Love of Variety and Product Churn

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PRELIMINARY AND INCOMPLETE
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EXTENDED ABSTRACT

Abstract

Persistence in consumer purchasing choices has been well documented in many categories of frequently purchased consumer products. However, the previous literature has focused on product categories that contain a small number of brands with brands offering a limited and stable selection of varieties or flavors. We show that in product categories marked by a large number of brands and varieties, consumers exhibit a love of variety and very little persistence. We estimate a structural demand model where consumers have a love for variety. Consumers’ love of variety appears to have a profound impact in the behavior of firms in these product categories. Brands introduce new varieties each year; the annual turnover of products is close to 20%. We quantify the welfare benefit of both product churn and an increase in the number of varieties offered over time.

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1 Extended Abstract

Persistence in consumer purchasing choices has been well documented in many categories of frequently purchased products. That is, it has been observed that consumers are more likely to purchase brands or products that they have previously purchased. For example, this persistence has been found in categories such as ketchup (Keane 1997), peanut butter, margarine, toilet tissue, canned tuna (Seetharaman, Ainslie, and Chintagunta 1999), and orange juice (Dubé, Hitsch, and Rossi 2010). Persistence can be viewed as a switching cost on the consumer and has been shown to have important implications for the firms’ pricing and advertising decisions. However, these product categories contain a small number of brands, with many brands offering only a single variety or “flavor.”

In this article, we show that in product categories marked by a large number of brands and varieties, consumers exhibit very little persistence. Using a discrete choice model of consumer demand that incorporates previous consumer purchases, we find evidence that consumers exhibit a love of variety in these categories. We then examine the implications of this love of variety on competition among brands in these categories.

Our empirical application focuses on the categories of shampoos and conditioners. In these product categories, there is very little persistence in the varieties or the brands that consumers purchase. For instance, we find repurchase rates of 12% for varieties and 25% for brands in shampoos and conditioners (Figure 1 and Figure 2). Contrast this to Dubé, Hitsch, and Rossi (2010) who find repurchase rates for brands of margarine and orange juice that approach or exceed 80%. In shampoos and conditioners, we observe the average household to purchase over 23 different varieties across more than 12 different brands. The lack of persistence suggests consumers exhibit a love of variety in these product categories.

Using household and store level panel data, we estimate a random coefficients discrete choice model (Berry, Levinsohn, and Pakes 1995) with micro moments (Petrin 2002). To allow for persistence, or the lack there of, in purchases, we introduce state dependence, similar to
Dubé, Hitsch, and Rossi (2010), in a way that is agnostic to whether consumers exhibit persistence or love of variety. For shampoo and conditioners, we find consumer exhibit a significant level of love of variety.

Consumers’ love of variety appears to have a profound impact in the behavior of firms in these product categories. Whereas, in categories with more demand persistence, brands often market only small number of varieties and these varieties are relatively stable over time, we find brands offer a large number of different varieties with a high degree of churn in these varieties. That is, excluding select mainstay products, the vast majority of varieties enter and quickly exit the marketplace. On average, products survive approximately 38 months. Figure 3 plots within-store assortments over time. A value of one indicates that the assortment doesn’t change. Two versions are plotted, the blue line indicates assortment changes from \( t \) to \( t + 1 \). The dotted gray lines indicate assortment changes from \( t_0 \) to \( t + 1 \). The plots suggest that less than 50% of products remain in-stock more than a year and less than 20% of products remain on the shelf few years after introduction.

Employing our model estimates, we examine two sets of counterfactuals. First, we analyze firm pricing strategies in an environment absent consumer love of variety. Second, we shut down the firms’ abilities to introduce and remove products. This allows us to analyze the profit motive of product churn in shampoos and conditioners.

References


Figure 1: Probability of Switching Products

Days from 1st UPC purchase (shampoo; 2006-2015)

Note:

Figure 2: Probability of Switching Brands

Days from 1st brand purchase (shampoo; 2006-2015)

Note:
Figure 3: Assortment changes within a firm over time

Note: Sales unweighted left. Sales weighted right.