Cooperative Advertising in a Marketing Channel

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Abstract. This paper examines dynamic advertising and promotion strategies in a marketing channel where the retailer promotes the manufacturer product and the manufacturer spends on advertising to build a stock of goodwill. We assume that sales depend on goodwill and promotion activities and that there are decreasing marginal returns to goodwill. Two scenarios are studied. First, the manufacturer and retailer determine noncooperatively their respective strategies. Second, the game is played à la Stackelberg with the manufacturer as the leader who supports partially the cost of the promotion activities of the retailer. In both cases, stationary Markovian strategies are characterized. These scenarios are examined also in the absence of decreasing marginal effect of goodwill on sales. The results show that, whether or not the goodwill stock has a decreasing marginal effect on sales, the cooperative advertising program is a coordinating mechanism in the marketing channel, i.e., both players receive higher payoffs.

Key Words. Differential games, marketing channels, cooperative advertising, feedback Nash equilibria, feedback Stackelberg equilibria.

1. Introduction

This paper studies advertising strategies in a marketing channel, formed of one manufacturer and one retailer, in a dynamic setting. The framework is that of differential games and the focus is on the so-called cooperative advertising. This is an arrangement where a manufacturer pays some or all

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of the cost of the local advertising undertaken by a retailer for the manufacturer products (Ref. 1). By supporting a retailer, a manufacturer seeks to stimulate greater retailer buying, more promotional activity on the part of the retailer, and larger consumer sales. For the retailers, cooperative advertising is a way to get more funds to offer promotions to their customers.

The model-based literature on cooperative advertising is sparse. Optimal decisions for a cooperative advertising strategy have been investigated in Ref. 2 using a static game in a one manufacturer–one retailer setting where the manufacturer gives an advertising allowance to his retailer as a fixed discount per unit purchased. In Ref. 3, it is shown that advertising allowances increase the retailer level of local advertising and total channel profits. In Ref. 4, the authors extend the model in Ref. 2 to a channel formed of two manufacturers and two retailers to take into account competition at the manufacturing and retailing levels.

All these studies use a static context. Recently, an attempt to study cooperative advertising in a dynamic game framework was made in Ref. 5. The authors examine a case where both channel members make long term and short term advertising efforts to enhance sales and consumer goodwill. The cooperative advertising program can take three forms: a full support program where the manufacturer contributes to both types of retailer advertising expenditures, and two partial support programs where the manufacturer supports only one of the two types of retailer advertising. Stationary feedback Stackelberg equilibria are characterized and strategies and payoffs are compared for different scenarios. Due to the functional forms adopted for the demand and state dynamics, the authors obtain constant equilibrium strategies. This may not be realistic, given that the differential game is played over an infinite horizon. Further, the sales function is such that, if both players set their advertising efforts at zero, then the demand vanishes. This may also lack realism. Indeed, it is usually assumed that zero advertising leads to a lower demand level, but not to a zero demand level.

This paper modifies the model in Ref. 5 by introducing decreasing marginal returns to goodwill and adopts a more flexible functional form for the sales dynamics. Our objective is to see if cooperative advertising is a coordinating device, that is, channel profit improving, and if so, whom it benefits the most. The case where the sales are linear in the goodwill is studied as a special case.

We consider a channel of distribution formed of one manufacturer and one retailer. The retailer controls his promotional spending, and the manufacturer controls his advertising spending and rate of support to the retailer promotional expenses. Both players seek to maximize a stream of discounted profits over an infinite horizon. The sales are assumed to depend on the retailer promotion of the product and on the level of goodwill. The