

# Elasticity and Curvature of Discrete Choice Demand Models <sup>\*</sup>

Eugenio J. Miravete<sup>†</sup>      Katja Seim<sup>‡</sup>      Jeff Thurk<sup>§</sup>

March 2023

## Abstract

Profit maximization in non-competitive markets constrains the support of equilibrium elasticity (markup) and demand curvature (pass-through). We offer a framework to study the link between the specification of preferences in unit-demand discrete choice mixed-logit models and the range of equilibrium elasticity-curvature pairs consistent with the model. We highlight features of the specification that ensure both flexible cross-price substitution *and* robust pass-through estimates. Such flexibility is required for the analysis of mergers, taxation, tariffs, costs shifts, and exchange rates in industries with market power. We show that recognizing heterogeneity in price responsiveness, rather than simply in preferences for product characteristics, is necessary to alleviate curvature restrictions inherent in multinomial logit models. A skewed distribution of price responsiveness increases the range of feasible elasticity-curvature pairs up to those of *CES* demand. We provide a flexible and parsimonious approach to specifying price responsiveness in empirical mixed-logit models. As our approach nests the standard model, we show that this flexibility generates economically and statistically meaningful differences in estimated product elasticity and curvature.

**Keywords:** Market Power, Pass-Through, Demand Curvature, Demand Manifold.

**JEL Codes:** C51, D43, L13, L41, L66

---

<sup>\*</sup> We thank Jeremy Fox, Philipp Schmidt-Dengler, Stephen Ryan, Paulo Somaini and Alan Sorensen for valuable discussions of early versions of this work. All remaining errors are only our own.

<sup>†</sup> The University of Texas at Austin, Department of Economics, Austin, TX 78712; and CEPR. E-mail: [eugenio@utexas.edu](mailto:eugenio@utexas.edu); <http://www.eugeniomiravete.com>

<sup>‡</sup> Yale University, Department of Economics and School of Management, New Haven, CT 06520; CEPR and NBER. E-mail: [katja.seim@yale.edu](mailto:katja.seim@yale.edu)

<sup>§</sup> University of Georgia, Department of Economics, Athens, GA 30602. E-mail: [jeff.thurk@uga.edu](mailto:jeff.thurk@uga.edu); <http://www.jeffthurk.com>