

The Consumer Response to Food Labeling

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Executive Summary

We survey our empirical research on the consumer response to several types of food labeling, including: eco-labels, organic, genetically modified (GM), state agricultural product labels, European Protected Geographical Indication labels, BSE-tested beef labels, and “Fair Trade” labels.

The organic and environmentally friendly marketing movement is successful and growing rapidly. With consumer survey data, Loureiro, McCluskey, and Mittelhammer (2001) assess consumer choice of eco-labeled, organic, and regular apples. Consistent with the notion that the eco-label alternative is less desirable when compared with organic apples for certain consumers, some of the factors that have a positive and significant effect on the probability of organic choice have a negative impact on the probability of the eco-label choice. They find that consumers will pay a small premium for the eco-labeled apples.

In terms of GM food labeling, the perception of quality, and thus the consumer response depends on the country or culture that the consumer comes from. If there is an especially strong appreciation of tradition, such as in Europe and Japan, perceptions of high quality food may be correlated with using the same ingredients that one’s grandparents used in cooking. On the other hand, in China, there seems to be a love affair with things American and high technology.

Regional and local origin labeling is also gaining prominence. Loureiro and McCluskey use a hedonic approach in order to calculate consumers’ willingness to pay for fresh meat products that carry the Protected Geographical Identification (PGI) label, “Galician Veal,” in Spain. They find that the PGI label is an effective signal of quality only in combination with other indicators or signals of quality.

State agricultural product labeling has been used to differentiate specific states’ agricultural commodities from other states’ commodities. Quagraine, McCluskey, and Loureiro use a DYMIMIC modeling approach to analyze the effect of the “Washington Apple” label on price premiums. They find that the “Washington Apple” label has a positive effect.

The discovery of BSE in Japan caused anxiety about consuming beef. McCluskey et al analyze factors that affect Japanese consumers’ willingness to pay price premiums for beef labeled as BSE-tested using data obtained from a consumer survey in Japan. They find that food safety and environmental attitudes, reduction in beef consumption following the BSE outbreak, and being female all have a statistically significant positive effect on choosing beef labeled as BSE-tested.

The debate over fair trade and fair working practices and conditions is gaining prominence and media coverage. Loureiro and McCluskey analyze consumer preferences for apples labeled as being produced by farm workers who enjoy fair and safe working conditions. Although a “fair and safe working conditions” label is estimated to command a premium, they find that taste, quality and freshness are the highest ranked characteristics in terms of importance by consumers.

The major generalization that can be drawn from this group of empirical studies is that the consumer must perceive high eating quality in order for the food product to command a premium. This is particularly important for socially responsible and origin-based products.

Mandatory Process based labeling: To serve whom and at what cost?

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Consumers, according to various surveys, demand labels on foods produced using the process of genetic engineering (GE). The usual justification is to enable an 'informed choice'. But is consumer choice the purpose of food labels? Will such mandatory process-based labels provide meaningful information? Or simply satisfy curiosity?

Currently, food labels provide compositional information for nutritional and identified health hazards (e.g. presence of allergens). Regulations now require labels for any new foods, including those involving GE, IF there is a change in nutritional composition or if a component is toxic or allergenic. The information on the label is based on the quantifiable chemical characteristics of the food product, not on the process of introduction. The traditional policy is objective, verifiable and enforceable because the constituent properties of the food can be independently measured. However, a regulatory policy mandating labeling for other than composition requires not only a fundamental change in approach from product to process, but will also jeopardize the credibility of all labels. Process based labeling shifts from the objective accounting of the composition of foodstuffs to a largely subjective, untested, and often unverifiable system based on serial affidavits from multiple stakeholders. For example, if a food says "Contains 25mg sodium", anyone can send a sample of the food to a lab to objectively verify the sodium content. On the other hand, if the label says "This corn oil is produced from GE corn", the consumer has no independent and objective means to verify the label, because the composition of GE corn oil is identical to that of conventional corn. The label claim is based on often unverifiable assurances from retailers, bottlers, processors, grain handlers, farmers, and seed suppliers. The credibility of the label information diminishes at each transaction.

Another problem is the cost of process-based label compliance, and who pays that cost. Ordinarily, those consumers making demands pay for implementation, usually by a charge built into the cost of the goods. But here, many people demanding process-based labels desire to avoid buying the products, so how should they pay? Compounding that is the paradox of the reverse onus: the liability and cost of mandatory process-based labeling is borne disproportionately by non-GE foods. That is, the main cost, and liability, is less in putting a label on GE foods, but in keeping a label off non-GE foods.

Finally, the credibility of the food labeling system breaks down completely if we try to accommodate demands for process-based labeling, because almost all foods are composites of many different types of processes. Establishing a regulatory system to monitor every process undergone by every ingredient would entail a massive bureaucratic effort at huge cost and provide no additional health, safety or nutritional information to consumers, nor would it provide for 'informed choice'. The traditional, product- based food labeling system provides credible and enforceable health safety and nutritional information. Process based labeling offers no material advantage yet carries considerable costs, to be borne by all consumers.

Food Labeling and Advertising: Regulatory Issues and Evidence

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This paper examines original data on the information content of food advertising during the years 1977 to 1997, especially as related to nutrition and health issues. During these years, the Federal Trade Commission's policies governing advertising claims and the Food and Drug Administration's and the Department of Agriculture's rules for label claims changed several times, culminating in the *Nutrition, Labeling and Education Act of 1990* (NLEA) and the current NLEA-based labeling rules. More recently, the FDA has proposed changing key features of labeling policy following several adverse First Amendment rulings from the courts.

The policy changes during these years are most pronounced for health claims, that is, claims that explicitly tie a food to a health condition, as in "With the whole oats that can lower your cholesterol" or "Heart smart." The study finds that policy strongly affects the health claims that producers are willing to make. The use of health claims rose sharply in the late 1980s, when the policy was relatively relaxed, and fell significantly in 1990, when the rules were tightened. After the NLEA regulations were finalized in 1994, the use of health claims again rose, but remained significantly below 1990 levels. Reductions are most dramatic for heart claims in the fats and oils market, where in 1997 firms no longer compete on the health reasons to choose one fat over another.

Under the rules implementing the NLEA, health claims are limited to foods that are "best" on the dimensions relevant to the particular claim, "not bad" on other key dimensions, and "nutritious" in the sense that they provide a specified level of nutrition on at least one of six specified nutrients. By limiting health claims to these particular foods, regulators hoped that producers would be induced to increase promotion of these foods targeted for increased consumption. If this hypothesis is valid, the NLEA rules should have increased health claims for these foods, increase advertising for them, and reduce the use of health claims by sellers of other foods.

The evidence does not support the hypothesis that the new rules increased advertising or health claims for "good" foods. For instance, the number of fruit, vegetable, and juice advertisements dropped significantly after 1990, and only orange juice ads have health claims in the category. In fact, advertising does not increase in any of nine broad food categories in the post-NLEA years. The amount of advertising has fallen in some food groups targeted for reduced consumption, such as fats and oils, and meats and eggs.

Regulations also affected nutrient content claims, such as *low fat*. In the post-NLEA period, the focus of nutrition advertising shifted markedly to total fat, away from saturated fat, cholesterol, calcium, calories, and other nutrients. The use of comparative claims has also fallen for all nutrients except total fat.

EMERGING ROLES FOR FOOD LABELS: INFORM, PROTECT, PERSUADE

March 20, 2003

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Food Labeling Challenges in CFSAN

The challenges facing the Center for Food Safety and Applied Nutrition (CFSAN) with respect to labeling are daunting. CFSAN's concerns for food labeling currently fall into two major categories, nutrition and food safety. The nutrition role is one that is evolving rapidly based on new legal interpretations that say that FDA cannot assert that a label is misleading but rather must have consumer evidence that that is the case. CFSAN is responsible for labels and accompanying labeling for all foods (except meat and poultry) and dietary supplements. One of CFSAN's premier accomplishments has been creation of the nutrition facts panel and regulation of health and nutrient content claims on food labels. In the implementing regulations for food labeling, FDA's rule required a rigorous level of scientific support before allowing such claims on the label, assuming that consumers would *de facto* be misled by weakly supported claims. Recently however, in view of the First Amendment, the courts have found that there may be a way to communicate scientific evidence to consumers in a way that would not mislead them, even if the science is still uncertain. FDA is interested in consumer research that will show how to structure claims about health effects that have weaker science that will not be misleading to consumers.

In addition, many people in both the public and private sector are becoming more and more concerned about the increase in obesity and accompanying diabetes in the last few decades. One question is whether the label is as helpful as it can be in helping people selecting products that control weight gain? Are labeled serving sizes helpful to people in trying to control portions? Daily Values (DVs) based on a 2000-calorie diet work for people? Would it be helpful to include dietary guidance within the Nutrition Facts panel? Are people seeking more information from restaurants? With over 10 years of experience with the nutrition label perhaps it is time to revisit many of these issues.

Finally, CFSAN continues to seek the best ways to alert consumers to vital risk information such as the presence of allergens, or pathogens in food or side effects from consuming dietary supplements. Consumers may also want to know about facts such as whether a food has been irradiated or contains some generically modified ingredients and it is difficult to know how to best provide for such labeling. In short, the challenges for CFSAN with respect to both nutrition and food safety labeling are increasing and the need for understanding what kind of labeling works best for consumers has never been greater.

Bill Snape,
Defenders of Wildlife

Despite broad public support in the United States, Europe and an increasing number of countries in Asia, the U.S. dolphin-safe tuna program has come under attack by Mexico, Venezuela and several other Latin American countries. One significant reason for this hostility is the fact that Mexico and other countries have invested heavily in fishing fleets in the eastern tropical Pacific Ocean (ETP), which coincidentally is the only area in the world where large, mature (yellowfin) tuna swim directly underneath schools of dolphin. Thus, under the auspices of the Inter-American Tropical Tuna Commission (IATTC), fishermen have traditionally chased and then intentionally encircled dolphins with purse-seine fishing nets in order to catch the lucrative tuna below. Since the late 1950s, at least seven million dolphins have died from this practice, and at least three populations of dolphin are officially designated as biologically "depleted" under the U.S. Marine Mammal Protection Act (MMPA). In response to this carnage, the U.S. Congress has repeatedly passed legislation to encourage responsible fishing behavior as a price for access to the U.S. market, the largest in the world. Although countries such as Mexico have gained market access in the U.S. as a result of 1997 legislation, called the International Dolphin Conservation Program Act (IDCPA), the U.S. "dolphin-safe" tuna standard has not changed to Mexico's liking because scientists continue to conclude that the practice of intentionally encircling dolphins is having a "significant adverse impact" on depleted dolphin populations. Mexico, therefore, argues that it does not possess the market access that it desires, and has consequently threatened to take the U.S. to the World Trade Organization (WTO), and sue the U.S. tuna industry for damages. This discussion will focus on the U.S. litigation that has ensued under the MMPA, and the legal prospects for another trade/environment battle at the WTO.

Retailer Expectations for Country of Origin Labeling

Tim Hammonds

American Agricultural Economics Association Forum

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In May of 2002, Congress passed a sweeping new requirement for Country of Origin Labeling of perishable products at point of sale in the United States. A voluntary program period is in effect until September 30, 2004 when the program becomes mandatory. The fact that no major supermarket company has joined the voluntary program, despite the fact that retailers have a long history of supporting consumer information, tells you all you need to know about whether this will be a good idea or not.

Since USDA's interim compliance guidelines were published in October of 2002, the entire industry has been struggling to understand the implications for American agriculture. The answers that are emerging are not encouraging.

Despite the fact that selected cattlemen along with some of the fruit and vegetable growers were responsible for the passage of this act, it's becoming increasingly clear that the cost burden will fall primarily on cattlemen and meat packers. Beef will become more expensive relative to chicken and turkey (not covered under the Act) and retailers will move increasingly to prepackaged meats at the expense of in-store processing. In addition, this two-year "voluntary" period is not voluntary at all for cattlemen. Ranchers unable to document the history of their animals two years from now, including those being born right now, will find themselves unable to sell to supermarkets forcing their beef into the export or foodservice markets (restaurants are not covered). Traceability to the farm will ultimately be required by the industry for cattle, and traceability for fruits and vegetables will require segregation by source, perhaps all the way to the retail display case. No one yet knows how much this is going to cost.

Country-of-Origin Labeling of Beef Products: U.S. Consumers' Perceptions

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Executive Summary

Consumers are becoming increasingly concerned with the quality, safety and production attributes of their food. Consumers' concern with the safety and origin of beef is especially true in light of the recent European and Japanese BSE outbreaks and occurrence of E-coli 0157:H7 in U.S. beef. The origin and processes used to produce beef products are not apparent to the consumer through experience (consumption) or visual inspection of the product. Therefore, production attributes that may be valued by consumers, such as organic, non-GMO, and country-of-origin are considered credence characteristics. Truthful labeling of credence characteristics allows the consumer to judge the product before purchasing.

This research quantitatively and qualitatively evaluates U.S. consumers' preferences for country-of-origin labeling (COOL) of beef products. Surveys and experimental auctions were used to elicit consumers' preferences and willingness-to-pay (WTP) for COOL. In the summer of 2002, 273 consumers from Denver and Chicago were paid \$50 for their participation in a beef palatability study. Upon arrival consumers filled out a survey about their meat shopping habits, meat preferences and demographics. Additionally, consumers answered questions about their preferences and WTP for beef products with labels identifying the country-of-origin of the product. After completing the surveys, consumers visually evaluated and bid on a pair of steaks, one with a "Born and Raised in the United States" label and one unlabeled. The steaks were nearly identical in color, size, external fat and marbling.

In the survey, consumers indicated their WTP per pound for a beef steak with a COOL. The majority of consumers, 64%, indicated that they were willing to pay a 1-25% premium for COOL. However, 29% of the consumers indicated that they would not pay a premium. The average premium for COOL was only 9%. Consumers indicated a desire to support U.S. producers, beliefs that U.S. beef was of higher quality, and food-safety concerns about imported beef as rationale for preferring COOL. Consumers were asked to also rank the importance of a series of beef attributes. Freshness, food-safety inspection and price were the three most desired attributes. Source assurance, locally-raised and COOL received average rankings of "somewhat desirable."

The WTP results from the experimental auction portion of the study were of greater magnitude than the WTP values from the survey. In the auction, 75% of the consumers bid more for the steak with the "Born and Raised in the United States" label. On average, consumers were willing to pay a premium of 20% for the steak with the U.S. label. The premiums for the U.S. labeled steak ranged from no premium to more than 100%; however, the majority of consumers (40%) were willing to pay a 10-25% premium.

Consumers appear to be willing to pay a premium for COOL. Those who were willing to pay the most for the label believed the label signified increased food safety and quality. Additional research is necessary to determine if the premiums are substantial enough to cover the additional costs associated with the certification and traceability programs necessary to validate the label.

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Product labeling, as a policy instrument, regulates the presentation of product-specific information. Success of food labeling policies is closely tied to correcting market inefficiencies related to the provision of information, and the ability to increase consumer welfare through better consumer protection and the provision of the possibility to make better informed choices. Such labeling policies are either used as a substitute for more restrictive forms of government regulation, such as command-and-control options, process or performance standards, or as a complement to other policies. Food safety and the beef crises in Europe has lead to new European label standards attempting to restore consumer confidence through enacting mandatory traceability and origin labeling, specifically for beef.

The objectives of this paper are twofold. First consumer interest in beef label indications is considered through assessing importance and attention scores for beef label indications. It has long been understood

that the presupposition that consumers want, will acquire and, having acquired, will adequately understand and use the information supplied on labels is invalid. Therefore, the focus is on which indications are used (important and/versus attended) by consumers in general, and more specifically, in terms of demographic consumer profiles such as gender, age, education level, and presence of children.

Next the row of publicity campaigns aimed at raising consumer awareness and knowledge of the new beef labeling rules is considered. The objective relates to the need to communicate and educate consumers in order to have a potential impact. Together with the introduction of the mandatory beef labeling regulation in Europe, consumer information campaigns were initiated. Questions pertain to the effectiveness of the implemented communication efforts, and what can be learnt from the experience in Europe in advent of the new U.S. beef labeling regulation. Both objectives are addressed based on cross-sectional data and the specification of ordered probit models.

Ordered probit models are estimated for each of twelve label attributes with each attribute being scored with a 5-point likert scale (5 = highest score). The twelve attributes are: label; country of origin; country slaughtered; meat type; slaughter house; cutting unit; traceability; slaughter date; quality guarantee; quality label; control organization; expiration date. Probabilities of giving high (or low) scores for each attribute are derived from the order probit including the changes attributed to demographics and advertising. Surprisingly, the model shows the country-of-origin to be of little importance to consumers while the quality and expiration date are the most important. A major effort to educate the population about the new labeling system through advertising is shown to increase the probability some of the label attributes but not the country-of-origin attribute. Furthermore, divergence between consumer attention to the label versus importance is shown analytically for the label overall and for specific attributes. All label attributes are ranked in terms of the most important to the least important using the probit probabilities. Finally, major policy implications for the European system of labels are presented along with implications for the U.S. labeling system.

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Title: The Battle of Taste Buds and Environmental Convictions: Which Drives Demand for Ecolabeled Seafood?

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Executive Summary:

Ecolabeling has been identified as a potential means to create market-based incentives for environmentally-friendly products and production processes, by creating consumer demand for these products. The increased demand is expected to result in higher prices and/or increase market shares. There have been several previous studies of consumer demand for ecolabeled seafood products showing that there is a demand for these products. However, most studies have focused on consumers choosing between labeled and unlabeled products of the same species. This paper will report on a recent survey in which consumers were asked to trade-off amongst seafood products when there were 4 different species, ecolabeled and not, and varying prices. The hypothesis tested is whether or not species drives decisions, or in other words, to see if taste buds rule consumer choices at the expense of environmental convictions and what role prices play in product choices.

Nutritional Labels, Health Claims, and Consumers' Diets*

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Executive Summary

During the last two decades, product labeling has become a popular policy tool, particularly with respect to the provision of nutrition and health information. It culminated in the passage of the Nutritional Labeling and Education Act (NLEA) in 1990. The NLEA instituted sweeping changes to replace the voluntary system of labeling established by the Food and Drug Administration (FDA) in 1973. It requires mandatory nutrition labeling for almost all packaged food and strict regulation of nutrient content and health claims. In addition, it also requires a new format for the nutrition information panel called "Nutrition Facts", standardization of serving sizes, and strict regulation of use of descriptors and explicit health messages. The FDA estimated that the NLEA would cost the food industry \$1.4 billion to \$2.3 billion and the government \$163 million over the next 20 years. These estimates, however, are contingent upon the presumption that consumers' diets are improved by their use of food labels.

This paper evaluates the impact of nutritional labels and health claims on consumers' diets. The Healthy Eating Index (HEI) developed by the USDA is used as a measure of diet quality in evaluating the effectiveness of label use. The responses to food label use are expected to vary across individuals and across the types of information on the label. Thus, five types of nutritional label information- nutritional panel, serving size, nutrient content claim, the list of ingredients, and health claims- are examined to determine which type of label information provides the most improvement, if any, in diet quality. Results indicate that nutritional labels provide measurable benefits by improving diet quality of Americans by as much as 4-6 points on a 100 point Healthy Eating Index scale. Among nutritional panels, serving sizes, nutrient content claims, list of ingredients, and health claims, the use of health claims on food labels provides the highest level of improvement in diet quality.

* Based on Kim, Nayga, and Capps (2001).

Some economic implications of public labeling.

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Today's consumers are faced with a plethora of food certification labels concerning safety, nutrition, characteristics, geographic origin, and organic status, just to name a few. There are eco-labels to identify green products, labels proclaiming that a product is "cruelty free," labels indicating whether milk comes from cows treated without the BST hormone, and there is increased debate over whether to affix labels to foods that have been irradiated or processed from inputs using genetically modified organisms (GMO). As an inspection seal of a product's characteristics, certification insures (to some extent) the credibility of the information, namely that a labelled product conforms to some standardised principle. Governmental grading and inspection encompass both voluntary and mandatory certification labels. In the U.S. alone, there is a great diversity of grading and inspection services offered by such public agencies as the Food Safety and Inspection Service, the Agricultural Marketing Service, and the Food and Drug Administration.

In this paper, labels such as those just mentioned are subsumed within a unified analysis. Labeling encompasses both certification and promotion, but our study focuses on public labeling where the system is defined and/or organized by some regulatory authority. Such public labeling includes two types of programs: (i) when a public agency directly controls the entire labeling process and (ii) when private, third-party middlemen (or producer associations) certify those goods that meet the particular specifications defined by a regulator. We focus on the effect of labeling on consumers' choices.

Arrow *et al.* (1996) show how economic arguments may be used to inform one's rationale when using a cost-benefit analysis. In this paper, we argue that there are important economic considerations to any discussion of public policy on food labeling. Rather than dealing with any particular public debate, however, we demonstrate our arguments using more stylized economic mechanisms. From a policy perspective, this paper seeks to address the following questions. First, when should a regulator promote public labeling? Second, if a labeling program is deemed necessary, what will be the limits to and the market distortions from such a policy? For each issue, we present the main (and latest) contributions in both the empirical and theoretical literatures, so as to provide policy makers with resources to help inform their decisions. It is important to keep in mind when reviewing this literature that, although a label is proposed as a tool for mitigating certain market failures that have resulted from imperfect information (Akerlof, 1970), the labeling itself may generate other distortions that can countermand any positive effect coming from the added information. After reviewing this literature, we expound on a point that we feel has been overlooked, namely the optimal way to finance labeling. In other words, once the decision to label a good has been made, who should pay for a public label?

The European Food labeling Policy and Regulation: How Good Is at Informing, Protecting and Persuading?

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and
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Summary

The paper describes the main features and the roots of the present EU legislation on food labels. Special attention is paid to the 1992 legislation that bases some of the labeling policy on the geographic origin of the products, referring to a somewhat peculiar concept of quality where tradition and local know-how is emphasized. The legislation for organic products is also described. Then, the paper describes some of the main successes of the EU policy, in particular in the area of traceability, prices and effects on rural development, market segmentation and regional economy impact. However, the present EU policy also suffers from major limitations. The first one is the lack of international recognition of the EU labels. The system also generates a large bureaucracy, and does not always favor high quality products because of moral hazard problems with collective denominations. These problems are particularly important in the wine sector, where the EU system, or more exactly the French and Italian traditional systems that are at the basis of EU regulation, face a dramatic problem of competition from brand named products.

The future of the EU policy is then discussed, in relation to the changes in the international framework. Indeed, the status of the EU labeling system relative to the international trade agreements is uncertain. The recognition of the system of denominated origins in countries such as the United States has been a bone of contention for years. In non-EU countries, the quality attributes that are emphasized differ a lot from the ones that are seen as important in the EU. The resulting international legislation is therefore sometimes at odds with the EU conception. The issue of competition with private brands, of conflict with names at the national as well as the international level is then raised. Overall, the judgment on the ability of the EU system to inform consumers and make it possible for producers of high quality to differentiate their products is ambiguous.

Marketing of Safe Food through Labeling

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A series of successive food safety crises has scattered consumers' confidence in the food system's vigilance in delivering high quality and safe food. In this environment of suspicion, regulators, producers, and retailers alike are trying to regain consumers' confidence by redesigning legislation and quality assurance programs. These efforts can only succeed, if new standards of process and product attributes are successfully communicated. One way to accomplish such communication involves product labeling.

However, the direct labeling of food safety attributes has proven difficult. Due to the natural processes underlying food production and scientific uncertainties about cause-effect relationships, the inherent variability of safety attributes prevents direct labeling of product safety attributes. Instead, public and private actors have focused on labeling process attributes.

Consumers also are looking for process attributes as signals of product quality. This is documented, e.g., in the increase in demand for products coming from organic agriculture after the dioxin crisis in Belgium or the BSE crisis. While BSE and the Nitrofen scandal in Germany have demonstrated that organic agriculture is not immune to food safety risks, consumers consider it less prone to systematic failure.

Private businesses have focused on process labeling that allows differentiating their products. Private brands and labels conveying quality information may enable the market to provide consumers with the level of information they desire, thus transforming credence and experience goods into search goods. However, government may need to enforce labeling if consumers do not trust or place any importance on private labels. Intervention will also be required when labeling is not in the firms' interest, and thus a private solution to the signaling problem does not exist.

This problem of inefficient information disclosure, and the concern that every consumer should have access to a safe food supply, has led many countries to strengthen their regulation. Recent reforms in Europe focus on the labeling of process attributes and on product traceability. New regulations of nutritional claims currently are underway.

This paper reviews issues involved in the private labeling of food safety. In a first instance, we will look at consumers' search for quality signals and the quality issues at stake. A second part discusses changes in the production and retail environment and the resulting development of new labeling initiatives in Europe. The creation of the Quality and Safety (Q&S) label in the German meat industry serves as an example. The program engages farms, slaughterhouses, processors, and retailers and installs process control and traceability. However, as it tries to cover all actors of the meat production chain, vigilance may not be at its best. Due to its wide scope, the differentiation of products does not seem possible and the investment in reputation may be at risk.

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The role of advertising, collective action and labelling in the European wine markets

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The main difference between the wine sector in the European Union (EU) and other countries is the differentiation between table and Appellation d'Origine Controllee (AOC) wines. Wines in the AOC system are often made by blending local grape varieties; grape production is regulated, with a maximum yield allowed per unit of land; and production regions are very delimited. In other words, wine-making in the EU is very regulated and based on tradition, with a big role assigned to local wines which name is generally associated with the production region, e.g., Bordeaux, Chianti, Rioja. The AOC system has proven successful in guaranteeing a good reputation for many European wines and in assuring relatively high profits for wine producers even for the relatively small vineyards typical of most European countries.

Having traditionally been the biggest producers and exporters of wine, countries like France, Italy, Spain and Portugal in the last few years have witnessed, however, a tremendous growth of New World winemakers. Indeed, the wine producers of Australia, California, Chile, and other emerging wine producing countries, are challenging the European leadership in world markets. Common characteristics of the emerging wine producing countries are the lack of detailed rules, i.e., the freedom to experiment with new techniques; the bigger size of the farming, wine-making and trading operations; the production and marketing of wines according to single varieties, e.g., Chardonnay, sometimes associated with the production region; and a very intense use of marketing investments.

Contrary to the New World countries, the wine industry in Europe is very fragmented and appears relatively uninterested by the consolidation processes that are taking place worldwide, especially in Australia and the USA. Apart from some notable exceptions, e.g., the Champagne or Bordeaux regions, the wine industry in Europe is made of many small firms, which may lack adequate capital for the required investments in new technologies and marketing policies. A partial solution to the size problem, according to some practitioners, may be the collective organization of farmers through cooperatives and other producer groups. Indeed, cooperatives in the European wine industry are very common and in some regions have a considerable market share of production and processing facilities.

In this paper we consider the role for collective action in advertising investments, investments that are needed to enter into new markets, and we model the choices facing producers in regions where both AOC (high quality) and table (low quality) wines are produced. We show when it is profitable for producers to join forces to make the fixed investments in advertising needed to enter new markets. In the initial situation, producers in a given region are producing both high and low quality quality wines to be sold in traditional markets facing Cournot competition. By joining forces with producers of other regions to invest in advertising, producers may penetrate into new markets. We show that entering new markets may be profitable according to the relative size of the markets, the fixed costs of advertising, and the market situation in the internal and new market. Since the advertising requires more regions to join forces, we study the incentives of individual regions using the advances of the literature on cartel stability. We discuss the policy implications of the results, arguing about possibile modifications of the AOC system to facilitate collective action and improve investment levels.