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# The Truth Hurts: How Customers May Lose From Honest Advertising☆

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ABSTRACT

This paper examines the impact of competition, brand equity, and the cost of overstating quality on optimal quality and quality claims of new products. We consider two firms simultaneously introducing a new product and making one-time decisions about its quality, price, and advertised quality. Using a two period model which allows for larger weight on future period sales, we find competition often leads firms to overstate quality unless they are constrained by high legal costs imposed by regulations or third-party legal action. More interesting, when competitors are constrained to be truthful in their advertising due to legal or other costs, optimal product quality can be lower and profits can be higher.

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## 1. Introduction

The pros and cons of competition (and capitalism) have been debated for centuries. While early debates centered on issues such as the appropriateness of charging interest ("usury"), more recent ones have involved issues such as the effect of large firms on small firms and consumers (hence the evolution of anti-trust laws). Much of the debate centers on the sense that, left to their own devices, firms will act in such a way as to damage both consumers and their competition unfairly. This paper highlights a different perspective, namely how controlling firm behavior by requiring truthful advertising may, paradoxically, harm some consumers and increase firm profits.

One area in which companies are tempted to behave "inappropriately" to gain competitive advantage is in advertising. Especially when product quality is hard to assess a priori and/or ambiguous after use (i.e., for credence and some experience goods), a firm has the apparent incentive to overstate quality. Indeed, misleading advertising is the reason for the existence of the Federal Trade Commission (FTC) in the U.S.A. The FTC serves partly as a policeman, imposing costs on firms who mislead the public.

Overstatement of the quality of new products is widespread. The Wall Street Journal (WSJ) has reported quality overstatement (deceptive advertising) in multiple industries including food (Wall Street Journal, 2003), toys (Wall Street Journal, 1996), finance (Wall Street Journal, 2007), retailing (Wall Street Journal, 2009a,2009b), pharmaceuticals (Wall Street Journal, 2004a,2004b), electronics (Wall Street Journal, 2004a,2004b), and packaged goods (Wall Street Journal, 2009a,2009b). Moreover, the Federal Trade Commission (FTC) examined 627 cases of deceptive advertising practices between 1995 and 2002, and found 626 of them were in violation of the law (http://www.ftc.gov/).

The core issues investigated here are the role of competition in overstating quality and the corresponding effect of discouraging quality overstatement on the products offered by firms. Obviously regulations that discourage and punish quality overstatement will reduce overstatement, i.e. make advertising more truthful. However, the impact of these regulations on actual product quality, price, and profitability is less obvious. Here we examine why firms overstate quality and its consequences in the context of new product introduction.

There are two ways to approach this issue: empirically (i.e. examine what companies/managers do) and normatively (i.e. determine what companies should do to maximize profits). Here we focus on the second approach, i.e., the decisions that firms "should" make to maximize profits.

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We focus on experience goods where product quality is revealed upon use, i.e. quality in use is observed at the end of the first period.[2] While the model we use may be more generally applicable (e.g., to information goods), the type of product we have in mind is a repeat purchase good or service such as car tires or annual services (e.g., lawn care) with a fairly objective measure of quality (e.g., how long a product lasts or how promptly a service is performed).

We assume the cost of overstating quality increases as the degree of overstatement increases. This is consistent with results of cases decided by the FTC which show a positive relation between the seriousness of the distortion and the severity of the punishment. FTC data also indicate that firms with a larger number of competitors tend to make more substantial quality overstatements.

We extend prior work on optimal new product introduction strategy by a) considering competition, specifically a duopoly where two firms simultaneously introduce a new product (or an upgrade to an existing one), including the case where one firm has a stronger reputation (greater brand equity) than the other and by b) explicitly incorporating costs (which we call "legal costs") which may be imposed by regulators (e.g., the FTC) or others (e.g., competitor lawsuits) on firms which overstate quality (i.e. advertise deceptively). We focus on new products because (a) that is when advertising is most influential and (b) once a claim is made, it is difficult for a firm to change it.

Several results emerge for a wide variety of, although not all, market conditions. First, competition encourages firms to overstate quality. More intriguing, while imposing a cost on overstating quality (beyond that naturally caused by the market via unsatisfied customers and negative word of mouth) leads to less overstatement (an obvious result), it also leads to firms producing a lower quality product. This later result was unanticipated and is somewhat counter-intuitive. Also, intuitively, imposing costs on overstating quality should lead to reduced profits. Interestingly the opposite result emerges; imposing a cost on overstating quality leads to greater firm profits.

The paper is organized as follows. The next section presents a brief literature review. We then describe the model and examine its consequences. We conclude with a discussion of implications, limitations, and directions for future research.

## 2. Background

A large body of research has focused on new product introductions and diffusion (Biyalogorsky, Boulding, & Staelin, 2006; Dahl & Moreau, 2002; Peres, Muller, & Mahajan, 2010; Rao & Humaira, 2003; Shankar, 1999; Urban & Hauser, 1993). This work includes attempts to forecast sales (Bass, 1969; Mahajan, Muller, & Bass, 1990), identify determinants of success (Goldenberg, Lehmann, & Mazursky, 2001; Henard & Szysmanki, 2001; Montoya-Weiss & Calantone, 1994), and understand the process of customer adoption (Moreau, Lehmann, & Markman, 2001; Rogers, 2003). There has also been substantial research in the general area of optimal new product strategies. For example, Lehmann and Weinberg (2000) investigated the optimal time to move a new product into a different channel (specifically a movie from theaters to video rentals). In the research most closely related to this paper, Kopalle and Lehmann (2006) examined optimal price, quality, and advertised quality for a monopoly firm introducing a new product.

Importantly, at least two forces influence the results of new product introductions beyond those typically considered in prior research. First, competition, although often ignored in normative models, clearly can impact optimal pricing and advertising decisions (Iyer, Soberman, & Villas-Boas, 2005; Rao & Syam, 2001; Thompson & Teng, 1984). Second, misleading quality statements can lead to costs (beyond customer dissatisfaction) being imposed by governmental agencies and other actors (e.g., consumer watchdog agencies), which we consider under the broad description of "legal costs". Extant research implicitly assumes that overstatement of quality does not result in out-of-pocket costs for the firm (Crawford & Sobel, 1982; Farrell & Gibbons, 1989; Farrell & Rabin, 1996; Gneezy, 2005; Kopalle & Assunção, 2000; Kopalle & Lehmann, 2006); here, we relax this assumption.

There has been significant behavioral research on deceptive advertising. Boush, Friestad, and Wright (2009) indicate that deception is common in firm and consumer interactions and Richards (2010) provides a three step conceptual model of deceptiveness. Skurnik, Yoon, Park, and Schwarz (2005) show the "illusion of truth" effect where letting people know that a quality claim is false can actually make them recollect it as true. Overstated quality claims lead to higher levels of expectations relative to true information (Burke, DeSarbo, Oliver, & Robertson, 1988) while those in a positive mood are not only more likely to notice false information but also have positive feelings toward the brand (LaTour & LaTour, 2009). True claims tend to be recalled more often than false claims (Nagar, 2009). Recently, using functional magnetic resonance imaging data, Craig, Komarova Loureiro, Wood, and Vendemia (2012) observe significantly higher brain activity associated with quality claims that are moderately deceptive relative to those that are either believable or highly deceptive. Thus, this body of literature suggests that quality claims by firms do impact consumer expectations.

On the normative side, prior work on deceptive advertising suggests that when customers are boundedly rational, companies will overstate quality (Nagler, 1993). While prior research does not take customer expectations (and the ensuing satisfaction) into consideration, adaptive expectations seem to describe customer behavior better than rational expectations (Johnson, Anderson, & Fornell, 1995). In this paper, we consider customer and firm dynamics, customer expectations and satisfaction with respect to quality, and legal costs of overstating quality.

We follow a micro-modeling approach (Chatterjee & Eliashberg, 1990; Garber, Goldenberg, Libai, & Muller, 2004), allowing customer heterogeneity regarding the quality they experience. Akin to Shi (2003), who linked pricing strategy to word of mouth (WOM), our two-period model considers WOM based on experience in a competitive market, including both positive (high quality) and negative (low quality) experiences (East, Hammond, & Lomax, 2008).

We examine a duopoly where two firms make three decisions simultaneously: average product quality (which allows for experienced quality to be heterogeneous across customers), the advertised level of product quality (and by implication the level of over- or understatement of quality relative to average/actual quality), and price. Overstating quality leads to higher sales in the first period but lower sales in the second period due to reduced customer satisfaction and negative word of mouth. On the other hand, more truthful claims result in lower sales in the first period but higher sales in the second period due to improved customer satisfaction. We find that competition may lead to overstatement of quality. We also show, paradoxically, that the imposition of legal costs (penalties) for overstating quality may lead to firms producing lower quality products.

## 3. Model

Consider two competitors (A and B, a duopoly) selling new products which are experience goods. Our model incorporates three aspects of quality[3]: 1) the average quality produced ($\mu$), 2) the quality level advertised by the firm ($Ad$), and 3) the quality expected by customers ($\hat{Q}$, both prior to and, appropriately revised, after experience with the product).

[2] Note that many of the categories where overstatement was identified in the various Wall Street Journal articles cited in the Introduction involved experience goods (Darby & Karni, 1973) where products must be used in order for their quality to be observed.

[3] While quality can have multiple dimensions, here it stands for a single dimension (for example, how long a product lasts as a measure of performance) or overall value based on a linear combination of multiple dimensions.

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