Cooperative promotions in the distribution channel

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ABSTRACT

This paper investigates equilibrium strategies for both horizontal (HJP) and vertical (VJP) joint promotions (cooperative advertising) in the supply chain. A game theoretic model is solved for two setups: a centralized channel competing with a decentralized one (DC), and two competing decentralized channels (DD). Retailers decide of HJP and regular promotional efforts, as well as of prices. Manufacturers choose their transfer prices and VJP support rates offered to the retailer. For each setup, we solve for equilibrium strategies in two games: when retailers invest in HJP, and when they do not. Comparison of equilibrium solutions shows that, for both DC and DD settings, the manufacturer's VJP support to the retailer would be affected differently by HJP depending on the levels of both price and promotional competition. In particular, manufacturers should offer a lower VJP rate when price competition is lower than promotional competition, and higher VJP rates otherwise. The effects of HJP on equilibrium profits depend on the channel structure. When a decentralized channel is competing with a centralized one, we find that HJP is beneficial to the manufacturer. However, it can be detrimental to the decentralized retailer's profits, especially when products are closely competing both on prices and promotions but HJP is not highly effective. It can also harm the centralized channel if it has the highest baseline demands in the market. This result is not supported in case of similar competing decentralized channels, for which HJP leads to higher equilibrium profits earned by each retailer and manufacturer.

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1. Introduction

The recent economic crisis has led many retailers to search for new ways to rejuvenate sales with limited promotional budgets. While retailers have been sharing their promotional costs with manufacturers for decades, some retailers have recently started sharing these costs with other retailers as well.

A case in point is the joint promotion by leading sports goods retailers Bass Pro Shops (BPS) and MarineMax in 2008 entitled "the great American boat sale". The promotion consisted mainly in pooling the top selling products sold by each retailer, and showcasing them in multiple locations across the US [30]. The brands featured in the joint promotion were direct competitors. BPS promoted its line of fishing and pleasance boats manufactured by its own division Tracker Marine (manufacturer of brands such as Tahoe, Sun Tracker, etc.), while MarineMax featured boats of its main supplier (Brunswick Inc.) and showcased brands such as Sea Ray and Boston Whaler.[1] The reason for the promotional event was mainly to increase sales for both retailers who were struggling

to push products to the market.[2] MarineMax later reported that the event drove incremental sales but also higher marketing costs and that manufacturers' promotional support for MarineMax promotional activities did not change following the retailers' joint campaign (MarineMax's earnings conference call transcript 2008).

This example shows that retailers are willing to cooperate with their competitors in order to push products to the marketplace and cut promotional costs. It also shows that these joint promotions might not be profit-improving for the participating retailers, and that manufacturers might need to adjust the level of their promotional support in reaction to the retailers' joint promotion.[3]

This paper addresses this problem by looking at both vertical and horizontal joint promotions in channels. Vertical Joint Promotions (VJP), also called cooperative advertising programs, are commonly used to stimulate retailers' promotional expenditures for the manufacturers' brands. In 2002, an estimated total amount of $65 billion has been given by manufacturers to retailers to promote their products [2]. Horizontal Joint Promotions (HJP) are "partnerships in which several retailers share the cost of a

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[1] Examples of brands featured in the promotion can be found at http://www.greatamericanboatsale.com/

[2] MarineMax's sales have plunged from about $1.25 billion in fiscal 2007 to $588 million in 2009 and BPS had a hard time moving its own brand of boats in 2008 (Hoovers' report, retrieved in 2010).
[3] See Karray [21] for other examples of retailers' joint promotions.

promotion" (AMA online dictionary). In the recent economic crisis, these contracts were on the rise [9]. The main objective of such programs is to increase the retailers' visibility, generate traffic in stores and, when possible, use the argument of economies of scale in order to obtain discounts from media agencies.

The benefits of HJP are recognized by governmental agencies worldwide. For example, the European Commission (EC) states that commercialisation agreements between competing firms such as HJP can give rise to efficiency gains by providing greater choice and reducing search costs for consumers [15].

Although anti-trust regulations in the US and Europe do not prohibit HJPs, they impose several restrictions to prevent anti-competitive outcomes. The US Federal Trade Commission (FTC) warns that "joint promotion might reduce or eliminate comparative advertising, thus harming competition by restricting information to consumers on price and other competitively significant variables" ([16], p.14), and the EC forbids HJPs that are accompanied by price fixing or distribution agreements that can lead to market partitioning ([15], Article 6).

The literature about retailers' HJP is almost inexistent except for the paper by [13], which provides a theoretic framework for classifying different types of HJP, but does not discuss its strategic implications for retailers or for the channel. More recently, Karray [21] looked at the profitability of such collaborations and identified market conditions that are conducive for HJP implementation under different channel structures. The main result is that HJP could be profit improving for the channel members whether it is initiated by centralized or decentralized retailers.

The literature about manufacturers' VJP (cooperative advertising) programs is more extensive (e.g., [6,14,5,37,35]). Retailers are often offered monetary incentives by their suppliers to promote their products. These funds can be provided in form of a monetary allowance [25], or as a percent reimbursement of the retailer's promotional expenditures [5,22,36,24]. They are usually used by retailers for advertisements or regular promotional activities such as direct mail, on-line promotions or in-store product placement. The main result is that VJP is effective in boosting sales and profits of channel members. Bergen and John found also that the VJP participation rate should be adjusted to variations in market conditions, e.g., retail competition and cross price effects.

The strategic relationship between vertical and horizontal joint promotions is particularly interesting to study since these programs can have conflicting goals and implications. While VJP aims at increasing demand only for the manufacturer's product, retailers' HJP is intended mainly at expanding the industry demand by increasing traffic in all participating stores, thereby inciting purchase of, not only the manufacturer's product, but also of its competitors'. For the manufacturer, retailers' HJP can have both beneficial and detrimental effects. On one side, it can benefit the competition and may affect the retailers' regular promotional efforts for the manufacturer's brand. This, in turn, would impact the manufacturer's decision to invest in vertical joint promotions or the level of their support to the retailer. On the other side, retailers' HJP can boost demand by encouraging new product purchase, thereby benefiting all products in the marketplace.

Similarly, HJP can benefit retailers by cutting promotional costs and increasing their sales. However, it promotes the competing retailer, thereby providing the competition with more resources to offer more favorable prices and regular promotions. It also can increase the retailer's costs. Not only does it result in additional costs for HJP, which are not supported by the upstream manufacturer, it could even lead to a lower VJP support for regular promotions.

This paper extends the cooperative advertising literature by looking at how manufacturers should adjust their VJP rates in reaction to competing retailers' HJP. In addition, it analyzes the profitability of HJP. By doing so, it will extend the results in Karray [21], which assessed the profitability of HJP programs by competing retailers considering only pricing decision variables. We aim at testing the validity of these results, by considering a more realistic setting where retailers invest in regular promotions, in addition to the horizontal promotions, and when a vertical joint promotion (cooperative advertising) is offered by the manufacturer.

In particular, we investigate the following research questions: how does retailers' decision to engage in a HJP with a retailer selling competing products affect manufacturers' decisions and profits? More specifically, should the manufacturer offer VJP support when the retailer engages in horizontal joint promotions? Should it cut or increase its VJP support, and under what conditions (e.g., price substitutability and promotional effects)? Finally, what is the effect of HJP on individual and total channel members' profits?

The results obtained in this study can be helpful to manufacturers and retailers alike. Manufacturers will better understand the strategic implications of HJP by exploring market conditions under which they should adjust their strategic decisions, specifically their VJP rates following the retail joint promotion. For competing retailers, it is important to understand implications of such promotions on their strategies and profits and their relationships with suppliers.

To explore these issues, we develop a game theoretic model that considers competitive interactions in the distribution channel. We analyze the relationship between HJP and VJP and study the effects of HJP on the channel's strategies and profits. We do so for two channel structures: a decentralized channel competing with a centralized one (DC), and two competing decentralized channels (DD).

The rest of the paper is organized as follows. Section 2 explains the model. Section 3 presents the equilibrium solution. In Section 4, we discuss the effects of HJP on VJP, and in Section 5 the effects of HJP on profits are studied. Section 6 summarizes and concludes.

2. Model

2.1. Set-up and decision variables

Consider a distribution channel formed by two competing supply chains selling substitutable products to consumers. The decision variables and model parameters are described in Table 1 ($i, j = 1, 2, i \neq j$). The manufacturers and retailers choose respectively the wholesale (w_i) and retail prices (p_i). Additionally, channel members set their non-price marketing efforts such as in-store displays, features, merchandising activities and local advertising. In particular, each retailer chooses regular promotional efforts (A_i), which are initiated without any collaborative agreements with other retailers. Each retailer can also decide to collaborate with the competing retailer for HJP, in which case each retailer sets the level of the HJP effort it will contribute (B_i).

Table 1
Notation.

Decision variables	Model parameters
w_i: wholesale price of manufacturer i	v_i: baseline demand of retailer i
α_i: VJP rate of manufacturer i	β: price competition effect on demand
B_i: HJP effort of retailer i	ρ: effect of A_i on retailer i's demand
A_i: regular promotional effort of retailer i	δ: effect of A_j on retailer i's demand
p_i: price charged by retailer i	θ: effect of HJP effort on demand
	c_i: unit cost of manufacturer i