

Hyewon Kim**Quantity Surcharge and Consumer Heterogeneity**

Consumption goods are often offered at multiple package sizes at grocery stores. Theory predicts that sellers would offer quantity discounts when consumer demand is unobservable. However, quantity surcharges are also frequently observed in the real world: a larger package size item is more expensive per unit than the smaller counterpart. In my job market paper, “Quantity Surcharge and Consumer Heterogeneity”, I study quantity surcharges at grocery stores and heterogeneity in consumer behavior. I use rich scanner data at grocery stores and focus on peanut butter category for the analyses.

I first document the frequency of quantity surcharges in peanut butter products. Quantity surcharges are quite frequent: almost as frequent as quantity discounts for major brands. I show that households have heterogeneous reactions to quantity surcharges: some households purchase multiple jars of the same small size items and take advantage of quantity surcharges, but other households choose an inferior option of buying large size products. This pattern suggests that there are two types of consumers: an attentive type who is aware of the existence of quantity surcharge and an inattentive type who is not. In addition to consumer attention, there is one more dimension of consumer heterogeneity. As peanut butter products are storable, I find evidence of households purchasing more for future consumption when the product is on sale, but not every household does. Hence there are storers and non-storers. These types are unobservable but can be identified through different purchasing patterns observed from the data.

Based on these empirical findings, I develop a dynamic demand model with inventory holding, multiple-unit purchase, and multiple consumer types. The model allows two dimensions of consumer heterogeneity: attention and storing. There is one product with two different package sizes, and households choose consumption quantity, purchase quantity, and the jar size in each period. The model assumes that the consumption quantity follows the negative binomial distribution, and this allows a discrete quantity choice which could lead to multiple jar purchases. I estimate the demand model using the household scanner data. I identify household types using the method of kmeans and estimate the parameters using maximum likelihood. The results show that storer type households are more price sensitive than non-storer type households, and between the two types of storer households, attentive storers are more price sensitive than inattentive storers.