Consumer Preferences and Willingness to Pay for Food Labeling: A Discussion of Empirical Studies

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We discuss empirical research on consumer preferences and willingness to pay for several types of food quality or attribute labeling. The selected categories we include are eco-labels, GM food labels, U.S. state agricultural-product labels and European Protected Geographical Indication labels, BSE-tested-beef labels, and "Fair Trade" labels. We discuss generalizations that can be drawn from the studies as a group. Most importantly, we find that consumers must perceive high quality in order for the food product to command a premium. Furthermore, the perception of quality may sometimes differ across consumers.

Driven by increasing consumer demand for healthier, safer, and more environmentally friendly food products, the use of food labeling has become increasingly important in recent years. The use of credible labels allows firms to signal quality or the presence of specific desirable attributes, and in so doing to create the potential for premiums based on this signal. Caswell and Padberg (1992) discuss the possibility of food labels as the answer to the imperfect information dilemma in food safety. Also Caswell and Mojduszka (1996) argue that quality signaling through product labeling promotes market incentives with relatively limited government involvement.

Producers and firms have responded by marketing organic, eco-labeled, and other quality-differentiated foods, sometimes with labels that explicitly claim that the products were produced with sound environmental, animal-welfare, and fair-labor practices. Labels stating that products are free of genetically modified (GM) ingredients are being used throughout the world. Other labels claim that the product has specific safety, nutrition, and quality characteristics or comes from a specific geographic area.

In this paper we discuss empirical research on consumer preferences for several types of food quality or attribute labeling. The selected categories we include are eco-labels, GM food labels, U.S. state agricultural product labels and European Protected Geographical Indication labels, BSE-tested-beef labels, and "Fair Trade" labels. Admittedly, this is far from an exhaustive list of food labeling categories. For example, there is a substantial literature on the consumer response to nutrition labeling, which is not covered in this paper. To conclude, we discuss generalizations that can be drawn from these studies as a group.

Eco-labels

An eco-label identifies environmentally preferable products based on an environmental-impact assessment of the product compared to other products in the same category.[1] The environmental-impact assessment includes the production process, use, and disposal of the product (Blend and van Ravenswaay 1999). While eco-labels require compliance with standards, they are still considered market-oriented, because they do not involve direct government regulation. The U.S. Department of Agriculture (USDA) set national standards for organic food on October 21, 2002. (See the national organic label in Figure 1). According to the USDA, organic food is produced without using most conventional pesticides, fertilizers made with synthetic ingredients or sewage sludge, bioengineering, or ionizing radiation. Since eco-labeled products and organic products are marketed as "environmentally friendly," they will sometimes appeal to the same consumers.

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[1] See Consumer's Union (CU) Eco-label website (http://www.eco-label.org/home.cfm) to learn more about how eco-labeled products compare with conventional products and to read CU's report card for specific eco-labels.

Figure 1. The U.S. Department of Agriculture's Organic Label.

Figure 2. The Food Alliance Label for Sustainable Agriculture (an Eco-label).

The environmentally friendly marketing movement is successful and growing rapidly. The German eco-label, Blue Angel, introduced in 1978, has become a successful instrument in environmental protection and marketing. Nearly 4000 certified products use it. The Euro eco-label, launched in 1998, regulates and sets common standards for all eco-labels in the European Union countries. Eco-labeling programs are flourishing in the U.S. food industry. From the Pacific Northwest to the Northeastern United States one can find eco-labeling programs that deal with the production of environmentally sound fruits, vegetables, and milk. Some examples include Core Values Northeast, California Clean, Environmental Quality Initiative, and The Food Alliance (*Good Housekeeping* 2000). In addition, many regional sustainable agriculture programs use labels to assure acceptance in regional niche markets for "green" products.

There remains disagreement over whether eco-labels increase consumers' willingness to pay (WTP) for a particular product. Blend and van Ravenswaay (1999) examined willingness to pay for eco-labeled apples and concluded that at a $0.40 per pound premium, over one-third of surveyed households would be willing to buy eco-labeled apples. Ethier et al. (2000) found that 30.6 percent of phone respondents and 35.5 percent of mail-survey respondents said that they would choose to join the Green Choice™ program for "green" electricity at a $6/month price premium. Although Nimon and Beghin (1999) identified a premium for organic cotton fibers, they could not find evidence of a premium associated with environmental friendly dyes. Additionally, Teisl, Roe, and Levy (1999) studied how eco-marketing and seals of approval affect consumer choice and preference rankings of electricity suppliers and how reactions differ across consumers. They conclude that eco-labels are more likely to affect the preference rankings of products rather than the choice of products.

Loureiro, McCluskey, and Mittelhammer (2001) assess consumer choice among 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 the organic choice have a negative impact on the probability of the eco-label choice. However, the perceived quality of eco-labeled apples has a positive and significant effect on the probability of choosing eco-labeled apples. This is consistent with the conjecture that eco-labeled apples satisfy a niche market for consumers who may not be as willing to trade off quality of the fruit for higher environmental or food-safety benefits compared with organic consumers.

In a separate study, Loureiro, McCluskey, and Mittelhammer (2002) estimated the mean WTP for Food Alliance apples (see Figure 2). The Food Alliance (TFA), a non-profit third-party certifying organization based in Portland, Oregon, uses market-based incentives to promote sustainable agricultural practices in the Pacific Northwest. Farmers who reduce or eliminate pesticides, conserve the soil and water, and provide safe and fair working conditions become eligible to market their products with the TFA-approved seal. TFA-approved farmers hope to earn the recognition of environmentally conscious shoppers and garner public goodwill. TFA has the only labeling program in the Pacific Northwest that is defined by farm practices and requires third-party

monitoring.

The premium is small (about 5 cents per pound over an initial price of 99 cents), reflecting the overall difficulty with garnering a premium based on "environmentally sound" practices. Complicating eco-label valuation is the fact that eco-labels may work better for some products than for others, implying that a general "recipe" to stimulate "green markets" may not work. In a study related to this point, Wessells, Johnston, and Donath (1999) found that consumers do not value all certified fish and seafood species in the same way, stating higher subjective willingness-to-pay values for certified salmon than for cod. Furthermore, consumers from different countries may respond differently to the same eco-label. Johnson et al. (2001) investigated differences in consumer preferences for eco-labeled seafood across the United States and Norway. They found that consumer preferences differ by price premium, species, consumer group, and certifying agency.

Many researchers have also studied consumer demand for organic or other products with low or no pesticide usage. Thompson (1998) offered a comprehensive survey of consumer studies on organic foods.

Genetically Modified (GM) Foods

Many European and Japanese consumers believe GM foods pose a threat to human health. They fear short- and long-run consequences for their own health and that of their offspring. The Chinese consumer response is not well documented. Consumer attitudes and behavior toward genetically modified food products are complex and differ across cultures. As Caswell (2000) points out, these different sets of beliefs and risk perceptions motivate different government support and labeling policies for GM products.

In recent years, a number of consumer studies have examined the consumer response to GM foods in different countries. A subset of these studies quantify whether the consumer is willing to pay a premium for food that does not contain GM ingredients. In general, studies that investigate the relationship between consumer characteristics and food-safety concerns find that sociodemographic variables (such as education and income) perform poorly as explanatory variables for purchasing decisions regarding GM food products. The exception is that women generally are more concerned with food safety.

In an experimental setting, Lusk et al. (2001) determined consumer willingness to pay for non-GM corn chips among students. Results from the calibration, using scale-differential questions, indicated a high level of acceptance of GM products. Additionally, results from the double-hurdle model bids indicated that 70 percent of participants were unwilling to pay for non-GM chips.

Baker and Burnham (2001) used a conjoint analysis survey to determine U.S. consumer response to genetically modified foods. The hypothetical product used for the consumer choice model in this study was a box of corn flakes and the attributes evaluated included brand, price, and source of corn (GM or non-GM corn). Results of the logit analysis showed that cognitive variables (opinions, beliefs, knowledge) have a great influence on consumer preferences. The level of risk aversion, knowledge about genetic modification and opinion about genetic modification are highly significant in explaining the purchasing decision.

Lusk, Roosen, and Fox (2003) estimated consumer willingness-to-pay for beef in France, Germany, the United Kingdom, and the United States using a variety of quality variables including whether the cattle were fed GM corn. Their results suggest that European consumers place a higher value on beef from cattle that have not been fed genetically modified corn than do with U.S. consumers.

Burton et al. (2001), in a study of consumer attitudes toward genetically modified foods in the United Kingdom, concluded that male shoppers were willing to pay an extra 26 percent to avoid genetically modified animals and plants, while female shoppers were willing to pay an extra 49.3 percent. Boccaletti and Moro (2000) estimated an ordered probit model using data collected from a consumer survey in Italy in 1999. Their results suggest that WTP is mainly affected by income and information. For the WTP analysis, the study categorized the GM foods into four types of products with positive characteristics: lower use of pesticides, improved nutritional characteristics, improved organoleptic characteristics, and longer shelf life. Interestingly, with the use of the positive product categories "the rate of acceptance seemed to increase." (p. 261). This introduces the larger issue that the type of information provided can affect outcomes. In the

conclusion section, we suggest this as an area of future research.

In order to learn more about GM food preferences in different countries, comparable surveys were conducted in different Asian and European countries by McCluskey and colleagues at Washington State University. The surveys solicited demographic information, respondents' attitudes about the environment and food safety, and their self-reported knowledge and perceptions about biotechnology. Furthermore, respondents were asked if they were willing to pay the same price for the GM food as a corresponding, non-GM product. In Japan, consumers were asked about GM noodles and GM tofu. In China, consumers were asked about GM rice and GM soy oil, and in Norway, consumers were asked about GM bread and about salmon grown with GM feed.

The estimation results for Japan (McCluskey et al. 2003a) show that variables representing food-safety and environmental attitudes, self-reported knowledge about biotechnology, self-reported risk perceptions of GM-foods, income, and education all significantly increase the necessary discount required for consumers to choose GM foods. The results indicate that Seikyou members, on average, want a 60-percent discount on GM noodles compared to non GM noodles. Increasing self-reported risk perceptions toward GM foods and preferences for domestically produced food both significantly increase the discount required for Norwegian consumers to choose GM foods (Grimsrud et al. 2003). The results indicate that, on average, the Norwegian consumers in our sample want a 49.5-percent discount on GM bread compared to conventional bread.

Interestingly, the estimation results for China present a very different picture (Li et al. 2003). The results show that positive opinions regarding biotechnology significantly increase the premium that Chinese consumers are willing to pay for GM foods. For GM rice, age significantly decreased the consumers' willingness to pay for GM foods. The results indicate that Chinese consumers, on average, were willing to pay a 38.0-percent premium for GM rice over non-GM rice and a 16.3-percent premium for GM soybean oil over non-GM soybean oil. This is not surprising, given that 23 percent of the survey respondents were very positive about the use of biotechnology in foods and 40 percent of the respondents were somewhat positive about the use of biotechnology in foods. It makes sense that consumers in China, who have low perceived levels of risk (82 percent felt there was little or no risk associated with GM foods) would be willing to pay a premium for GM products.

Chinese consumer attitudes concerning biotechnology may reflect the Chinese government's traditionally strong support. Thus far, the controversy taking place in Europe and Japan is not evident in China, but new regulations regarding labeling and safety testing are most likely leading to increased public awareness of the application of biotechnology to agricultural products.

Japanese and Norwegian cultures both place a great deal of value on tradition. This world-view extends to the food they eat and feed their children. The vast majority of our Chinese respondents have positive attitudes toward the use of biotechnology in agriculture and, in general, toward science. The marketing outlook for GM foods in China is optimistic. Younger people are more willing to purchase the GM food products with product-enhancing attributes, which indicates that the Chinese market may be even more open to GM foods in the future. Additionally, government investment in biotechnology remains strong as China works to fulfill its self-sufficiency food policies.

State Agricultural-Product Labels and Protected Geographical Indication (PGI) Labels

Regional and local origin labeling is also gaining prominence. The increasing demand for high-quality and high-status products and a desire for cultural identification have created a growing market for value-added products that carry a strong identification with a particular geographic region. The recent food-safety scares in Europe have added to the need to know the origin of specific foods. This trend in consumers' preferences has led the European Union to introduce protected designation-of-origin labels and protected geographic identification labels. These programs promote regional and "traditional" products in unique value-added niche markets and help preserve traditional production that otherwise may disappear in a competitive market. In the United States, state promotion programs and many local agencies promote state- and locally grown products such as Washington apples, Idaho potatoes, California Peaches, and Florida Citrus.

A protected geographical indication represents

the name of a region or a specific place that is used to describe an agricultural product or a foodstuff from in that region. It also possesses a specific quality, reputation, or other characteristic attributable to that geographical origin. Its production, processing, or preparation takes place in the defined geographical region. Loureiro and McCluskey (2000) used a hedonic approach to calculate consumers' willingness to pay for fresh meat products that carry the PGI label (see Figure 3)—in this case, "Galician Veal" in Spain. The results indicate that if the PGI label is present on high-quality cuts of meat, one can obtain a premium up to a certain level of quality. The label is not significant for either quality extreme. This suggests that the PGI label is an effective signal of quality only in combination with other indicators or signals of quality, but it may have diminishing marginal returns with respect to quality. Interestingly, the variables that can be interpreted as consumer-perception variables (*quality*) and quality-signal variables (*supermarket* and *label*) perform better statistically than do the standard intrinsic-quality cue variables (*fat* and *color*). In a similar study, Jekanowski, Williams, and Schiek (2000) conducted a survey in Indiana about local products, showing that quality perceptions play an important role toward consumer acceptance of local products.

State agricultural product labeling has been used as a marketing strategy to differentiate specific states' agricultural commodities from those of other states. For example, if Washington apples are perceived as high quality relative to apples from other states, then one would expect Washington apples to command a premium in the market. Quagrainie, McCluskey, and Loureiro (2003) used a dynamic multiple-indicator multiple-cause (DYMIMIC) modeling approach to estimate the collective reputation of Washington apples as a dynamic latent variable based on price premiums and marketing data rather than on data provided by expert assessment. The estimation results indicate that apples that use the "Washington Apple" label (see Figure 4) in their advertising obtain a price premium. It appears from the results that the apple industry in Washington benefits from a built-up reputation from the past.

Patterson et al. (1999) studied the case of "Arizona Grown"-labeled food products (see Figure 5), and found that consumers were largely unaware of Arizona's program, and the promotion was found to have little to no effect on products sales. Govindasamy, Italia, and Thatch (1998) reported that 77 percent of consumers surveyed were aware of the Jersey Fresh label and state-sponsored program. Also in relation with the Jersey Fresh state-sponsored program, Adelaja, Brumfield, and Lininger (1990) conducted an analysis of New Jersey's efforts to promote locally grown tomatoes. They found out that Jersey Fresh tomatoes had higher own-price and income elasticities of demand, suggesting that consumers perceived them to be a high-quality product.

Figure 3. European Union PGI Label.

Figure 4. Washington Apple Label.

Figure 5. Arizona Grown Label.

BSE-tested Beef

The discovery of Bovine Spongiform Encephalopathy (BSE), commonly known as "mad cow disease," in Japan caused anxiety about consuming beef and beef products. Until the BSE outbreak, the prospects for the Japanese beef market had been promising. Annual Japanese beef consumption had tripled over recent decades to about 21 pounds per person (Brooke 2001), and the Japanese beef market had been liberalized, allowing the importation of fresh/chilled and frozen beef. The BSE scare caused a sudden extreme disruption in consumer demand for beef. As a result, there was a sudden drop in sales of beef, which hurt the Japanese beef industry as well as major beef exporters to Japan.

McCluskey et al. (2003b) analyzed factors that affect Japanese consumers' willingness to pay price premiums for beef labeled as BSE-tested and estimated the mean willingness to pay (WTP) for this product using data obtained from a consumer survey in Japan. They found 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 the WTP for BSE-tested beef. In their sample, consumers are willing to pay an average 56-percent premium for BSE-tested beef.

In the aftermath of the French BSE-outbreak, Latouche, Rainelli, and Vermersch (1998) conducted a survey in France in 1997, eliciting information from consumers on consumption patterns and reasons for possible changes, as well as consumers' attitudes about quality labels and sanitary norms. Consumers were asked how much of a premium they would be willing to pay for beef that could not transmit the human variant of BSE. The meat products were medium-quality, low-priced minced steak with little risk of vCJD, and high-quality, higher-priced beef with no risk of vCJD. The mean WTP premiums for the two meat products (including zero bids) were 22 percent of the original price and 13.7 percent of the original price, respectively. Furthermore, the authors found that employed and highly educated respondents, as well as respondents who preferred labeled or organic products, indicated higher WTP, while respondents who are involved in agricultural activities were less willing to pay a premium.

Fair Trade/Fair Labor Practices

The debate over fair trade and fair working practices and conditions is gaining prominence and media coverage. As an example, many coffee brands use fair-trade labels (see Figure 6) in their marketing strategies. Fair-trade labels have also been used for cocoa and bananas. The academic literature dealing with consumer response toward these types of labeling that signal socially conscious or socially correct production practices is not very abundant. Loureiro and McCluskey (2003) analyzed consumer preferences for apples labeled as being produced by farm workers who enjoy fair and safe working conditions and estimated consumers' mean willingness to pay (WTP) for these apples. The sample consisted of apple consumers who were randomly interviewed in Seattle, Washington in 2002. They found that younger consumers and those who have higher levels of concern about worker safety are more likely to be willing to pay a premium for apples labeled as being produced by farm workers who enjoy fair and safe working conditions. Overall, they obtain positive willingness to pay premium estimates for these socially responsible products.

All respondents were asked to indicate the importance of a series of nine characteristics in choosing apples: price, freshness, taste, color, variety or type of apple, size, quality, where the apple was grown, and how the apple was grown. Importance was rated on a 10-point scale with "1" meaning "not at all important" and "10" meaning "extremely important." The "fair and safe working conditions" estimated premium notwithstanding, taste, quality, and freshness are the highest ranked characteristics in terms of importance by consumers. All three characteristics have mean ratings greater than 9 on the 10-point scale. "How the apple was grown" was

Figure 6. Fair Trade Label.

next to last, with a mean response of 5.30 on the 10-point scale. It seems that although consumers state that they will pay a premium for socially responsible products, they will only purchase the products if they perceive them to be of high quality.

Conclusions and Future Research

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

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 use of the same ingredients that one's grandparents used in cooking. On the other hand, in China, there seems to be a love affair with American things and high technology. Chinese consumers may have entirely different preferences.

The increasing demand for high quality, health, and social-responsibility concerns will make product-attribute labeling an important marketing tool for the future. As food products with unobservable quality attributes are increasingly marketed, the information issues and their implications for food-supply chains, markets, and trade will continue to gain prominence. More research is needed to understand these markets and information issues and evaluate policies.

In our opinion, areas of the greatest potential interest for future research will include comparisons of different valuation approaches, such as stated vs. revealed preferences (for example, see Loureiro, McCluskey, and Mittelhammer 2003); the effect of information on consumer preferences and willingness to pay; and incorporation of other disciplines, such as sensory input, psychology, and marketing.

References

Adelaja, A. O., R. G. Brumfield, and K. Lininger. 1990. "Product Differentiation and State Promotion of Farm Produce: An Analysis of the Jersey Fresh Tomato." *Journal of Food Distribution Research* 21(3):73–85.

Baker, G. A. and T. A. Burnham. 2001. "Consumer Response to Genetically Modified Foods: Market Segment Analysis and Implications for Producers and Policy Makers." *Journal of Agricultural and Resource Economics* 26(2):387–403.

Blend, J. R and E. O. van Ravenswaay. 1999. "Consumer Demand for Eco-labeled Apples: Results from Econometric Estimation." *American Journal Agriculture Economics* 81:1072–1077.

Boccaletti, S. and D. Moro. 2000. "Consumer Willingness-to-Pay for GM Food Products in Italy." *AgBioForum* 3(4):259–67.

Brooke, J. 2001. "In Japan, Beef Business Sinks in a Sea of Skepticism." *New York Times* 4 November:A2.

Burton, M., D. Rigby, T. Young, and S. James. 2001. "Consumer Attitudes to Genetically Modified Organisms in Food in the UK." *European Review of Agricultural Economics* 28:479–498.

Caswell, J. A. 2000. "An Evaluation of Risk Analysis as Applied to Agricultural Biotechnology (with a Case Study of GMO Labeling)." *Agribusiness* 16(1):115–123.

Caswell, J. A. and E. M. Mojduszka. December 1996. "Using Informational Labeling to Influence the Market for Quality in Food Products." *American Journal Agriculture Economics* 78: 1248–53.

Caswell, J. A. and D. I. Padberg. 1992. "Toward a more Comprehensive Theory for Food Labels." *American Journal Agriculture Economics* 74: 460–468.

Ethier, G. R., G. L. Poe, W. D. Schulze, and J. Clark. 2000. "A Comparison of Hypothetical Phone and Mail Contingent Valuation Responses for Green-Pricing Electricity Programs." *Land Economics* 76:54–67.

Good Housekeeping. 2000. 230(1):156.

Govindasamy, R., J. Italia, and D. Thatch. 1998. "Consumer Awareness of State-sponsored Marketing Programs: An Evaluation of the Jersey Fresh Program." *Journal of Food Distribution Research* 29(3):7–15.

Grimsrud, K. M., J. J. McCluskey, M. L. Loureiro, and T. I. Wahl. 2003. "Consumer Attitudes toward Genetically Modified Food in Norway." IMPACT Center Working Paper.

Jekanowski, M. D., D. R. Williams II, and W. Schiek. 2000. "Consumer's Willingness to Pur-

chase Locally Produced Agricultural Products: An Analysis of an Indiana Survey." *Agricultural and Resource Economics Review* 29(1):43–53.

Johnson, R. J., C. R. Wessells, H. Donath, and F. Asche. 2001. "Measuring Consumer Preferences for Ecolabeled Seafood: An International Comparison." *Journal of Agricultural and Resource Economics* 26(1):20–39.

Latouche, K., P. Rainelli, and D. Vermersch. 1998. "Food Safety Issues and the BSE Scare: Some Lessons from the French Case." *Food Policy* 23:347–356.

Li, Q., K. R. Curtis, J. J. McCluskey, and T. I. Wahl. 2003. "Consumer Attitudes Toward Genetically Modified Foods in China." *AgBioForum* (forthcoming).

Loureiro, M. L. and J. J. McCluskey. 2003. "Are Consumers Willing to Pay for Fair and Safe Working Conditions for Farm Workers?" mimeo.

Loureiro, M. L. and J. J. McCluskey. 2000. "Assessing Consumers Response to Protected Geographical Identification Labeling." *Agribusiness* 16(3):309–320.

Loureiro, M. L., J. J. McCluskey, and R. C. Mittelhammer. 2003. "Are Stated Preferences Good Predictors of Market Behavior?" *Land Economics* 79(1):44–55.

Loureiro, M. L., J. J. McCluskey, and R. C. Mittelhammer. 2002. "Will Consumers Pay a Premium for Eco-labeled Apples?" *Journal of Consumer Affairs* 36(2):203–219.

Loureiro, M. L., J. J. McCluskey, and R. C. Mittelhammer. 2001. "Assessing Consumers Preferences for Organic, Eco-labeled and Regular Apples." *Journal of Agricultural and Resource Economics* 26(2):404–416.

Lusk, J. L., M. S. Daniel, D. R. Mark, and C. L. Lusk. 2001. "Alternative Calibration and Auction Institutions for Predicting Consumer Willingness to Pay for Nongenetically Modified Corn Chips." *Journal of Agriculture and Resource Economics* 26(1):40–57.

Lusk, J. L., J. Roosen, and J. A. Fox. 2003. "Demand for Beef from Cattle Administered Growth Hormones or Fed Genetically Modified Corn: A Comparison of Consumers in France, Germany, the United Kingdom, and the United States." *American Journal of Agricultural Economics* 85(1):16–29.

McCluskey, J. J., K. M. Grimsrud, H. Ouchi, and T. I. Wahl. 2003a. "Consumer Response to Genetically Modified Food Products in Japan," *Agricultural and Resource Economics Review* 32(2):222–231.

McCluskey, J.J., K.M. Grimsrud, H. Ouchi, and T.I. Wahl. 2003b. "After the BSE Discoveries: Japanese Consumers' Food Safety Perceptions and Willingness to Pay for Tested Beef." IMPACT Center Working Paper.

Nimon, W. and J. Beghin. 1999. "Are Eco-labels Valuable? Evidence from the Apparel Industry." *American Journal Agriculture Economics* 81: 801-811.

Patterson, P. M., H. Olofsson, T. J. Richards, and S. Sass. 1999. "An Empirical Analysis of State Agricultural Product Promotions: A Case Study on Arizona Grown." *Agribusiness: An International Journal* 15(2):179-196.

Quagrainie, K. K., J. J. McCluskey, and M. L. Loureiro. 2003. "A Latent Structure Approach to Measuring Reputation." *Southern Economic Journal* 67(4):966-977.

Teisl, M. F., B. Roe, and A. S. Levy. 1999. "Eco-Certification: Why It May not Be a 'Field of Dreams.'" *American Journal Agriculture Economics* 81:1066-1071.

Thompson, G. D. 1998. "Consumer Demand for Organic Foods: What We Know and What We Need to Know." *American Journal Agriculture Economics* 80(5):1113-18.

Wessells, C. R., R. J. Johnston, and H. Donath. 1999. "Assessing Consumer Preferences for Eco-labeled Seafood: The Influence of Species, Certifier and Household Attributes." *American Journal Agriculture Economics* 81:1084-1089.