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Asymmetric and Neighborhood Cross-Price Effects: Some Empirical Generalizations

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Abstract

This paper provides some empirical generalizations regarding how the relative prices of competing brands affect the cross-price effects among them. Particular focus is on the asymmetric price effect and the neighborhood price effect. The asymmetric price effect states that a price promotion by a higher-priced brand affects the market share of a lower-priced brand more so than the reverse. The neighborhood price effect states that brands that are closer to each other in price have larger cross-price effects than brands that are priced farther apart. The main objective of this paper is to test if these two effects are generalizable across product categories, and to assess which of these two effects is stronger.

While the neighborhood price effect has not been rigorously tested in past research, the asymmetric price effect has been validated by several researchers. However, these tests of asymmetric price effect have predominantly used elasticity as the measure of cross-price effect. The cross-price elasticity measures the percentage change in market share (or sales) of a brand for 1% change in price of a competing brand. We show that asymmetries in cross-price elasticities tend to favor the higher-priced brand simply because of scaling effects due to considering percentage changes. Furthermore, several researchers have used logit models to infer asymmetric patterns. We also show that inferring asymmetries from conventional logit models is incorrect.

To account for potential scaling effects, we consider the absolute cross-price effect defined as the change in market share (percentage) points of a target brand when a competing brand's price changes by one percent of the product category price. The advantage of this measure is that it is dimensionless (hence comparable across categories) and it avoids scaling effects. We show that in the logit model with arbitrary heterogeneity in brand preferences and price sensitivities, the absolute cross-price effect is symmetric.

We develop an econometric model for simultaneously estimating the asymmetric and neighborhood price effects and assess their relative strengths. We also estimate two alternate models that address the following questions: (i) If I were managing the i th highest priced brand, which brand do I impact the most by discounting and which brand hurts me the most through price discounts? (ii) Who hurts whom in National Brand vs. Store Brand competition?

Based on a meta-analysis of 1,060 cross-price effects on 280 brands from 19 different grocery product categories, we provide the following empirical generalizations:

1. The asymmetric price effect holds with cross-price elasticities, but tends to disappear with absolute cross-price effects.

2. The neighborhood price effect holds with both cross-price elasticities and absolute cross-price effects, and is significantly stronger than the asymmetric price effect on both measures of cross-price effects.

3. A brand is affected the most by discounts of its immediately higher-priced brand, followed closely by discounts of its immediately lower-priced brand.

4. National brands impact store brands more so than the reverse when the cross-effect is measured in elasticities, but the asymmetric effect does not hold with absolute effects. Store brands hurt and are, in turn, hurt the most by the lower-priced national brands that are adjacent in price to the store brands.

5. Cross-price effects are greater when there are fewer competing brands in the product category, and among brands in nonfood household products than among brands in food products.

The implications of these findings are discussed.

(Cross-Price Elasticities; Packaged Goods; Price Competition; Promotions; Private Labels.)