

# Part One: Theory

## The Firm's Voluntary Labeling Decision

For a firm, labeling is one of many advertising options and its labeling decision can be examined just like any other advertising decision. Assuming that firms attempt to maximize profits, they will add more information to product packaging so long as each additional message generates more revenues than it costs.

A label is intended to help consumers differentiate the labeled product from otherwise similar products. A label calls to consumers' attention the desirable attributes of the product. When a firm labels its product, it assumes that the information it provides is important to consumers and that they will respond by changing their purchase decisions. Schmalensee (1972) described the incentive for firms to advertise, claiming that if a firm's advertising has any effect, it will be to allow the firm to sell more without reducing the price it charges or to raise the price without losing sales or market share.

While it is easy to say that firms disclose information that is advantageous to them, deciding which attributes consumers will find desirable is not a trivial problem. If firms could easily decide which information is advantageous to disclose on labels and how to disclose it, big Madison Avenue advertising firms would be neither big nor located on Madison Avenue. The labeling decision is complex for two reasons. First, for even the simplest of products, there are many attributes that could be labeled. For example, the attributes of bottled water include the size and shape of container, trace mineral content, and place of origin. Some bottled-water labels name particular springs or types of springs while others suggest snow-melt from Alpine mountains as a source. Second, the labeling decision is complex because consumers are not all alike. Consumers have diverse preferences. For example, some will care whether animals were harmed in product testing, while others will not. Some will care about organic production methods and others will not. All consumers may want their food to be safe, but may differ widely in risk perceptions and risk preferences and in ability to process information about health risks.

In 1997, U.S. producers spent \$48.7 billion on packaging and \$21 billion on advertising (Elitzak, 1999). Together these amounts represent over 12 percent of domestic food expenditures. Even if only a small share of packaging goes toward labels, we know that there

must be substantial rewards for constructing successful label messages.

### Markets Work To Inform Consumers

Labeling decisions may enhance economic efficiency by helping consumers to target expenditures toward products they most want. Thus, in their drive to persuade the maximum number of consumers to purchase their products, firms may provide a public service by increasing the information available to consumers. The value of this service depends on the importance consumers attach to the attribute and the difficulty they face in assessing the attribute on their own.

Economic studies have characterized product attributes as search, experience, or credence attributes. Search goods are those for which consumers examine product characteristics, such as price, size, and color, before purchasing. Experience goods are those for which consumers evaluate attributes after purchasing the product. For example, consumers choose particular brands of canned tuna without sampling the product first (Nelson, 1970). Credence goods have attributes that consumers cannot evaluate even in use (Darby and Karni, 1973). For example, consumers cannot inspect particular produce items and determine whether they were grown organically or whether they are the result of biotechnology. Consumers cannot inspect canned tuna and determine if the tuna was caught without harming dolphins.

Though producers may wish to conceal the negative attributes of their products, a number of factors make this difficult, even for experience and credence goods. First, consumer skepticism may lead to a situation in which consumers are informed about all attributes of goods. For example, if a consumer could not determine the contents of a box before purchase and had to rely on a label claiming that the box contained "at least three oranges," a rational consumer might assume exactly three oranges. If there were really four oranges in the box, the seller would say so because a box of four would command a higher price than a box of three. So if the rational consumer expects the worst—that labels are as optimistic as truth permits—the firm has an incentive to highlight all the positive attributes of its product. Consumers can infer that every attribute that the firm does not discuss is negative; either the

product does not possess desirable attributes or attributes are of low quality.<sup>1</sup>

Second, warranties offer consumers a mechanism for deducing product information for credence goods. If a product has an observable characteristic related to the credence attributes, the firm can offer a warranty. For example, suppose an automobile manufacturer wanted to distinguish its product from other cars with a claim of overall better quality. While it is difficult to observe the quality of a car (or even to state precisely what a car's quality is), a low-quality car will break down more often than a high-quality car. An automobile dealer can offer a warranty against particular types of failures. Unwillingness to offer warranties for particular failures amounts, in the eyes of skeptical consumers, to admission that some attributes of the car are low quality.

Third, competition among firms also reinforces consumers' ability to deduce relatively complete information about the hidden quality dimensions of products (Ippolito and Mathios, 1990a). For example, the producer of a food product low in fat might voluntarily advertise that fact. A competitor with a similar product low in both fat and sodium would have an incentive to advertise its product's two desirable attributes. Consumers would then be suspicious of products that failed to make both claims. This competitive disclosure, which Ippolito and Mathios named the "unfolding" theory, results in explicit claims for all positive aspects of products and allows consumers to make appropriate inferences about foods without claims. The unfolding theory also leads to the conclusion that firms' advertising would inadvertently alert consumers to negative aspects of products. For example, without any cigarette labeling requirements, the cigarette brand that advertises less tar would be alerting consumers to a negative aspect of all cigarettes. Disclosure of tar levels would be likely among low-tar cigarettes and nonexistent among others. The unfolding theory implies that the presence of advertising (including labels) is a signal of quality and that competitive products without such advertising are alerting consumers to its absence.

Empirical tests of the effectiveness of the market in producing full disclosure of quality to consumers have yielded mixed results (Mojduszka and Caswell, 2000).

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<sup>1</sup> Grossman (1981) shows that this result occurs even where there is only one seller and where consumers have had no experience with the seller and will have no further experience—where the incentive to mislead is greatest.

Prior to 1994, when the NLEA went into effect, nutrition labeling was provided on a voluntary basis. Mojuszka and Caswell, examining the frequency with which food products carried nutrition labels in 1992-93, found that for food groups defined as salted snacks, cereal, yogurt, and margarine spreads, almost all products carried voluntary nutrition labels, regardless of nutrition profiles. This result differs from predictions logically derived from the Grossman model (labels should be found frequently on nutritionally superior products and absent on others). For other food groups, their results were largely inconclusive.

## Limitations of Market Incentives

While consumer skepticism, warranties, and competition among firms may expose many product attributes, they are not always sufficient to guarantee complete disclosure (Ippolito and Mathios, 1990a). For example, when an entire product category has an undesirable characteristic that cannot be changed appreciably (e.g., cholesterol content of eggs), unfolding depends on producers of entirely different foods to draw attention to the undesirable characteristics. In these cases unfolding may be weaker than in cases where variations exist within the same product category.

Another limitation to market incentives to disclose information arises when information has a "public good" aspect, that is when information pertains to a whole product type, not one particular product. In these cases, even if information increases sales, the chances that the benefits of labeling outweigh the costs for a single firm are reduced: the costs are borne by the single firms while the benefits are shared by many. For example, if the producers of Oat Snappy Cereal label their cereal boxes with the information that oat bran cereals have been linked to lower heart disease, they provide information not only about their cereal, but also about all other oat cereals as well. The producers of Oat Snappy Cereal bear the costs of labeling but the benefits are shared with their rivals. In this case, the information is a public good, and like all public goods is less likely to be produced voluntarily (Hadden, 1986; Caswell and Kramer, 1994).

Market incentives and legal prohibitions may also be unable to eliminate partial disclosure and innuendo (Scherer, 1980). The possibility of deception erodes the efficiency of the market. Widespread deception makes consumers less responsive to messages, even those that provide truthful information. It makes consumers doubt the veracity of claims made by honest producers.