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Do Food Labels Make a Difference? . . . *Sometimes*

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- Competition drives food manufacturers to voluntarily label their products' desirable attributes and to use third-party certifiers to bolster credibility.
- Mandatory food labeling is usually more successful at filling information gaps than at addressing externalities such as environmental or health spillovers associated with food production and consumption.
- Mandatory labeling may initially have a larger impact on manufacturers' production decisions than on consumers' food choices.

There is a lot to know about the food we eat. The ingredients in a jar of spaghetti sauce, a box of cereal, or a cup of coffee could come from around the corner or around the world; they could be processed by children or by high-tech machines; they could be grown on huge corporate farms or on small family-run farms; or they could be mostly artificial or 100-percent natural.

While a description of a food product could include information on a multitude of attributes, not all of them are important to consumers or regulators. Information on some attributes could affect the health and welfare of consumers by influencing their food choices. Information on other attributes might have no effect at all.

Consumers, food companies, third-party entities, and governments play a role in determining which attributes are described on the label. The interaction of these groups influences which information is labeled voluntarily, which is mandated, and which is not labeled at all. It shapes the way information is presented and the accuracy and credibility of that information. The economics behind food labeling provides insight into the dynamics of voluntary food labeling and the types of market failures best addressed through mandatory labeling requirements.

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Companies Will Voluntarily Label If Their Benefits Outweigh Their Costs

Voluntary labeling is one of a food company's many advertising options. Assuming that companies attempt to maximize profits, they will add information about an attribute to the label as long as each additional message eventually generates more benefits than costs. The primary benefits of labeling for a company come from either increasing profits or maintaining profits in the face of new competition. Either outcome is more likely if consumers use the information to differentiate the labeled product from similar products and then buy it.

The probability that consumers will value and react to labeled information is improved if the label successfully persuades consumers that it conveys information about a meaningful distinction between labeled and unlabeled products. If consumers decide that the information's significance or accuracy is questionable, they will not use it to modify their purchase decisions. Researchers from the University of California and ERS found, for example, that the geographic branding of Washington State apples is losing its impact because it does not convincingly differentiate the State's apples from those grown in other areas.

To bolster the meaningfulness of their message, firms often rely on advertising and other types of outreach. In 2005, the U.S. food industry spent $32 billion on advertising and $66.5 billion on packaging to differentiate their products from the competition (see "Food Product Introductions Continue To Set Records" on page 4 in this issue).

Firms may also try to convince consumers of the validity of their labeling claims by using third-party labeling services. By offering an "unbiased" assessment of a labeling claim, these services help strengthen the credibility of voluntary labeling (see box, "Third-Party Labeling Services Can Improve Market Efficiency"). A number of entities, including consumer groups, producer associations, private companies, national governments, and international organizations, provide third-party services. The Good Housekeeping Institute, for example, founded for the purpose of consumer education and product evaluation, sets product standards and provides consumer guarantees for a multitude of goods, including foods. Two private companies, Société Générale de Surveillance (SGS) and AIB International (originally the American Institute of Baking), verify and certify food safety for a wide range of food products. USDA's Agricultural Marketing Service (AMS) has developed official grade standards for meats, eggs, poultry, dairy products, fresh fruits, vegetables, tree nuts, peanuts, and other commodities. ISO, a worldwide federation of national standards institutes,

promotes the development of international standards for a variety of products and production processes.

The value of the labeling service generally depends on the credibility and reputation of the providing entity. In some cases, national governments or associations of national governments may be the most widely recognized and reputable third-party providers of labeling services. But this is not always true. For example, although U.S. consumers tend to have confidence in USDA and the Food and Drug Administration (FDA) to regulate food safety, Europeans rank national bodies far below international, environmental, consumer, and farm organizations in terms of trustworthiness.

Private and government labeling services have helped support an explosion of voluntary food labeling. American grocery store shelves have become veritable encyclopedias of labeling claims. A single carton of eggs sold in a national grocery store chain, for instance, is labeled with a "cage free" claim, the grocery store "quality and satisfaction money-back guarantee" logo, the Orthodox Union symbol of kosher certification, and a long list of nutrient claims, including "25% of the daily value of vitamin E; 185 mcg of lutein per egg; and 100 mg of omega-3 polyunsaturated fatty acids per egg."

A byproduct of the explosion of labeled attributes is that consumers learn to "read between the labels" and make deductions about unlabeled products. For example, confronted with one can of tuna labeled "dolphin friendly" and one with no such claim, consumers would likely assume that the unlabeled tuna was caught with dolphin-endangering practices. In a competitive marketplace, the presence of a label is a signal of quality, and the lack of a label on competing brands implies the absence of the quality attribute.

Consumers' ability to make inferences about quality further spurs the proliferation of labels. Companies in a competitive marketplace are motivated to make explicit claims for all positive "sellable" product attributes since they know that consumers may interpret the lack of labeling as a lack of the attribute. It is almost impossible, for example, to find a can of tuna in the United States without a dolphin-friendly label.

Ultimately, the company's bottom line sets limits on product differentiation and labeling. Not all attributes are worth the cost. "Predator-friendly" labeling, a campaign to promote wolf-friendly cattle ranching, has not had the success of the dolphin-friendly label. Likewise, "Made in America" or similar country-of-origin labeling is not always a valuable marketing attribute. Only if consumers believe that food produced in the United States is tastier, safer, or has some other distinctive attribute will the label be worthwhile to manufacturers or retailers. A company's benefit-cost criterion for deciding which information to include on the label helps ensure labeling efficiency. Only information valuable enough to consumers to justify the cost is included on the label.

Voluntary Labeling May Leave Information Gaps

Economic theory predicts that voluntary labeling is not always sufficient for disclosing information on all attributes consumers value or for guaranteeing information accuracy. One limitation to voluntary labeling may arise when an entire product category has an undesirable characteristic. In these cases, manufacturers do not compete on the attribute and therefore do not provide labeled or otherwise advertised information to consumers. For example, there was little information on the sodium content of processed foods before manufacturers were required to disclose it. The competitive process did not work well to reveal high-sodium products; few manufacturers competed to offer reduced-sodium products because less of this "health negative" attribute also tends to reduce taste.

Another limitation to voluntary labeling arises because manufacturers may provide only relative information. For example, a sausage label may boast "30 percent less fat than the leading brand" or a bacon label may brag "half the sodium." Although this type of information is valuable for deciding among competing brands of the same item, it is not complete. Lower fat sausage may still be a high-fat food. In many cases, consumers need information on absolute, not just relative, values to make fully informed consumption decisions.

Market forces may also be unable to eliminate partial disclosure and innuendo. For example, in early 2000, a manufacturer began marketing a wheat-flake cereal with a label proclaiming no "genetically engineered ingredients." A consumer advocacy group asked the FDA to take enforcement action against the manufacturer (and six others) on the grounds that the labels were misleading because they implied that the absence of genetically

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Third-Party Labeling Services Can Improve Market Efficiency

Third-party labeling services—services offered by an entity other than the buyer or seller—can increase a label's value by increasing its reliability and credibility. These services improve market efficiency by reducing uncertainty for producers and search and information costs for consumers. By increasing the value of information, third-party services can also boost the amount of information that producers provide to consumers through product labels. The four primary third-party labeling services are standard setting, verification, certification, and enforcement. A single entity could provide just one service or any combination of all four services.

- Through *standard setting*, third-party authentication helps ensure consumers that a firm's quality standards are meaningful for differentiation and are not simply empty marketing ploys. For example, "green," "sustainable," or "fair trade" could mean almost anything. Successful third-party standards establish a common terminology for goods possessing the same quality characteristics.
- *Verification* services can take the form of either testing (such as testing that pathogen contamination or other safety problems are under control) or process verification (such as inspecting production facilities and bookkeeping records to verify that firms have adhered to safety and quality standards and followed specified production practices) or segregation and traceability monitoring to verify the existence of process attributes, such as organic, fair trade, dolphin-safe, and sustainable. These services help producers strengthen their labeling claims by providing an objective measure of product attributes.
- Third-party *certification* provides evidence that testing and/or process verification has been completed and that the information supplied by firms or third-party verifiers is correct. Third-party certification provides an objective evaluation of the product's quality attributes and helps firms establish credible market claims. Through accreditation, third-party certification can also establish the credentials of other third-party services, including other third-party certifiers. For example, USDA accredits third-party certifiers for the National Organic Program.
- Third-party *enforcement* provides further assurances that quality claims are valid. Private third-party enforcement includes watchdog services and de-certification. Watchdog-type enforcement relies on negative publicity to discourage fraud. Firms with valuable reputations will be most susceptible to this type of enforcement. De-certification provides a clear indication that a product has failed to comply with quality standards. De-certification by government entities could carry the added penalty of prohibiting marketing of the product. Legal requisites concerning advertising and fraud provide the ultimate enforcement, even for voluntary claims.

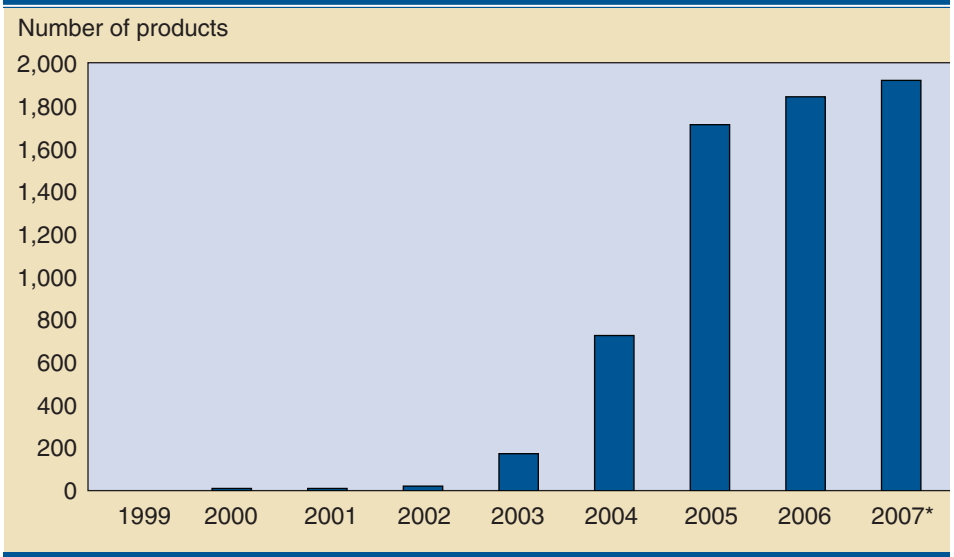
engineered ingredients distinguished the product from competing brands, when actually, no genetically engineered wheat is present in any food. The manufacturer removed the label.

Mandatory Labeling Has Targeted Information Gaps and Social Objectives

U.S. Government intervention in labeling began in 1906 with the Federal Pure Food and Drugs Act and the Federal Meat Inspection Act, which authorized Federal regulation of the safety and quality of food and prohibited sales of misbranded or adulterated foods. Lawmakers' primary objective in passing the acts' labeling regulations was to enhance fair competition by cracking down on deceptive marketing practices.

Enhancing fair competition and market efficiency has remained a primary motivation behind food labeling regulation for the past 100 years. Regulations ranging from the 1966 Fair Packaging and Labeling Act (requiring all consumer products in interstate commerce to contain accurate information to facilitate value comparisons) to the Organic Foods Production Act 1990 have sought to create a level playing field for producers by providing consumers with accurate information for comparing products and making choices. These regulations seek to increase informed consumption, not to alter consumption behavior. USDA's National Organic Program (the result of the Organic Foods Production Act) is designed to improve the comparability of organic labeling claims, not persuade more consumers to choose organic products.

Products claiming to have zero (or low) trans fat took off in 2003



*January 1 through October 1, 2007
Source: Datamonitor, Productscan Online.

Recently, government intervention in labeling has begun to target environmental or other spillovers associated with food production and consumption. Individual food consumption decisions can have social welfare consequences, including effects on the environment, health and productivity, labor conditions, and farm and industry structure. For example, consumers who eat tuna caught with encircling nets may inadvertently endanger dolphins. Economists describe these kinds of situations, in which the action of one economic agent affects the well-being or production possibilities of another in a way that is not reflected in market prices, as *externalities*.

When private consumption decisions result in externalities, social welfare may be maximized by a labeling choice that differs from one generated by private firms. In the tuna example, the potential benefits of providing information on labels include fewer dolphin deaths. For society as a whole, these potential benefits may outweigh the increase in profits that compose a private firm's labeling benefits. As a result, the social benefits of labeling may outweigh the social costs even though the private benefits do not outweigh private costs. The opposite could also be true. For example, the increased consumption of red wine resulting from labeling red wine with the information that moderate consumption may lower the risk of heart disease could result in higher costs from more birth defects, car accidents, and alcohol-related health costs. These social costs may outweigh the benefits of reduced

heart disease. On the other hand, the firm's net benefits may be positive: the costs of redesigning labels could be lower than the benefits of increased sales triggered by the health claim.

In externality cases where private firms do not supply relevant information, the government may decide to intervene in labeling decisions to try to maximize net social benefits. Government-mandated labeling can be a useful tool for achieving social objectives because of the potential power of information to influence consumption decisions. However, economic theory suggests that labels may be a poor means of addressing problems of externalities and advancing social objectives, such as protecting consumer health or the environment. Even if some consumers alter their behavior to account for externality costs, others do not, which means that the objective will probably not be met. For example, while some may purchase only free-range chickens, their goal of ending chicken cooping will not be achieved as long as most consumers continue to buy chickens raised in coops.

Economic theory identifies a number of policy tools that may be more suited to redressing externalities than information remedies. Bans, quotas, production regulations or standards, and Pigouvian taxes (which impose the externality cost of an activity on its producer) may be more successful than mandatory labels in adjusting consumption and production to better match socially optimum levels.

Empirical studies have found mixed results on the efficacy of labels in educating consumers and changing consumption behavior. These studies highlight the observation that consumers often make hasty food choices in grocery stores and usually do not scrutinize food labels. Researchers from Purdue University and the Ecole Nationale Superieure de Genie Industriel in France found that most participants in a marketing experiment did not notice the "GMO" (genetically modified organism) label on a food product until the label had been projected in large letters on a big screen.

Research also shows that a large number of warnings or a list of detailed product information may cause many consumers to disregard the label completely. And, even if consumers do consider each piece of information on a label, they may find it difficult to rank the information according to importance. For example, out of 10 warnings on a label, consumers may have difficulty picking out the most important. As a result, consumers may underreact to important information or overreact to less important information.

Labels May Influence Producers More Than Consumers

The primary impact of mandatory labeling regulations may stem from their effect on product reformulation and innovation, not on consumers' food choices. Changes in labeling regulations can open up areas of competition by allowing producers to compete on a new set of attributes, like health claims. To compete in these new areas, manufacturers may introduce new or reformulated products. Economists at the Federal Trade Commission found that regulation allowing health claims on cereal boxes resulted in significant product innovation and a plethora of cereals claiming to help reduce the risk of cancer. New labeling requirements can also spur product introductions or reformulations. Firms that are forced to disclose the negative characteristics of their products may choose to reformulate rather than risk losing sales from disclosure.

Manufacturers' reactions to labeling policy could be quite swift. In an effort to be the first to label—and capture first-mover profits—manufacturers may reformulate before consumer demand kicks in. FDA researchers found that leading up to mandatory trans fat labeling, most consumers did not know whether trans fats were good or bad. Nevertheless, in anticipation of mandatory labeling, manufacturers quickly jumped on the "no trans fat" bandwagon. From January 2005 through

the first 9 months of 2007, manufacturers introduced 5,459 products with labeling touting low or zero trans fat content.

Manufacturers may label and reformulate even though most consumers are not particularly interested in the new attribute. Sometimes a small niche group of consumers is enough to warrant the expense of reformulation and product innovation, particularly when the new ingredient or attribute does not affect taste or price and therefore does not alienate core groups of consumers. The more attributes manufacturers can stack in their products—eco-friendly, low-sugar, fair-trade, high-fiber—the more niche consumers they may be able to attract.

As a result of product reformulation, labeling regulation can affect consumer food choices more than would have been accomplished simply via consumers' reactions to labels. Even consumers who remain indifferent to or unaware of a new attribute may consume more of it if their usual food choices have been reformulated. For example, some consumers of popular snack foods may not know that their favorite nibbles are now made without trans fats. They are reaping the benefits of a potentially more healthful diet without changing their food choices. However, if the price of their favorite snack rises because of reformulation, consumers who do not want the new attribute are made worse off.

The benefits and costs of labeling regulation could be far reaching when manufacturers respond by reformulating. A shift to "zero trans fat" has triggered changes all along the processed food chain, including investments in new processing technologies and the development of soy and canola crop varieties with different oil characteristics. Other reformulations could have ramifications for the environment, animal welfare, and consumers' health and budgets.

These cases stand in stark contrast to those in which labels go unread and unnoticed. They also underscore the potential of labeling policy that works with industry incentives to affect the content and quality of American diets.

This article is drawn from . . .

Economics of Food Labeling, by Elise Golan, Fred Kuchler, Lorraine Mitchell, Cathy Greene, and Amber Jessup, AER-793, USDA, Economic Research Service, December 2000, available at: www.ers.usda.gov/publications/aer793/

Country-of-Origin Labeling: Theory and Observation, by Barry Krissoff, Fred Kuchler, Kenneth Nelson, Janet Perry, and Agapi Somwaru, WRS-04-02, USDA, Economic Research Service, January 2004, available at: www.ers.usda.gov/publications/wrs04/jan04/wrs0402/

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