

Abstract

Consumer purchase decisions are influenced by the underlying preferences and the underlying consumption possibilities. A deeper understanding of the likely demand drivers would help manufacturers to promote, differentiate or reposition their offerings differently. Towards this end, this thesis examines some key unobserved drivers of household demand. In the first essay, we seek to understand the economies that may arise from shared consumption to analyze how households of varied compositions may respond to price promotions and constraint relaxations. The second essay examines the strength of consumer preferences for a focal product category (compared to outside goods) and the product characteristics, as well as their price sensitivity, to investigate how consumers may respond differently to price-based policy intervention versus product characteristics reformulation. The insights we get from the counterfactual policy simulations using the estimated drivers of demand would help manufacturers and policymakers in devising optimal strategies.

In essay one, we examine how the products are consumed and its impact on quantity decisions. Products that are individually consumed (e.g., food) provide value to the individual consuming member, while products that are jointly consumed by household members (e.g., household cleaners, light bulb) benefit multiple members as they are enjoyed in a non-rivalrous manner. In this research, we explore how households allocate expenditure across the product categories that are privately versus jointly consumed and how this impacts their responses to marketing strategies. We develop a structural model of household demand by incorporating household composition and consumption pattern. We estimate the model with panel data and recover preferences, satiation, and the economies of scale arising from joint consumption of private and shared products. We find that multi-member households enjoy higher economies of scale but are more price sensitive to private goods compared to single-member households. In contrast, larger households are less price elastic for shared products. We also find that larger households and households with children have a higher marginal utility for budget constraint relaxation. Based on the above insights, manufacturers/retailers contemplating promotional allocation across product categories

can choose consumer segment who may best respond to such promotions.

In essay two, we examine consumer response to taxation vs. product reformulation in the context of policy intervention in the form of a “sugar tax”. The global epidemic of diet-related health concerns has induced policymakers to use taxation-based interventions (termed as sugar/fat/soda tax) to reduce the consumption of energy-dense processed food products such as Carbonated Soft Drinks, and high sugar Breakfast Cereals. The manufacturer of the taxed products may choose to pass on the sugar levy wholly/partly to the consumers or reformulate the products by reducing the taxed product attribute to avoid/lower sugar tax. In this research, we examine the manufacturer’s optimal response strategy to such policy interventions, by first investigating consumer’s potential response to a sugar tax versus product reformulation. Using a direct utility based structural model we recover consumer preferences for product attributes, variety seeking preferences, and preference strength to the focal category relative to the outside category. Conditional on the recovered consumer preferences, we find that sugar tax may reduce the demand in general, but, product reformulation may increase the demand for the focal category in the presence of heterogeneous consumer preferences, though the per-gram sugar consumption decreases. Our findings suggest reformulation as an optimal strategy for the manufacturer. We also find that policy-makers may find an incentive-based intervention that prompts the manufacturer to reformulate more effective in the long term in reducing the overall sugar consumption than direct tax-based intervention.

Together, the essays contribute to the quantitative marketing literature that examines the behavioral aspects of demand drivers. Both the essays develop microeconomic theory-driven structural models which can be used in policy simulations to predict consumer response under changed external conditions. The models are estimated on a panel dataset using a Hierarchical Bayesian framework to recover household level demand parameters.