Misleading advertising and minimum quality standards

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ABSTRACT

This paper examines the relationship between misinformation about product quality and quality standards, such as minimum quality standards (MQSs) and certification criteria, when products are vertically differentiated in terms of their health/safety aspects. We investigate the welfare effect of regulating misinformation and strengthening MQSs. We find that the welfare effect of a decrease in misinformation crucially depends on the existing amount of misinformation; moreover, a more stringent MQS either improves or deteriorates welfare. Two effects figure strongly throughout our results. First, changes in misinformation and/or an MQS make price competition between firms more or less serious, causing changes in price and quantity. Second, these changes influence some consumers' choices, leading them to change the products that they purchase. This change in consumption behavior increases or decreases inappropriate choices when misinformation is present. We extend the analysis to the case in which a high-quality firm's quality investment is endogenously determined.

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1. Introduction

Over the past few decades, consumers in developed countries have become more conscious of the health and safety aspects of many products. Examples include fat, calorie and other nutrition information in processed food, the use of toxic substances in producing toys, and the use of antibiotics in livestock. A well developed literature demonstrates a substantial willingness to pay for higher-quality products.[1]

A greater willingness to pay for quality has had two effects on the supply side. The first is increased vertical differentiation, with both premium and standard products coexisting in the marketplace. Free range hens are sold alongside standard chickens, foods free of genetically modified organisms or irradiation are sold next to traditional products, etc. The second effect is a proliferation of persuasive advertising aimed at convincing consumers to purchase more profitable premium items.

The regulatory response to vertical differentiation in consumer products has often been an approach that sets minimum quality standards (MQSs) for low quality products and certification criteria for premium products. For examples of MQSs, in the US, the Food and Drug Administration (FDA) regulates ingredients and additives in food. In Japan, the Food Sanitation Act regulates food safety, as well as the use of additives and chemicals in toys and containers.[2]

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[1] See Grunert (2005) for more details on consumer behavior. Many studies have evaluated consumers' willingness to pay for higher quality products as assessed by safety and health factors (see Caswell and Joseph, 2007 for a survey of this literature). Although the magnitude of the willingness to pay varies across these studies, they show that consumers are prepared to pay a premium based on health and safety factors. The effect of safety information on demand has also been studied using objective data such as prices, news, and regulations (Chang and Kinnucan, 1991; Piggott and Marsh, 2004).

[2] See the website of the Japanese Ministry of Health, Labor, and Welfare for information on food safety (http://www.mhlw.go.jp/english/topics/foodsafety/index.html).

Conversely, in developed countries, organic food is usually certified by third parties and distributed with labels that convey certification to consumers. In certain cases, countries have labeling rules for pesticide-free agricultural produce, whereas in others, private companies have instituted voluntary labeling systems.

With the advent of persuasive advertising comes the potential for misinformation or misleading advertising of product quality. There is ample evidence of firms making exaggerated or misleading claims, and consumers responding favorably to these claims.[3] In response to such widespread misinformation, governments have begun to regulate advertising content. The EU adopted the "Television without Frontiers" Directive in 1989, containing provisions that regulate advertising to protect consumer health and safety. Directive 2006/114/EC regulates misleading and comparative advertising to control misinformation in the interest of consumers, competitors, and the general public. In the US, the FTC (the Federal Trade Commission) has a special division within the Bureau of Consumer Protection (the Division of Advertising Practices) that sets advertising guidelines for several types of products, including dietary supplements. In Japan, in addition to the Japan Fair Trade Commission, the government established the Consumer Affairs Agency in 2009 to regulate misleading advertising on the health, safety, and nutritional aspects of foods.

This study focuses on the relationship between misinformation/misperceptions and MQSs when products are vertically differentiated in their health/safety aspects. We consider a model of price and advertising competition between two firms producing vertically differentiated products. Consumers are heterogeneous in their evaluation of health/safety aspects and are misled by misinformation in advertising provided by firms. Each firm chooses the amount of misinformation about its product before setting its price. Within this framework, this study investigates the welfare effect of regulating misinformation in the presence of quality standards (an MQS and a certification criterion), and examines the welfare effect of a more stringent MQS in the presence of misinformation.[4]

We assume, except in Section 6, that true qualities of both high- and low-quality products are bound by quality standards, which implies that we exclude firms' decision making on quality investments. The assumption applies to a situation in which quality investments are long-term decisions because firms take longer to decide on the level of investment compared with the time taken to decide to conduct a certain amount of misleading advertising. Therefore, except for the cases in which firms are forced to alter the true quality of their products because of changes in quality standards, they do not introduce these quality changes in the short term. In Section 6, to investigate the

long term effect of MQS on welfare, we discuss the case in which the certification criterion is not biding and the firm producing high-quality product can choose the true quality of its product through investment.

For clarity, we omit the following two factors. First, we do not consider the issue of the quality and credibility of advertising, which several studies have addressed.[5] Following Glaeser and Ujhelyi (2010), we assume that misinformation can cause consumers to misperceive a product's quality as intended by a firm. That is, consumers are *naive* in the sense that they always believe misinformation.[6] Second, we do not consider the credibility of the certification criteria. In reality, consumers may not believe the certification or product labeling because many forms of labeling for high-quality products exist in a single product category.[7] Nevertheless, we do not consider this issue because we focus on the distortion caused by the changes in MQSs as well as by misinformation provided by firms.

Extensive literature exists on the economic analysis of advertising (Nelson, 1974; Dixit and Norman, 1978; Becker and Murphy, 1993; Bagwell, 2007; Glaeser and Ujhelyi, 2010; Matsumura and Sunada, 2013). Informative advertising provides consumers with useful information, enabling them to accurately recognize the true quality or attributes of a product.[8] In contrast, persuasive advertising appeals to consumers by sending only information on a product's positive attributes, which is intended to lead consumers to perceive that the quality of a product is better than it truly is. The advertising addressed in this study falls under the category of persuasive advertising. Our study is related to that of Dixit and Norman (1978) in terms of the demand-expansion effect of advertising, and that of Glaeser and Ujhelyi (2010) in terms of the focus on the welfare effect of regulations on misinformation. However,

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[3] Glaeser and Ujhelyi (2010) and Hattori and Higashida (2012) provide several detailed examples. See also Garde (2008) and Byrd-Bredbenner and Grasso (2001) for the cases of food advertisement.

[4] MQSs are considered to be more important than certification criteria in terms of health/safety issues, because they guarantee minimum quality/safety and because all firms that supply products to the market must abide by these standards. Therefore, we focus on an MQS rather than a certification criterion.

[5] For example, Mulainathan et al. (2008) investigate how advertisers persuade receivers using the concepts of transference and framing. Anderson and Renault (2006) discriminate between price and quality information. Kihlstrom and Riorden (1984) and Milgrom and Roberts (1986) examine the signaling role of information conveyed by advertising.

[6] Although misleading advertising can benefit a firm in the short term, it may lead to a long-term loss by damaging the firm's reputation. The assumption of naive consumers excludes the reputational effects of misleading advertising. Such a setting is useful for analyzing the following cases. The first is the case where goods have a relatively short lifespan, such as diet foods, where new products often enter the market. In this case, consumers may be misled repeatedly. The second is the case where it takes consumers a long time to realize their misperception or it is difficult to hem to verify the truth about the product qualities (e.g., cosmetics and medical supplies). Even after realizing the truth, consumers find it difficult to file lawsuits against the companies. Moreover, despite being misled once, they remain vulnerable to repeated misleading. If misinformation is serious camouflage, such as obvious false information and concealment of risks involved in using/ingesting goods, rival firms may reveal the camouflage by filing lawsuits. However, we focus on the types of white lies, which improve the image of goods by somewhat exaggerating their positive attributes. In such cases, it becomes difficult for the authority to determine whether the advertisement should be completely prohibited.

[7] Mahenc (2009) examines this type of credibility problem and demonstrates that labeling may be wasteful if the third party is untrustworthy.

[8] Ippolito and Mathios (1990) empirically examine the effect of informative advertising using data of the ready-to-eat cereal market. They concluded that lifting the regulatory ban against producer advertising helped consumers to make better choices.