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# Defensive strategy against a private label: Building brand premium for retailer cooperation

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#### ABSTRACT

We build a game-theoretic model of price competition between a national brand manufacturer and a retailer that also sells its private label. In particular, we examine a national brand's strategy of building brand premium in the context of channel coordination. The importance of national brand's brand equity has been well-documented in many empirical and behavioral studies. We reinforce the argument that building brand premium should be the first line of defense for a national brand instead of aggressively cutting wholesale price. Not only does the national brand manufacturer benefit from it, but also the retailer who sells both the national brand and its own private label has less incentive to promote the latter. Therefore, it can induce retailer cooperation, which is essential for a successful strategy in a distribution channel.

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#### 1. Introduction

In this paper, we are interested in understanding defensive strategies of a national brand manufacturer facing private label competition. To a national brand manufacturer, a retailer who sells the private label is both a channel partner and a competitor at the same time. However, this competitor also determines the retail price of the national brand, which gives the retailer a greater power (Dhar and Hoch, 1997). Hence, it is important for the national brand to formulate a defensive strategy that is consistent with the retailer's interest.

This paper focuses on the national brand's premium-building strategy for its ability to induce retailer cooperation instead of price competition. Our result reinforces the argument that national brands should build brand value and stay away from price competition with private labels. This strategic conclusion is consistent with results obtained from the existing literature. For example, Steenkamp et al. (2010) suggested marketing activities to enhance consumer willingness to pay for the national brands. Nenycz-Thiel and Romaniuk (2014) advocated adverting for building up national brand's brand association especially among consumers without prior knowledge. Abe (1995) derived a Bayesian separating equilibrium in which only a national brand with a higher quality advertises, whereas consumers

\* Corresponding author. E-mail address: chanchoi@rutgers.edu are willing to pay for the brand premium based on the quality signal. Unlike these studies, however, we focus on the effect of brand premium on retailer's incentive to cooperate instead of promoting its own private label. This retailer cooperation is crucial for any successful channel strategy.

Our game theoretic model is based on two major factors behind the proliferation of private labels. First, consumer brand loyalty is rapidly diminishing. Ever-increasing product choices and intense competition in promotion among national brands have diluted brand values by directing consumers' attention toward price discounts (Shocker et al., 1994). Second, retailers are gaining greater leverage over manufacturers. With the emergence of large retailers, the crucial decisions as to "what is sold and how" are made by the retailers, and private labels facilitate this power shift. From a modeling perspective, these two factors correspond to the issues of brand premium and channel structure, respectively. Whereas many existing studies on private label focused on either of these two factors, this paper combines these two model components in representing the private label competition.

Our model is built upon several existing analytical models of private labels, which include Rao (1991) who developed a model of private label competition in price and promotion and found that only the national brand tends to promote in price. The demand function was derived from a distribution of price premium in two market segments. Narasimhan and Wilcox (1998) viewed private labels as

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<sup>&</sup>lt;sup>1</sup> The price premium and market segments are equivalent to "brand premium" and "reservation price" respectively in this paper.

the retailers' competitive weapon for gaining better terms of trade from the national brand manufacturer. As in Rao (1991), their demand function was derived by mixing distributions of reservation price and brand premium. Our paper also employs a similar framework of mixing two distributions in deriving a demand function. Another line of private label modeling is to consider price competition within a distribution channel. Raju et al. (1995) proposed an analytical model of private label price competition using a vertical channel assumption. In this paper, we combine these two model frameworks in representing the private label competition.

In the next section, we begin with building a general demand model in the context of national brand and private label competition using two consumer distributions: reservation price and brand premium. Then the payoff functions for the two channel members are defined for the game. Section 3 employs a general beta distribution to represent virtually any shape of empirical distributions for the two demand components. Marketing efforts to build brand premium are represented as a shift in consumers' willingness to pay more for the national brand, and is captured by one of two beta distribution parameters. In Section 4, we derive two Nash equilibrium solutions for the game, one with the private label and the other without it. Due to analytical complexity of the resulting profit function, we rely on a numerical method to examine the effects of brand-premium on equilibrium quantities. We show that increasing brand premium is profitable to both channel members; hence, it is more likely to induce retailer cooperation than aggressive price-cutting. The last section summarizes the paper and suggests future research directions.

#### 2. A model of private label demand

Among a number of decision variables pertaining to private labels including quality levels (Olbrich and Jansen, 2014), positioning (Choi and Coughlan, 2006), and advertising (Amrouche et al., 2008), our focus is on pricing decisions. The retailer in our model plays a major role by choosing the price ( $P_p$ ) of her own private label as well as the retail margin ( $m_n$ ) for the corresponding national brand. The national brand manufacturer determines the wholesale price ( $w_n$ ) but does not have a direct control over its retail price ( $p_n$ ). For tractability, our model considers only one retailer in the channel model, although competition among retailers is another significant factor for private label decisions (Dawes and Nenycz-Thiel, 2013),

We assume that the private label manufacturer is an order taker without any significant marketing activity, and supplies the product at a contract price to the retailer  $(c_p)$ . This assumption is reasonable since in most cases private label orders are processed through private label brokers whose role is to match the retailers with the manufacturers. A broker can choose a manufacturer that can supply a specified product at the lowest transfer price.

This scenario is similar to the common retailer model with two manufacturers (Choi, 1991) except that only one manufacturer is active in our game scenario, which can be summarized as follows:

Player	Decision Variable	Objective
NB Manufacturer Retailer PL Manufacturer	$w_n$ $m_n$ and $p_p$ take order or not	Max Own Profit Max Combined Profit Stay Profitable

We first derive the primary demand function for the national brand. Following the standard economic literature, the base demand of a product is defined as the portion of the market whose reservation prices are above a given price. The reservation price is the highest price a buyer is willing to pay for goods or a service (Varian, 1992). Various construct definitions and measurement methods were proposed including direct elicitation methods (Park and Srinivasan, 1994), conjoint analysis-based methods (Jedidi and Zhang, 2002; Jedidi et al., 2003), and choice experiments (Chung and Rao, 2003). Wang et al. (2007) define reservation price as a compound range that includes several other sub-definitions as supports. All these methods define reservation prices at the individual level capturing consumer heterogeneity.

Since our focus is on building the demand function an existing distribution, we assume that individual reservation prices for a branded product were already measured using one of the above methods, and that a density function was estimated from their distribution. Suppose that all prices are normalized within the interval [0,1]. Let f(p) the p.d.f. of consumer reservation prices defined over the domain of  $p \in [0,1]$ . (See Fig. 1.) When only the national brand is available at price  $p = p_n$ , those consumers whose reservation prices are greater than  $p_n$  will purchase the product (darker shade in Fig. 1). However, when a private label is also available at a lower price ( $p_p$ ), consumers whose reservation prices are between  $p_p$  and  $p_n$ , who could not afford the national brand, can now afford the private label (lighter shade in Fig. 1). Consumers whose reservation prices are below  $p_p$  would still not buy either product.

On the other hand, those customers whose reservation prices are greater than  $p_n$  now have a choice. They can either continue purchasing the national brand or switch to the private label depending on their willingness to pay extra for the branded product. While some private labels command premiums over national brands, our model considers the more prevalent case in which private labels are perceived to be inferior (Dawes and Nenycz-Thiel, 2013). We will use the term "brand premium" to refer to the minimum price difference at which a consumer switches to a private label (Steenkamp et al., 2010). This brand premium will be different across individuals (Rao, 1991; Blattberg and Wisniewski, 1989). For a given price difference between the national brand and the private label, those consumers whose brand premium is smaller than the price difference will choose the private label over the branded product. Note that this brand premium is similar to the concept of brand equity in the consumer behavior literature. For example, Keller (1993) defined brand equity as the differential reactions to marketing mix variables based on brand knowledge in comparison to an unnamed version. Yoo et al. (2000) and Yoo and Donthu (2001) summarized brand equity as the incremental value of a product due to the brand name. However, to distinguish the price differential from the broader concept of brand equity, we will use the term brand premium.

We follow Narasimhan and Wilcox (1998) in modeling the

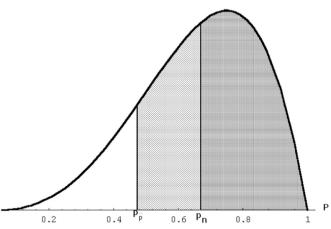


Fig. 1. A reservation price distribution.

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