Part Two: Case Studies and Examples

In this section, we illustrate the points raised in the theory section by considering three case studies in which the government has intervened in labeling and two examples in which the government has contemplated intervention. The case studies are nutritional labeling, dolphin-safe tuna labeling, and organic labeling. The examples are country-of-origin labeling and biotech labeling. For each case study and example we examine the amount of information that was voluntarily supplied by private firms, the role of third parties in enhancing the value of voluntary labeling, and the costs and benefits of government intervention in labeling. Each study involves different types of costs and benefits and different sets of political, legal, social, and scientific objectives and considerations.

Nutrition Labeling (Amber Jessup, FDA)

Nutrition labels are intended to help consumers choose more healthful foods. Providing nutrition information increases incentives for producers to create more healthful foods and aids consumers in choosing a healthier diet, which leads to lower costs from diet-related illnesses. In contrast to nutrition "standards," nutrition labels do not constrain choice, they allow consumers to balance their own nutritional preferences and requirements. The costs of mandatory food labeling include higher production costs and food prices. The health benefits of nutrition labeling are difficult to measure and in many cases have been obscured by other factors that affect health, such as lack of exercise, increased food consumption, and increased consumption of ready-to-eat foods. The benefits of mandatory nutrition labeling appear to exceed the costs.

Background

The National Labeling and Education Act (NLEA) required the inclusion of nutrition information on almost all packaged foods and set standards for the appearance of the nutrition label. Before implementation of the NLEA in 1994, food processors were required to include nutrition information on their products only if they made claims about the nutrient content of the food. Even among foods that did include nutrition information, the lack of standardization made it difficult to compare nutrition information across products and to interpret the information that was provided.

The impetus for passage of the NLEA arose mainly from two possible problems caused by a lack of nutrition information. First, if it is difficult for consumers to obtain information about the healthfulness of the foods they eat, food producers have less incentive to create more healthful foods. Second, without nutrition information, consumers may choose less healthful foods than they would with nutrition information. Since diet has a direct effect on health, the costs of poor diets may be high. Studies have estimated that obesity-related morbidity accounts for 6.8 percent of U.S. health care costs (Mokdad et al., 1999). Moreover, poor nutrition choices lead to poor health and higher health costs for reasons other than obesity.

Nutrition labels may be beneficial, but they are not costless. Mandatory nutrition labels require expenditure of government resources to create standards and enforce the labeling requirements. Food producers have to interpret and decide how to deal with the new regulations and must then test their products and either redesign their labels or reformulate their products. These costs to the government and food producers also impose costs on consumers in the form of tax dollars and higher food prices. Even if nutrition labels have value, there are some questions the government should answer before intervening. First, does the market provide the information without the government's intervention? Second, do the benefits of intervention outweigh the costs and if so, how can the net benefits be maximized?

The Firm's Decision Prior to NLEA—Many, But Not All, Foods Were Labeled

A producer's decision to include or exclude nutrition information depends on the costs and benefits to the producer. Producers will decide to include a nutrition label if sales revenues will rise by more than the cost of the label. FDA estimated 61 percent of annual sales of packaged foods had nutrition labels in 1988. This translated into approximately 40 percent of all brands (*Federal Register*, 1991), so for many producers the private benefits of nutrition labels exceeded the costs. In addition, as discussed in the theory section of the report,

some information is revealed by a firm's decision not to provide a label. For example, the lack of an organic label tells the consumer the food is not organic as clearly as would a label saying "not organic." However, this unfolding process is not as robust for nutritional content because of the complexity of nutrition information. Therefore, the producer's decision not to include a nutrition label may convey little information for consumers.

Third-Party Services

Nutrition labels are less beneficial if consumers have difficulty using them. A third-party service, in this case the Federal Government, had the potential to increase the benefits of nutrition labels by standardizing the label. Standards created by the government dictate the format of the label, the list of micro and macronutrients that should appear on the label, serving sizes, location of the label, and units of measurement. This standard aids consumers in making comparisons between products and in interpreting nutrition information.

Estimated Social Benefits of Mandatory Labeling Outweighed Costs

That the private market failed to provide nutrition information is not alone sufficient to justify mandatory nutrition labels. For society to be better off with mandatory nutrition labels, the social benefits of labeling must exceed the costs. FDA attempted to discover if the social costs or benefits were greater in the economic analysis of the proposed amendment to the nutrition labeling regulations (*Federal Register*, 1991). The analysis of the costs identified five specific costs firms would incur:

- administrative costs, which are the costs of interpreting the rule and deciding on an appropriate action in response to the regulation; estimated at $152 million for 8,900 firms.

- costs of testing to determine the nutrient content (would not affect firms that already included nutrition information on their label, since they had already carried out analytical testing); estimated at $112 million in the first year and $195 million over 20 years (includes only firms that were not labeling voluntarily).

- printing costs, the costs of changing the printing plates or other printing mechanism; estimated at $756 million (the largest costs associated with the required labeling).

- inventory costs, the dollar value of the labels in inventory that cannot be used due to the rule; estimated at $421 million (the agency estimated a total quantified cost of $1.5 billion over 20 years for the regulation).

- reformulation, changing product recipes, costs of which the agency did not attempt to quantify (difficulty in predicting a firm's reaction to the rule made it impossible to quantify the costs of reformulation).

FDA based the estimate of benefits on health improvements resulting from consumers' changing their diets in response to the nutrition information. The health benefits arising from the labeling changes were assessed using a three-step model: (1) changes in consumer diets, leading to (2) changes in health states, and (3) valuation of these health changes. The analysis focused on changes in consumption of fat and cholesterol and their effect on cancer and coronary heart disease (CHD). The first step of the model, changes in consumer behavior, hinged on how much consumers would change their diets based on the newly available nutrition information. To approximate the amount of the change, the FDA looked at a small study that measured how consumers changed their consumption of fat and cholesterol in response to nutrition information flags on grocery store shelves. This study found fat consumption fell an average of 1.25 percent and cholesterol an average of 0.1 percent for consumers at that grocery store.

This change in fat and cholesterol consumption was hypothesized, in turn, to lead to reduced incidence of cancer and CHD. FDA estimated that the decrease in fat and cholesterol due to the nutrition information would prevent 35,179 cancer cases, 4,024 cases of CHD, and 12,902 premature deaths over 20 years. Finally, to estimate the benefits of nutrition labeling, the agency valued this reduction in deaths and illnesses. Economists attempt to measure consumers' own value of reductions in illnesses and deaths by looking at consumers' willingness to pay for accepting small changes in the probability of death. For example, the wage premium to workers in risky jobs or consumer purchases of safety equipment represents implicit valuation of small probabilities of death. The willingness to pay for the reduction in illnesses and deaths brought about by

nutrition labeling was $3.6 billion and the reduced medical costs were $0.6 billion over 20 years.

This $4.2 billion may underestimate total social benefits. The analysis includes only cancer and CHD. Many other illnesses are diet related, such as diabetes, arthritis, and stroke. By excluding these other diseases, the analysis underestimates benefits. Also, consumers may value having nutrition information, even if they do not act on it.

Other policy tools targeted at improving nutrition, such as nutrition standards, do not provide the flexibility of nutrition labeling. For example, a nutrition standard limiting the amount of salt in a food would constrain all consumers' choices, not just those of consumers on low-salt diets. Consumers have different nutritional needs and concerns. What is a positive nutrition attribute for one consumer may be a negative attribute for another. For example, a consumer on a low-fat, low-carbohydrate diet may have different definitions of "good" and "bad" foods than one on a high-protein diet. A consumer on a low-carbohydrate, high-protein diet might find low-fat foods that have been formulated by substituting sugar for fat quite undesirable. Labeling is an effective policy tool when consumer preferences and concerns differ. Nutrition labels do not limit choice. By providing more complete, comparable information, standardized nutrition labels may even expand choice.

Conclusion

The record for nutrition labeling is mixed. On the positive side, consumers do read food labels and nutrition is an important consideration in food purchases. Results from USDA's Diet and Health Knowledge Survey, 1994-96, indicate that 65 percent of adults use the nutrition label (answering that they either always or sometimes use the label). The Food Marketing Institute reported in 1999 that 59 percent of consumers have changed purchases because of information on the product label, and nutrition is the second most important factor in consumer food purchase decisions after taste (FMI, 1999). Food producers have also responded by creating healthier foods. New Product News reported the introduction of more than 6,500 reduced–fat foods between 1995 and 1998. On the negative side, obesity in the United States has increased since mandatory nutrition labels. From 1991 to 1998 the prevalence of obesity increased from 12 percent to 17.9 percent (Mokdad et al., 1999). Although 12,902 lives saved over 20 years is a large number, it is small compared with the 280,000 to 300,000 deaths per year that continue to be attributed to obesity. Therefore, nutrition labeling has led to a small improvement in health that continues to be more than counterbalanced by the many factors that lead to obesity, such as lack of exercise, increased food consumption, and increased consumption of ready-to-eat foods.

Dolphin-Safe Tuna Labeling (Lorraine Mitchell, ERS)

The development of a market for dolphin-safe tuna illustrates the role of consumers in influencing food labels. This example shows that labeling alone may be insufficient to achieve environmental quality goals. However, labeling may be a second-best solution if the alternative is regulation of imports and likely international trade disputes.

Background

Dolphin-safe tuna labeling was one of many responses to concerns about tuna-fishing practices in which fishermen encircled dolphins with their nets, frequently entangling and killing the dolphins. The declining dolphin population led to the Marine Mammal Protection Act of 1972, which limited the killing of dolphins by U.S. fishing boats (but not by foreign boats). In the late 1980's, dolphins were still being killed, and some consumers boycotted tuna. In 1990, tuna-canning firms began purchasing tuna from fishermen who did not kill dolphins, and labeled the tuna "dolphin-safe." To prevent fraud, the government created a legal definition of "dolphin-safe." Also, the government imposed an import ban on tuna from countries whose fishing fleets killed more dolphins than U.S. fishermen did. Mexico filed a complaint with the GATT, which ruled that the import ban was illegal. In 1992, the United States joined an international environmental agreement for dolphin protection with Mexico and other countries. Signatories agreed to avoid killing dolphins, to adhere to a dolphin mortality quota, and to accept international observers on boats. The United States also banned the sale of "dolphin-unsafe" tuna. In 1997, Congress lifted the import embargo on tuna caught with nets and adjusted the meaning of "dolphin-safe" (Vogel, 1995; Buck, 1997). Figure 2 shows a timeline of regulations and dolphin deaths.

Private Firms Had Incentives To Produce and Label Dolphin-Safe Tuna

Private firms had an incentive to produce and label dolphin-safe tuna because enough consumers were willing to pay for this quality attribute (and many were unwilling to accept the alternative). The first widespread manifestation of consumer concern over dolphin deaths came in the late 1980's with the canned-tuna boycott. While it is unclear whether the boycott noticeably affected total sales, producers realized that dolphin-safety was a quality that some consumers wanted (Newsweek, 1990). For a time, two distinct types of tuna were sold: dolphin-safe tuna and generic tuna caught with any fishing method. The price premium dolphin-safe tuna commanded was measured at $400 per ton (Lones, 1989; Vogel, 1995).

The price premium reflected demand and the higher production costs of dolphin safety. Tuna fishermen faced two options for producing dolphin-safe tuna, each more costly than using encircling nets. Fishermen could comply with the dolphin-safety regulations if they caught tuna on lines. Another option was to continue using nets, but move the fishing boats to the western Pacific, where dolphins and tuna do not swim together (Vogel, 1995). Most U.S. fleets took this latter route, but then had to change their off-loading locations, since the move placed them closer to Asia.

The three major name-brand U.S. tuna-canning companies publicly pledged to sell only tuna caught without the use of purse seine nets. This indicated that the producers of canned tuna felt that they could supply the dolphin-safe tuna at a price that compensated them for their change in fishing locations and technologies (Lones, 1989; Vogel, 1995). Additionally, the three largest canned tuna producers had an 84-percent share of the market (U.S. House of Representatives, Committee on Merchant Marine and Fisheries, 1990). Action on their part dictated the outcome for the whole market.

Role of Standardization and Verification

In 1990, almost all firms began labeling their tuna as dolphin-safe. However, without a standard definition of "dolphin-unsafe," consumer groups worried that firms that used technology that was harmful to dolphins might be labeling erroneously (Vogel, 1995). The government responded by limiting the dolphin-safe label to tuna from fishing fleets that had not used drift nets or, in the Eastern Tropical Pacific, purse seine nets to encircle dolphins (U.S. House of Representatives, Committee on Merchant Marine and Fisheries, 1990).

The U.S. Congress recently expanded the definition of dolphin-safe to include tuna caught by fleets that encircle dolphins in nets, as long as no dolphins are killed. Many environmentalists argue that encircling dolphins can injure them, and disrupt feeding and mating. Others argue that a standard that prohibits any dolphin deaths is actually more stringent than one that prohibits encir-