

MARKETING COLLOQUIA

Spring 2026 - Abstract

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When: 12:00 PM to 1:20 PM

Where: 3730 Walnut Street, Suite 700

A QUASI-BAYES APPROACH TO NONPARAMETRIC DEMAND ESTIMATION WITH ECONOMIC CONSTRAINTS

This paper develops a new estimation framework for balancing statistical flexibility and economic regularity in multi-product nonparametric demand systems. We take a quasi-Bayes approach that transforms a sieve estimator of inverse demand into a quasi-likelihood and then uses priors to regularize and enforce economic constraints. We implement novel sampling procedures that repose the heavily constrained posterior as the limit of a sequence of softly constrained posteriors and then utilize sequential Monte Carlo algorithms to push and filter samples through this sequence. Evidence from simulations and across several grocery retail categories shows that, relative to classical estimators, our approach more accurately recovers economic structure and improves finite sample performance. We also introduce an accompanying Julia package (NPDemand.jl) to help make nonparametric demand estimation more feasible in applied work.