The Hong Kong Polytechnic University
Department of Applied Mathematics

Seminar

On

Estimation of Pure Characteristics Demand Models with Pricing

by

Professor Jong-Shi Pang

Department of Industrial and Enterprise Systems Engineering
University of Illinois at Urbana-Champaign

Abstract

A pure characteristics model (PCM) is a class of discrete-choice random-coefficients demand models in which there is no idiosyncratic logit error term in a consumer's utility. The absence of the logit error term leads to a nonsmooth formulation of the predicted market share equations. As a result, inverting the market share equations for the unobserved product characteristics and estimating the model by using the nested fixed-point approach becomes computationally intractable. We introduce lotteries for consumers' purchase decisions, which are then characterized by a system of complementarity constraints. This reformulation leads to smooth market share equations. As a result, we can reformulate the generalized method of moments (GMM) estimation of a pure characteristics model as a quadratic program with nonlinear complementarity constraints. The reformulation of consumers' decision problem provides a unified framework to study the Nash-Bertrand pricing problem under pure characteristics demand models and the GMM estimation of the demand model with pricing equations. We present numerical results to demonstrate the effectiveness of our approach.

Date : July 16, 2012 (Monday)

Time : 2:30 p.m. – 3:30 p.m.

Venue : HJ610, The Hong Kong Polytechnic University

*** * * ALL ARE WELCOME * * ***