



Interfaces with Other Disciplines

Periodicity of pricing and marketing efforts in a distribution channel

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ABSTRACT

Most research about cooperative (coop) advertising programs in channels relies on the assumption that manufacturers and retailers decide of pricing and marketing efforts simultaneously. This paper evaluates this central assumption and investigates the optimal periodicity (sequence of move) of pricing and marketing efforts (ME) decisions for a distribution channel. We develop a game theoretic model that accounts for pricing at each level of the channel, for the manufacturer's ME mix strategies (a direct ME to consumers and coop advertising program offered to the retailer) and the retailer's ME as well. We obtain solutions for a bilateral channel under different vertical interaction scenarios; when the channel is led by the manufacturer, the retailer or when channel members decide simultaneously of each of their marketing mix decisions (vertical Nash). We compare the effect of pricing and ME decision periodicity on outputs for each channel member. The main findings suggest that simultaneous decision-making of pricing and ME is optimal only for high enough levels of the manufacturer's ME effects. For very highly effective marketing efforts, sequential play of pricing and ME allows channel members to implement equilibrium strategies and achieve maximum profits that would not be achieved with simultaneous decision-making. This highlights the importance of relaxing the simultaneous play assumption of pricing and ME in a distribution channel.

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1. Introduction

Distribution channels invest a large percentage of their marketing budgets into a variety of non-price marketing efforts such as merchandising activities, local advertising, displays and features by the retailer and national advertising and direct consumer promotions by the manufacturer (product sampling, trade fairs, etc.). Cooperative (coop) advertising programs that aim at sharing the costs of retail promotions also represent a significant component of the manufacturer's promotional mix (Nagler, 2006).

A growing literature has studied the effects of such programs in distribution channels and has shown their importance in coordinating strategies and improving overall channel efficiency (Berger, 1972; Bergen and John, 1997; Jørgensen et al., 2000; Huang and Li, 2001; Li et al., 2002; Huang et al., 2002; Xie and Ai, 2006; Karray and Zaccour, 2006, 2007; Yan, 2009; Ahmadi-Javid and Hoseinpour, 2011; Kunter, 2012). The existing research about coop advertising programs considering endogenous pricing decisions relies on the assumption that each channel member decides simultaneously of its pricing and marketing efforts (Karray and Zaccour, 2006, 2007; Yue et al., 2006; Xie and Wei, 2009; Szmerekovsky and Zhang, 2009; He et al., 2009; Ahmadi-Javid and Hoseinpour, 2011; Seyedsfahani et al., 2011; Kunter, 2012).

However, some marketing scholars considered that marketing efforts and prices are decided at different stages instead of simultaneously by each channel member and argued that this is due to the discrepancy in the periodicity i.e., the timing and frequency of these decisions (Agrawal, 1996; Banerjee and Bandyopadhyay, 2003; Parker and Soberman, 2006; Karray and Martin-Herran, 2008; Draganska et al., 2009). In these papers, the marketing effort decision in the channel, namely advertising, has been assumed to precede prices. This is based on the observation, in some industries, that advertising is usually set for a longer time period than prices and therefore should be decided at an earlier stage, which is especially the case for national advertising campaigns in traditional media outlets (TV, print, radio, etc.). Looking at a wider range of marketing efforts, evidence from the practice of coop advertising programs shows that prices can be decided more frequently than coop advertising rates and promotional budgets, especially for fast moving consumer products. In fact, the National Register Publishing (NRP) for coop advertising programs provides examples of coop advertising programs that are fixed for the entire year while more frequent price negotiations could occur during the year (NRP source book sample, 2012).

Alternatively, marketing effort budgets could also be more frequent decisions than prices. For example, manufacturers which brands benefit from high levels of consumer loyalty usually avoid frequent price adjustments that could damage their brand image (Raju et al., 1990). Pricing can also be a less frequent decision than

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marketing efforts in case the retailer is adopting a strategy of everyday low pricing, and agrees with the manufacturer to fix wholesale prices in order to avoid uncertainty (Kopalle et al., 1996). In such cases, marketing efforts could be more frequent decisions than prices especially for non-price promotions that inform consumers about the product attributes, build store traffic, or provide additional in-store customer service (e.g., sales support, merchandising activities, social media marketing activities, etc.). Finally, some marketing efforts such as online advertising, local advertising (e.g., in retail flyers or local publications) and in-store promotional activities (e.g., displays and features) that are decided on on-going basis would not necessitate a long budget commitment by the manufacturer and the retailer. For instance, the NRP shows also cases of coop programs agreements that are decided on on-going basis instead of fixed for the entire year. These different examples indicate that marketing efforts can be determined more frequently than prices and therefore could succeed the pricing decisions.

Empirically, the issue of periodicity of pricing and marketing effort (ME) has been described as an important yet unexplored factor that considerably affects our understanding of these strategic decisions (Kadiyali et al., 2001; Rao, 2009). As noted by Rao (2009, p. 120), “the possible difference in the periodicity of decision-making regarding price versus other decisions, such as advertising” is a “tricky issue” mainly because, in practice, we can observe situations where these decisions can be simultaneous or sequential as shown in the previous examples. In our knowledge, the empirical research does not provide a clear explanation of why such discrepancy might exist; which means that it could be due to various factors such as managerial practice, commitments with media agencies or with channel members. Different choices of periodicity for pricing and marketing efforts could also be due to differing marketing objectives (e.g., encourage short term sales versus build brand equity). This paper suggests that for firms operating under similar conditions and having comparable marketing objectives, the periodicity of pricing and marketing efforts can be endogenously determined by the distribution channel. Such decision can indeed significantly influence the strategies and profits of the manufacturer and the retailer. For example, when advertising is determined on a yearly basis, subsequent quarterly, monthly or weekly prices would be set given the previously decided advertising for that period. Alternatively, in case of long-term price agreements in the channel, marketing efforts such as weekly retail flyer advertising and consumer promotions are chosen subsequently to prices. Since, in practice, the periodicity of pricing and other marketing effort decision varies as shown in the previous examples, the sequence of these decisions can be changed and endogenously chosen by channel members instead of assumed ex-ante.

This paper investigates the optimal periodicity (sequence of move) for pricing and marketing efforts in the channel. It does so considering the main vertical interaction scenarios in the channel studied in the literature; when the manufacturer is leader and the retailer is follower, or vice versa, or when the channel does not have a leader and decisions are made simultaneously (vertical Nash). As defined in the marketing literature, a channel leader is a member that “can precommit to an action in the channel, which must be given by the other channel member(s) as they take their actions” (Weitz and Wensley, 2002, p. 233).

A large literature in marketing and operations research has shown that channel leadership considerably impacts the retailers’ and manufacturers’ prices and profits (e.g., Choi, 1991; Lee and Staelin, 1997). The increasing power of some retailers such as Wal-Mart and Tesco has motivated many researchers in marketing to shift their attention from a traditional channel framework where manufacturers are price leaders to situations where retailers lead in their pricing decisions (Kadiyali et al., 2000; Cotterill and Putsis,

2001; Geylani et al., 2007). Considering both advertising and pricing decisions of channel members, Jørgensen et al. (2001) extended these results and showed that a manufacturer leadership can provide superior channel efficiency levels to a retail leadership.

Most research about coop advertising programs considered a manufacturer Stackelberg sequence of move and a few looked at simultaneous (vertical Nash) games for manufacturers and retailers (Karray and Zaccour, 2006, 2007; Yue et al., 2006; Xie and Wei, 2009; Ahmadi-Javid and Hoseinpour, 2011). Recently, Xie and Neyret (2009) and SeyedEsfahani et al. (2011) proposed bargaining solutions by solving manufacturer as well as retailer Stackelberg games in addition to the cooperative solution. Their results show that marketing efforts, including the cooperative advertising program, and pricing strategies, as well as channel profits vary considerably with the channel leadership. For example, depending on the level of ME effectiveness, the manufacturer (retailer) might prefer to be a leader or a follower. Regardless of which firm leads the channel, both papers assume that each channel member decides simultaneously of its pricing and ME.

This research’s objective is to study the effect of the periodicity of pricing and marketing efforts on the equilibrium outcomes. Similarly to the related literature, we assume that the channel leadership is determined exogenously and focus on exploring the effect of separate decision periods of pricing and marketing efforts on equilibrium strategies and outputs given a vertical interaction scenario. That is when the manufacturer or the retailer is the channel leader or when both channel members are not leaders and simultaneously decide of their pricing and ME decisions (vertical Nash). In particular, the paper aims to identify whether the channel members should play the pricing game at a different time than the marketing efforts game or simultaneously, as conventionally assumed in the literature. This gives rise to three situations. Specifically, given a pre-set vertical interaction in the channel (manufacturer leadership, retailer leadership or vertical Nash), each channel member; 1 – decides of its marketing efforts and price simultaneously (benchmark), 2 – chooses first its price, then its marketing efforts, and 3 – decides on its marketing efforts, then on its price.

More specifically, the paper aims to provide answers to the following research questions:

- What are the implications of relaxing the simultaneous move assumption for marketing efforts and pricing? Are these implications different when the manufacturer or the retailer is the channel leader or when channel members play a vertical Nash game?
- Which periodicity (sequence of move) of pricing and ME is optimal for which channel member, and under what conditions?

In order to address these problems, we develop a game-theoretic model and solve for the equilibrium pricing and marketing efforts decisions of the manufacturer (including the coop program) and of the retailer. We do so for different periodicity of pricing and marketing efforts and for the three commonly used vertical interaction scenarios in channels; in case the manufacturer is the leader, follower or plays Nash with the retailer. Comparison of the equilibrium solutions within each vertical interaction scenario shows the impact of the periodicity of pricing and marketing efforts and identifies the preferred periodicity by each channel member.

The rest of the paper is organized as follows. Section 2 introduces the model. In Sections 3 and 4, we derive the equilibrium solutions and analyze results for the cases when the manufacturer (retailer) is the channel leader. Section 5 includes results for the case of no channel leadership (vertical Nash). Section 6 concludes and discusses future research avenues.

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