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Advertising and price competition in a manufacturer-retailer channel

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ABSTRACT

We investigate how manufacturers' advertising competition, when advertising has a dynamic impact on the goodwill that affects market demand, interacts with the price competition in a manufacturer-retailer channel. Specifically, we examine the strategic choices made by manufacturers, the role of the retailer in exacerbating or mitigating competition among manufacturers, the total channel profit and how that is split among the different players. Using prices, sales, and advertising data in the laundry detergent category we find that advertising and pricing are strategic complements as manufacturer advertising increases the price elasticity of demand; advertising competition intensifies price competition but it also improves the profitability of manufacturers; the presence of retailers in the channel leads to increased advertising spending while mitigating the extent of price competition. Manufacturers can enjoy a higher profit from using retailers when they compete in both price and advertising. Finally, we show that the emergence of ecommerce, which enables manufacturers directly selling to end consumers, has asymmetric profit impacts on manufacturers, as brands with lower cost and lower brand goodwill are more benefited from ecommerce.

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1. Introduction

It is well known that a channel, or the value chain, used in distributing products and services is part of an integrated marketing strategy, accounting for one of the 4P's of marketing. In many developed markets, as in North America, these intermediaries are autonomous entities often selling competing and complementary brands, in addition to the focal brand, with goals different from the manufacturers whose brands they sell. In most consumer product markets, manufacturers use "pull" marketing strategies, such as advertising, coupons rebates etc. to create awareness, build brand equity, and stimulate demand. In addition, they also use the "push" marketing strategy by pricing their brands providing incentives to the intermediaries to carry the product as well as supply point-of-sale influences. Advertising, consumer promotions, and trade incentives are the mainstays for most CPG manufacturers in their go-to market strategies. As an example, according to *Advertising Age* the aggregate advertising spending in the US has grown from about $66.7 billion in 1996 to about $108.5 billion in 2014. Companies such as P&G and Unilever have been consistently ranked among the top 10 leading national advertisers for many decades. As another example, the average manufacturer trade promotion spending is 13% of net sales in 1996, second only to the cost of goods sold as a profit and loss item (Drèze and Bell, 2003).

In terms of the 4Ps, product design, packaging, quality and advertising are mostly under the control of manufacturers while the retail price that affects demand and point-of-sale influences are under the control of retailers. It is important for us to understand

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the vertical interaction between manufacturers and retailers in the tradeoff between push and pull strategies for any manufacturer who initiates both. Put differently, manufacturers' choices on how much to pull or push would interact with the decisions made by the retailer in stimulating or affecting the demand. The combined outcome of the two vertical partners not only can increase the demand but also may change the composition of consumers. In this context, crucial questions arise in terms of marketing strategy. How do these pull and push marketing activities interact in a competitive environment? Are they strategic substitutes or complements, and how do the actions of one party affect the choices of another? These are the issues that we explore in this paper.

This research focuses on two of the 4 P's of marketing, namely advertising and wholesale and retail prices chosen by manufacturers and retailers, respectively. We study the competition among manufacturers selling through a common retail agent. Manufacturers choose in each period their advertising expenditures and wholesale prices to maximize the discounted value of the sum of profits over an infinite horizon. The common retail agent in turn decides the prices of all products every period to maximize his total profit. The demand of a brand is a function of manufacturers' advertising expenditures and retail prices, as well as other common marketing instruments in the market.

Following the rich tradition in the marketing literature we model advertising to have long term effect by creating goodwill for a brand among consumers. We also allow advertising to interact with retail prices in influencing demand. Becker and Murphy (1993), for example, argued that advertising can bring in more price sensitive consumers and thus make the demand more price elastic. Retailers as a result will find price promotions more effective in lifting sales. Erdem et al. (2008), as another example, empirically found a negative interaction effect between a brand's goodwill and the retail price in three out of four grocery categories in their study. An industry survey[1] showed that TV advertising is more effective when it is combined with in-store promotions. This is because the advertising will increase the awareness and trial intention from consumers and, when combined with in-store promotions, it will drive sales from the price sensitive consumers. Consequently, in our model a brand's goodwill can impact not only the level but also the price elasticity of demand.

This research aims to address the following questions: (1) What, if any, are the moderating impacts of manufacturer brand advertising on the market demand? (2) How does a manufacturers' advertising decision interacts with his wholesale price decision, and how does it impact a retailer's choice of the retail price? (3) What is the impact of the presence of a retailer on moderating the intensity of price and advertising competition among manufacturers? What is the impact on the manufacturers' profit? For this purpose, we study a dynamic competition model among manufacturers with the strategic interactions with a common retailer.

Past literature on the advertising competition among manufacturers (e.g. Villas-Boas 1993, Vilcassim et al. 1999) has largely ignored the role of retailers, and past literature on retail channel (e.g. McGuire and Staelin 1983) has only focused on the price competition but ignored advertising. Studying the dynamic advertising competition under complicated strategic interactions between manufacturers and retailers is a challenging task for our research. We adopt an empirical approach by using three years of weekly sales and brand advertising data from 50 geographical in the laundry detergent industry contained in the IRI academic database. After estimating the key demand and cost parameters from the data, we conduct a series of counterfactual exercises to investigate the nature of manufacturers' competition in the presence of a common retailer and address our research questions. Since selling through common retailers and using advertising to compete are common strategies for manufacturers in most industries, we believe the findings of this study have important substantive implications. Although our study only uses data from the laundry detergent industry, the main findings can be generalized to other industries, as long as the empirical settings are similar.

Our estimation results show that, when a brand's goodwill increases with advertising spending, its demand shifts outward and at the same time becomes more price elastic. This result implies that advertising as a pull marketing instrument and wholesale price promotion as a push marketing instrument are strategic complements. We use a series of simulation studies to demonstrate that retailers have a significant strategic impact on the manufacturer competition, as their presence on the one hand mitigates the extent of price competition but on the other hand also intensifies the advertising competition. By increasing advertising spending, manufacturers will incentivize retailers to cut retail prices (as the demand becomes more price elastic), thus reducing the double-marginalization problem in the channel. Compared to the counterfactual scenario when there is no advertising, the profit margins of manufacturers and retailers are both reduced when we allow manufacturers to compete in both price and advertising. However, the increase in retail sales is more than enough to compensate for the margin reduction, and subsequently manufacturers can enjoy a significantly higher profit when they are competing on both price and advertising. Based on these findings, we use a counterfactual to show that the emergence of ecommerce, which enables manufacturers directly selling to end consumers, has asymmetric profit impacts on manufacturers. Brands with lower cost and lower brand goodwill are more benefited from ecommerce.

Although the main contribution of this study is substantive, we develop an empirical method to study the complicated advertising and price competition among manufacturers in a retail channel. The main difference from the previous literature on the dynamic competition among manufacturers is that we have to model the strategic interactions between manufacturers and retailers. Since wholesale prices are unobserved in our study, they have to be "backed out" from the equilibrium conditions in the model. This approach can be generalized to other markets where the competition involves multiple marketing strategies and different channel structures.

The rest of our paper is organized as follows. In Section 2 we provide a background of the existing literature by organizing the literature on multiple dimensions along strategic issues. In Section 3 we develop the demand model and how goodwill enters the demand function, and the dynamic game of manufacturer advertising and price competition. In Section 4 we first describe our results from the empirical application, then proceed to answer the strategic questions we raised above. Finally, we conclude the paper with discussion, implications and directions for future research.

[1] Dunnhumby, July, 19, 2013. More details are in https://www.dunnhumby.com/insight/pricesensitivity and http://docplayer.net/19480672-Using-advertising-to-engage-the-price-sensitive-consumer.html.

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