

The Shansby Research Seminar in Marketing

“Estimating Airlines’ Dynamic Price Competition”

Nan Chen

University of California, Berkeley
Haas School of Business

11:00 am – 12:30 pm
Monday, September 11, 2017

Room C-325
Haas School of Business
University of California, Berkeley

Abstract:

The paper studies implications of dynamic price competition in differentiated products markets in which firms are capacity constrained. The analysis is performed in the context of the airline industry. The paper develops a structural dynamic oligopoly model in which firms perform dynamic pricing to: (i) price discriminate across heterogeneous buyers arriving at different points in time, (ii) smooth the impact of stochastic demand fluctuations on capacity utilization. The supply and demand are jointly estimated using a unique daily-level data on flight prices and capacity utilization. The identification leverages a natural experiment, which involves carrier exit and monopolization in several focal airline markets. The estimates show that demand for airline seats exhibits large degree of temporal heterogeneity and stochastic variability. The counterfactual experiments show that, in competitive airline markets, the ability to perform dynamic pricing increases total welfare. In particular, (i) the ability to price discriminate significantly increases profits. This increase highlights that the price discrimination in the airline industry is predominantly driven by the collective incentives to "expand the market", and less so by the private incentives to "steal each other's business". (ii) The ability to smooth demand fluctuations has small and mixed effects on profits, but significantly benefits both early- and late-arriving consumers. This is because selling the capacity "too soon" softens competition in the early market and decreases supply in the late market. I find that extra profits resulting from the ability to price discriminate are significantly larger than the extra profits resulting from throttling capacity. This signifies the importance of exploring temporal consumer heterogeneity, in addition to temporal stochastic demand fluctuations, when designing dynamic pricing systems.