International Journal of Industrial Organization 30 (2012) 352–360

Contents lists available at SciVerse ScienceDirect

International Journal of Industrial Organization

journal homepage: www.elsevier.com/locate/ijio

Non-comparative versus comparative advertising of quality[☆]

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ARTICLE INFO

Article history:
Received 20 April 2010
Received in revised form 23 January 2012
Accepted 24 January 2012
Available online 1 February 2012

JEL classifications:
D82
L15
M37

Keywords:
Quality
Advertising
Disclosure
Signaling

ABSTRACT

Two firms produce a good with a horizontal and a vertical characteristic called quality. The difference in the unobservable quality levels determines how the firms share the market. We consider two scenarios: In the first one, firms disclose quality; in the second one, they send costly signals thereof. Under non-comparative advertising a firm advertises its own quality, under comparative advertising a firm advertises the quality differential. In either scenario, under comparative advertising the firms never advertise together which they may do under non-comparative advertising. Moreover, under comparative advertising firms do not advertise when the informational value to consumers is small.

1. Introduction

Comparative advertising is any form of advertising that explicitly or by implication identifies a competitor or goods or services offered by a competitor. It was illegal in many European countries until the late 1990s. By contrast, in the US comparative advertising has been encouraged by the Federal Trade Commission since the 1970s.[2] A 1997 EU directive changed the situation in Europe by legalizing comparative advertising subject to the restriction that it should not be misleading.[3] European Competition Authorities now tend to agree with their American counterparts in that comparative advertising is an important tool in promoting competition. Comparative advertising increases consumers' information about alternative products. It allows consumers to evaluate the performance of particular products against other products, thus enabling more informed purchasing decisions.

Despite its importance there has been little economic analysis on comparative advertising. We will review this literature at the end of the introduction. In this paper we address the following questions. Does comparative advertising indeed generate more information for consumers than non-comparative advertising? Do firms advertise more once comparative advertising is allowed? Can the two advertising regimes be compared using welfare criteria?

To answer these questions we consider a product with a horizontal characteristic called design and a vertical characteristic called quality. Two firms produce different designs. Consumers do not observe quality before purchase. Prices cannot signal quality.[4] The firms compete for customers by advertising their quality. We first analyze a pure disclosure framework. If a firm advertises, it discloses the truth; it cannot falsify as such.[5] We compare two scenarios. In the first firms can only engage in non-comparative advertising, i.e., a firm may disclose its own quality but not the competitor's. In the second scenario, the firms can also engage in comparative advertising. In both

☆ We thank Kong-Pin Chen, Uwe Dulleck, Marco Hahn, Martin Hellwig, Simon Lörtscher, Gerd Mühlheusser, Andras Niedermayer, Martin Peitz, Yossi Spiegel, and two referees for helpful comments. The usual disclaimer applies. Emons acknowledges the hospitality of the Department of Economics at Boston University.

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2 See, e.g., the "Statement of Policy Regarding Comparative Advertising", Washington 1979, www.ftc.gov/bcp/policystmt/ad-compare.htm.

3 Directive 97/55/EC, see Barigozzi and Peitz (2006) for more details. European courts tend to follow a literal interpretation of quality claims, whereas U.S. courts ask whether consumers are actually misled.

4 In Section 2 we explain why prices are not used as a signaling device. Alternatively, we could assume that prices are regulated or that upstream manufacturers impose resale price maintenance on retailers.

5 Advertisements communicate, e.g., hard information about technical features. False advertising is deterred by the threat of lawsuits.

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doi:10.1016/j.ijindorg.2012.01.004

scenarios advertising is costly and firms may, therefore, choose to remain silent.

In the non-comparative framework a firm advertises if its quality level is above a threshold. If the quality is below the threshold, a firm remains silent; the cost of sending the message is higher than the gain. When both firms' quality is below the threshold, neither advertises and they share the market equally. When only one firm's quality is above the threshold, the high quality firm advertises while the low quality one says nothing. The high quality firm then has more customers. When both firms have high quality, both advertise. This may be highly inefficient: if both firms have the same high quality, both advertise at a cost yet still share the market equally.

In the second scenario firms may also engage in comparative advertising, meaning that firms disclose the quality differential. When both advertising formats are possible, consumers interpret non-comparative advertisements as implying that the quality differential is actually small; had it been high, the firm would have disclosed the quality differential. This unraveling implies that firms do not use non-comparative advertising; they either send comparative messages or do not advertise at all. If the quality differential is small, neither firm advertises. If it is large, the high quality firm advertises while the low quality one is silent. In equilibrium the firms never advertise together.

Comparative advertising tends to perform better than non-comparative advertising. Firms do not advertise if the quality differential is small and the information is of little value to consumers. If, however, the quality differential is large, the high quality firm advertises while the low quality one remains silent. There is no duplication of advertisement expenditures. By contrast, when only non-comparative advertising is allowed, firms advertise their high quality independently of their rival's quality level. Both firms may then advertise even when the information is of little or no value to consumers.

Next we look at the case where advertisements cannot provide hard information.[6] The firms now try to convince consumers of their quality (or the quality differential) by sending advertisements with expensive features such as highly paid celebrities expressing satisfaction with the product. By assuming that the costs depend on quality and satisfy the single-crossing property, we model persuasion as a signaling game. For instance, a celebrity may be reluctant to praise a product she experienced to be inferior. In equilibrium, if firms advertise, they spend money on expensive advertising to convince consumers of their quality. Consumers rationally infer the true quality from the advertisements. Otherwise, the equilibria have essentially the same structure as in the pure disclosure framework. In particular, in the signaling set-up the states of the world where firms advertise or are silent are exactly the same as under disclosure. The welfare comparison, however, is now somewhat less in favor of comparative advertising. Signaling costs may blur the picture, making the comparison more ambiguous.

Let us now review the literature. The marketing literature has discussed comparative advertising quite extensively; see Grewal et al. (1997) for a survey. There is, however, little economics literature on comparative advertising. Anderson and Renault (2009) consider comparative advertising with respect to horizontal characteristics. If qualities are sufficiently different, the low quality firm will disclose horizontal attributes of both products. The main difference with our approach is that advertising is costless.

Barigozzi et al. (2009) consider an incumbent with known quality facing an entrant with unknown quality. The entrant can choose generic advertising which is standard money burning to signal quality. Moreover, the entrant can choose comparative advertising which involves a comparison of the two firms' qualities; this involves the risk that the incumbent may sue. By resorting to comparative advertising, the entrant signals that he has a strong case. Comparative advertising can signal quality in those cases where generic advertising cannot. An important difference to our model is that only the entrant can choose to advertise.

Anderson et al. (2010a, 2010b) empirically study advertising in the US over-the-counter analgesics industry. Almost half the ad spending in their sample was on comparative advertisements; all firms had some comparative ads. Brands with better characteristics transmit more information. Comparative ads contain significantly more information than non-comparative self-promoting advertisements. The evidence that all firms use comparative advertising is at odds with our finding that only one firm does so. One possible explanation is that in the analgesics market quality has multiple dimensions and firms claim superiority in dimensions where they perform better.

More generally, our analysis is related to the industrial organization literature on advertising as quality disclosure or quality signaling. Levin et al. (2009) analyze a duopoly where firms can disclose their own quality by presenting verifiable information. In Daughety and Reinganum (2008), a monopolist may choose between costly disclosure or signaling his quality through prices. These papers only allow for non-comparative advertising. Our analysis is also related to disclosure games with multiple interested parties sharing the same information, as in Milgrom and Roberts (1986b).

An important literature, going back to Milgrom and Roberts (1986a), analyzes quality signaling via prices or advertising as money burning. This literature has mainly dealt with the case of a monopolist, i.e., it has considered one-sender games. An exception is Daughety and Reinganum (2007) who consider signaling through prices in a duopoly. Two other exceptions, more closely related to the present analysis, are Hertzendorf and Overgaard (2001) and Fluet and Garella (2002). In these papers the duopolists know each other's quality. In the resulting equilibria, signaling is either through prices alone or through the price-advertising mix. In the present paper, signaling through prices is not feasible. Moreover, we focus on the case where both firms may jointly signal about the same variable, namely the quality differential.

The remainder of the paper is organized as follows. In the next section we describe the model and derive the equilibrium prices. Section 3 analyzes the pure disclosure and Section 4 the signaling framework.

2. The model

Consider two firms 1 and 2 which produce products having two characteristics. The first characteristic is horizontal; we call it design. Firm 1 produces design 1 and firm 2 produces design 2. For example, design could refer to the interface in an operating system (Mac OS X vs. the Microsoft Windows or Symbian vs. Android), the location of a vacation resort (mountains vs. seaside) or the place where a cigar is produced (Cuba or the Dominican Republic). The second characteristic is vertical and concerns the quality of a particular feature; we will refer to it as firm i's quality $q_i \in [0,1]$, $i \in \{1,2\}$. Production costs are normalized to zero, i.e., they are independent of design and quality. Firm i charges the price p_i.

There are three groups of consumers: a mass M of firm 1 loyal consumers, a mass M of firm 2 loyal consumers, and a mass 1 of quality-conscious consumers. All consumers wish to buy at most one unit of the product. Loyal consumers do not care about the feature's quality. The utility of a firm i loyal consumer is $1 - p_i$ if he buys from firm i,

[6] Our distinction between hard and soft information is standard. Real life situations often fall somewhat in between. In 2009 telecommunications companies in Canada engaged in legal fights over their advertising campaigns. Rogers Communications sued Bell Mobility for describing its network as “the best and most powerful”. Earlier Rogers had been sued by Telus for claiming it had the “fastest and most reliable network”. Arguably, the legal suits served as advertising instruments.