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Investigating sales and advertising rivalry in the UK multipurpose vehicle market (1995–2002)

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Abstract

To what extent do managers account for rivals' advertising responses? We employ static and dynamic panel techniques to derive estimates that are used to test whether the Dorfman-Steiner optimality condition held in the UK multipurpose vehicle (MPV) market between 1995 and 2002. We show that omitting the response of own advertising to rivals' advertising leads to substantially lower optimal levels of advertising expenditure compatible with non-retaliation strategies. When recognition of interdependence by the members of the oligopoly is taken into account, the Dorfman-Steiner condition holds. To complete the analysis of the advertising-sales relationship we also examine advertising determinants and find that rival advertising is also a significant determinant of own firm advertising behaviour.
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1. Introduction

Understanding the impact of own and rival advertising on product sales is a crucial issue facing managers. In the vast majority of markets where managers sell their wares they face rivalry from competitors. In such environments, in deciding the financial scope of their advertising campaigns managers need to be concerned with how rival managers will respond. In particular, if managers are aware that embarking on costly, high-profile, advertising campaigns will induce their rivals to

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raise the advertising stakes, poach sales, and thus undermine their promotional efforts, they will think twice about doing so. The plausible outcome of rival retaliation is, therefore, that it will induce optimising managers to advertise at lower levels than would be the case if they monopolised the market.

The purpose of this paper is to pin down whether managers take optimal pricing-advertising strategic decisions when faced with rival reactions to their own advertising behaviour. Employing dynamic estimation methods we investigate the degree of monopoly in the industry by determining the unit profits (mark-up of price over marginal cost) as well as the optimising behaviour of advertising and prices. We then explicitly test whether the familiar Dorfman and Steiner (1954) optimality condition applies where members of an oligopoly recognise the interdependence of their marketing campaigns.[1]

Advertising rivalry is analysed within the context of a new product segment—multi-purpose vehicles (MPVs). We choose the MPV market for a number of reasons. First, MPVs form part of an influential industry whose advertising expenditure constitutes a sizable slice of advertising expenditure in the UK and elsewhere.[2] Second, as in other European automobile markets, there was a substantive takeoff in both sales and advertising expenditures in the MPV market from the mid-nineties. Prior to that time the product had been a marginal seller in the market since its introduction in 1983. Given that rapid growth phase, it is reasonable to argue, *ex ante*, that rather than making the more calculated decisions they would in a mature product segment, managers would be more likely to over-estimate the potential for sales and drive up advertising expenditures above optimal levels. Hence, by analysing a fast growing new product segment we are able to provide a sharper test as to the capabilities of managers make optimal decisions. Third, while quality matters across a wide range of consumer goods, this is certainly the case in the MPV segment where many automobile makers engage ‘brand engineering’ through development and production of a common vehicle base model, which is sold as separate models of different brands.[3] Thus, it is clearly important that quality changes are integrated into the analysis. More generally, and perhaps most importantly, the MPV market is like a number of other high-tech markets (personal computers, electronics, washing machines and so forth) where differentiation is important, competition is oligopolistic, and advertising plays a conspicuous role in market success of firms. Thus, we believe the insights from our research are applicable to broader sectors of the economy.

Methodologically, we take a two-step approach to analysing the sales-advertising relationship of each MPV model in the UK market. In the first step we use a hedonic price regression model to calculate quality adjusted prices (*QAP*s) for each MPV model. In the second step, the demand for new MPVs is estimated using dynamic panel techniques as a function of each model’s *QAP*, own and rival advertising, and sales.[4] While we are principally concerned with analysing the optimality of advertising decision making, we also examine the determinants of managers’ advertising spending. To do so, we model advertising’s influences on consumer decisions about the variety of MPV to be purchased, while also allowing current sales to feed back on current managerial

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[1] A series of earlier studies by Palda (1964), Lambin (1976) and Cubbin and Cowling (1971) examined the Dorfman-Steiner condition but none of them took advertising rivalry into account.

[2] The UK car market represented 12% of the total value added and advertising in the car industry represented 6% of total advertising expenditure in 2003. Four of the thirty largest advertisers in the UK were car companies that year (Ford UK, GM Vauxhall, Renault and Toyota). More details, see Advertising Association (http://www.adassoc.org.uk).

[3] The “twin models” brand engineering strategy in the US MPV market over the period 1985–1993 is analysed in detail by Sullivan (1998).

[4] The estimation of the demand function of new cars in the UK is a recurrent topic in the literature (Cowling & Cubbin, 1971; Cubbin, 1975; Armstrong & Odling-Smee, 1979; Atkinson et al., 1984; Bajic, 1993; Murray and Sarrantis, 1999).

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