameters that drive these strategic interactions. For example, in their study of supermarket pricing behavior, Ellickson and Misra (2006)

found strong evidence that supermarket chains favor strategies that accord with their rivals, but were unable to pin down exactly why such assortative matching was in fact beneficial to the firms. The goal of this paper is to provide a method for incorporating additional, post-choice outcome data into structural models of static discrete games.

Discussant: Harikesh Nair (Stanford)

5:30 pm – 6:00 pm Wittink Prize

The first QME best paper prize in honor of the late Professor Dick Wittink will be awarded.

6:00 pm Reception/Dinner Gleacher Center, Room 621

Saturday, October 13

Saturday's sessions will be held in classroom 100.

8:00 am – 9:00 am Breakfast

9:00 am – 10:00 am Session 1

Empirical Entry Games with Complementarities: An Application to the Shopping Center Industry

Maria Ana Vitorino (Chicago)

This paper studies the joint entry decisions of stores in a particular form of retail cluster - the regional shopping center. I propose a strategic model of entry capable of quantifying the magnitude of inter-store spillovers and show how these effects can help in explaining the composition of a given market. The model is applied to a novel dataset containing information about the store configurations of all US regional shopping centers and estimated using a new econometric approach that is robust to multiple equilibria. I find evidence of significant spillovers across stores with sign and magnitude varying across store-types.

Discussant: Peter Reiss (Stanford)

10:00 am – 11:00 am Session 2

Price Variation and Customer Antagonism

Eric Anderson (Kellogg) and Duncan Simester (MIT)

We present findings from two field experiments that measure how customers react if they buy a product from a retailer and later observe the same retailer selling it for less. Many customers react by reducing their demand for other products sold by the firm. The findings have important implications for two literatures: price discrimination and price stickiness. They represent a countervailing force that may limit firms' ability to price discriminate. They may also help to explain why prices are sticky, providing some of the first detailed measures of the importance of customer antagonism.

We show that the loss of demand is limited to customers who previously bought one of the items that were later discounted. The effect is also larger if that prior purchase was more recent and if customers were previously charged a higher price. These interactions suggest that the adverse outcome can be attributed to social preferences and reputation effects.

Discussant: Praveen Kopalle (Dartmouth)

11:00 am – 11:30 am Break

11:30 am – 12:30 pm Session 3

Information, Learning and Drug Diffusion: the Case of Cox-2 Inhibitors

Pradeep Chintagunta (Chicago), Renna Jiang (Chicago), and Ginger Z. Jin (Maryland)

The recent withdrawal of Cox-2 Inhibitors has generated debate on the role of information in drug diffusion: can the market learn the efficacy of new drugs, or does it solely depend on manufacturer advertising and FDA updates? In this study, we use a novel data set to study the diffusion of three Cox-2 Inhibitors – Celebrex, Vioxx and Bextra. From 1999 to 2003, IPSOS, a marketing research company, tracked a representative sample of patients and recorded every prescription received, including Cox-2s and traditional NSAIDs. Starting from January 2001, the company also collected information on how satisfied a patient is after she takes a specific drug. This data set, together with FDA updates, media coverage, professional articles, and advertising intensity from drug manufacturers, allows us to model how different sources of information affect prescription decisions. In the model, we also distinguish the learning of a drug's general efficacy from the learning of the specific match between a drug and a patient. The former entails learning across patients, while the latter is primarily within a patient.

Preliminary results suggest that prescription choice is sensitive to many sources of information. At the beginning of 2001 and upon the Bextra entry in January 2002, doctors held a strong prior belief about the efficacy of Celebrex, Vioxx, and Bextra, and learn gradually from patient satisfaction. We find evidence for both across- and within-patient learning, but within-patient learning explains much more variation in the data. Other sources of information are important as well: detailing and news report have positive influence, but professional articles and direct-to-consumer advertising appear to be detrimental for drug sales. The impact of FDA updates is close to zero once we control for professional articles. This suggests that the contents of FDA updates have already been included in professional articles and therefore deliver little new information to doctors.

According to our counterfactual prediction, suppressing FDA updates has no impact on market share. In contrast, setting up a nationwide database of patient feedbacks encourages doctors to switch from traditional NSAIDs to Cox-2s, but increasing professional publications about Cox-2s steal market shares away from Cox-2s. This suggests that patient feedback and professional articles may reflect different dimensions of drug quality, and these two sources of information are not necessarily substitutable to each other.

Discussant: Tülin Erdem (NYU)

12:30 pm – 1:30 pm Lunch

1:30 pm – 2:30 pm Session 4

Durable Goods Oligopoly with Endogenous Innovation

Ronald Goettler (CMU) and Brett Gordon (Columbia)

In durable goods markets firms face two dynamic trade-offs: lowering price to sell more today reduces future demand, and investment in quality today induces future upgrades. We construct a model of dynamic oligopoly with durable goods and endogenous innovation to shed light on the role of these tradeoffs on equilibrium behavior and market outcomes. Firms make dynamic pricing and investment decisions while taking into account the dynamic behavior of consumers who anticipate the product improvements and price declines. The distribution of currently owned products affects current demand and evolves endogenously as consumers make replacement purchases. Our work extends the dynamic oligopoly framework developed by Ericson and Pakes (1995) to incorporate durable goods. We use an alternative approach to bounding the state space which is less restrictive of frontier firms and yields a steady-state rate of innovation that is endogenously determined.

We estimate the model using data from the PC microprocessor industry and perform counterfactuals to measure the benefit of having AMD as a competitor to Intel. Consumer surplus is \$6.5 billion per year higher with AMD than if Intel were a monopolist. Innovation, however, would be higher without AMD present. Social surplus is 3 percent higher with both firms, but about 20 percent below what a social planner would attain.

Discussant: Stephen Ryan (MIT)

2:30 pm – 3:30 pm Session 5

Deterministic and Stochastic Prisoner's Dilemma Games: Experiments in Interdependent Security

Eric Bradlow (Wharton)

One-shot, deterministic Prisoner's Dilemma (PD) games have been extensively studied by academicians and practitioners alike for more than forty years. Recent research has extended these games to allow for repeated-play and stochastic outcomes, enabling the understanding of deviations from equilibrium behavior as compared to earlier simplified situations.

This research continues in that spirit by merging the data analysis paradigm of Bayesian statistics with an interdependent security PD game to examine a novel data set consisting of investment decisions in security with: (a) repeated play, (b) outcomes occurring either stochastically (with varying probabilities) or deterministically according to an experimental design, and (c) the ability to learn (or not) about the actions of the subjects' counterparts.

Our main empirical findings are that individuals have differing underlying propensities to invest, these propensities vary across round and time, are affected by both the stochastic nature of the game (and the associated probabilities), and even more so by an individual's ability to learn about his or her counterpart's choices. Implications for individual decisions and the likely play of a person's counterpart are discussed in detail.

Discussant: Wilfred Almadoss (Duke)

3:30 pm – 4:00 pm Break

4:00 pm – 5:00 pm Session 6

Dynamics of Consumer Demand for New Durable Goods

Gautam Gowrisankaran (Washington) and Marc Rysman (Boston)

This paper specifies and estimates a dynamic model of consumer preferences for new durable goods with persistent heterogeneous consumer tastes, rational expectations about future products and repeat purchases over time. Most new consumer durable goods, particularly consumer electronics, are characterized by relatively high initial prices followed by rapid declines in prices and improvements in quality. The evolving nature of product attributes suggests the importance of modeling dynamics in estimating consumer preferences. We estimate the model on the digital camcorder industry using a panel data set on prices, sales and characteristics. We find that dynamics are a very important determinant of consumer preferences and that estimated coefficients are more plausible than with traditional static models. We use the estimates to investigate the value of new consumer goods and intertemporal elasticities of demand.

Discussant: Baohong Sun (CMU)