Chapter 2

ADVERTISING AND ADVERTISING CLAIMS OVER TIME

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Abstract Advertising budget allocation with carryover effects over time is a problem that was treated extensively by economists. Additional developments were carried out by Sethi who has also provided some outstanding review papers. The model treated by Sethi were essentially defined in terms of optimal control problems using deterministic advertising models while my own were essentially sales response stochastic models with advertising budget determined by stochastic control problems. These problems continue to be of academic and practical interest. Issues relating to the "advertising message" such as truthful claims advertising directed to first time buyers has not attracted much attention however.

The purpose of this paper is to address issues relating to advertising and their messages by suggesting a stochastic advertising-repeat purchase model. In this model, advertising directed to first time buyers is essentially defined by two factors: the advertising budget and the advertising message (such as statement regarding the characteristics of a product, its lifetime etc.). Consumers experience in case they buy the product will define the advertising message "reliability", namely that the probability that advertised message are confirmed or not. Repeat purchasers, however, are influenced by two factors, on the one hand the advertising messages that are directed to experienced consumers and of course the effects of their own experience (where past advertising claims whether truthful, or not, interact with customers' personal experience). Advertising claims that underestimate products characteristics might be "reliable" but then they might not entice first time purchasers, while overly optimistic advertising messages might entice first time purchasers but be perceived as unreliable by repeat purchasers who might switch to other competing brands. In this sense, the decision to advertise is necessarily appended by the decision to "what to advertise", which may turn out to be far more important for a firm. This paper provides a theoretical approach to deal with this issue.

C. Deissenberg and R.F. Hartl (eds.), Optimal Control and Dynamic Games, 19–37.

1. Introduction

Advertising budget allocation with carryover effects over time is a problem treated extensively by economists (Dorfman and Steiner (1954); Nerlove and Arrow (1962); Gould (1970); Nelson (1970); Nelson (1974); Schmalensee (1972); Katowitz and Mathewson (1979)), marketers (Vidale and Wolfe (1957); Ehrenberg (1972); Feichtinger (1982); Feichtinger et al. (1988); Schmittlein et al. (1985)). Additional developments were carried by both Sethi (Sethi (1973); Sethi (1974); Sethi (1975); Sethi (1977a); Sethi (1981); Sethi (1983a); Sethi (1983b)), who has also provided some outstanding review papers, Sethi (1977b), Feichtinger, Hartl and Sethi (1994) and myself (Tapiero (1975a); Tapiero (1975b); Tapiero (1977); Tapiero (1978); Tapiero (1979); Tapiero (1981); Tapiero (1982a); Tapiero (1982b); Tapiero (1982c); Tapiero (1982d)) as well as Farley and Tapiero (1981); Farley and Tapiero (1982) and Tapiero, Elyashberg and Wind (1987). As the Sethi, Feichtinger and Hartl papers attest, the number of references related to these problems is indeed extremely large. The models treated by Sethi are essentially defined in terms of deterministic optimal control problems while my own were essentially sales response stochastic models defining the optimal advertising policy in terms of stochastic control problems. A number of such studies value advertising expenses in terms of their contribution to the firm profit objectives or their effects on competitive posture and market structure such as the market response, the effects of memory, competition and other important topics that differentiate advertising models by the hypotheses they make about the sales response to advertising (through goodwill-capital accumulation, word of mouth and their like).

These problems continue to be of academic and practical interest both by raising new hypotheses regarding the effects of carry-over (memory) effects of advertising and the market competition structure (leading thereby to differential games for example, Tapiero (1978)). Issues relating to advertising claims (such as truthfulness in advertising) and the effects of experience and advertising efficiency on repeat purchasers has attracted relatively little attention however. This is in contradiction to strong empirical evidence that advertising weights (quantities) do not always matter while advertising copy may have a greater effect on sales response (Lodish et al. (1995)). Explicitly, Lodish et al. (1995), using extensive and shared data on advertising on TV claim that increasing advertising budgets in relation to competitors does not increase sales in general. However, changing brand, copy and media strategies in categories can in many cases lead to a sales response to advertising. Furthermore, they conclude that “New brands or line extensions tend to be