

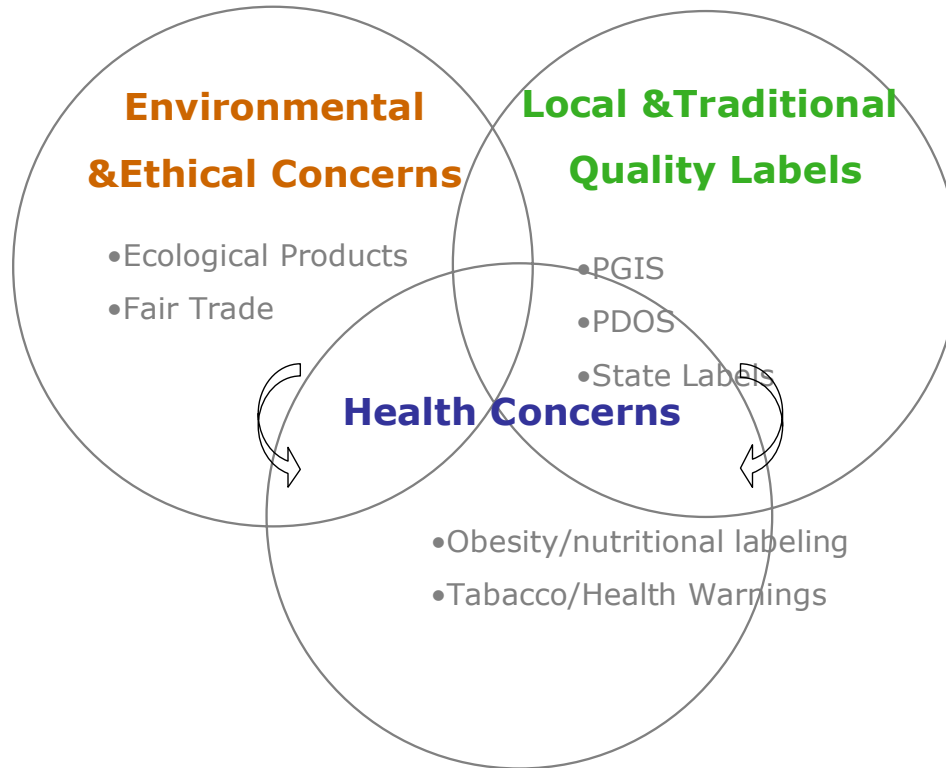
Valuation of Food Labeling

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Food Labels

- Voluntary and mandatory labeling programs are becoming popular in order to inform consumers about product characteristics.
 - Reduce Information Asymmetry
 - Contribute to Product Differentiation
 - If credible, reward producers using environmentally friendly practices, or promote rural and local foods, etc.

WIDE VARIETY OF FOOD LABELS



Common Characteristics

- Most labels are used to claim characteristics NOT OBSERVABLE even after consumption (low-fat, PGI meat, etc): *credence goods*
 - *Credibility of Single Producers* is a Main Concern
 - *Collective Reputation* for Collective Labels (PGI labels)
 - *Third Party Certification Mechanisms*: different types

Difficulties in the evaluation process

- Relying on individual survey data which may suffer different biases
 - Bias: difference between what you do and what you say
 - Need to overcome bias related problems in the valuation process
 - Need to compare with previous studies and other results
 - Micro level studies are difficult to become generalizable!!

How to Measure their Value

- Analyzing market data (*Revealed Preference Data*)
 - Demand Analysis
 - Hedonic Models
- Simulated markets (*Stated Preference Data*)
 - Contingent valuation
 - Conjoint/Choice experiments

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- Let's see Some Examples of the Implementation of the Different Methods....

Measuring the Value of Protected Geographical Labels in Spanish Meat

PGI labels as marketing tools

- ## Quality Signals

- Reduce asymmetric information problems.
- Transmits collective reputation of the product.
- Create value-added differentiated products based on quality, “image and tradition”.
- Promote market niche for local/specialty products.

Geographical Labeling in Europe: What type of labels?

- Protected food names carry one of the three labels:
 - Protected Geographical Identifications (PGI)
 - Protected Designations of Origin (PDO)
 - Certificate of Specific Character (CSC)



Galician Veal



- One of the five meats that has been recognized with a PGI label in Spain.
- Meat with high reputation and excellent quality.
- Very well known in the Spanish market.



Statistical Analysis: Hedonic Model based on Market prices and characteristics

- A hedonic model (Rosen, 1974) reveals the marginal prices of meat attributes.
- A hedonic model for fresh meat can be represented as:

$$\text{Price}(\text{meat}) = f(\text{type of meat cut, color, freshness, label, etc.})$$

Data Description

- 132 families reported consumption habits of meat (between March 31 and June 1, 1997)
- Total of 962 observations were collected, containing:
 - Behavioral Information (quantity, price, place, etc)
 - Consumers Perception of Meat (fat, color, etc)
 - Socio-economic Characteristics (family members, income, etc)

Econometric Models

- Estimation Procedure: Ordinary Least Squares

$$Price = \beta_0 + \beta_1 Quality + \beta_2 \mathbf{Label} + \beta_3 Supermarket + \beta_4 Sale + \beta_5 Sirloin + \beta_6 ExpenSteak + \beta_7 OtherHigh + \beta_8 Ribs + \beta_9 Stew + \beta_9 Fat + \beta_{10} Color + \varepsilon$$

$$Price = \beta_0 + \beta_1 Quality + \beta_2 Supermarket + \beta_3 Sale + \beta_4 Sirloin + \beta_5 Expen.Steak + \beta_6 OtherHigh + \beta_7 Ribs + \beta_8 Stew + \beta_9 \mathbf{Label * Sirloin} + \beta_{10} \mathbf{Label * ExpenSteak} + \beta_{11} \mathbf{Label * OtherHigh} + \beta_{12} \mathbf{Label * Ribs} + \beta_{13} \mathbf{Label * Stew} + \beta_{14} Fat + \beta_{15} Color + \varepsilon$$

Results

- *Does the presence of the PGI bring a price premium?*
 - Yes. The presence of the PGI label is highly and positively significant in the price equation.
- *What other factors affect the price of meat?*
 - The type of meat cut, perceived quality, and place of purchase.

Results (cont.)

- *Is the price premium the same across meat varieties?*
 - No. PGI label plays a “selective” role determining meat prices, carrying a higher premium for higher quality cuts.
 - PGI label is not significant for either extreme of quality.

Recommendations for the Industry

- Increasing demand for high quality and health concerns will make PGI labeling an important marketing tool.
- **We recommend a selective use of the PGI labels for high quality products, where the potential for an excellent reputation is high.**
 - For example, no PGI labels should be used in stew meats.

Food Labeling: Geographical Labeling

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

U.S Example: State Promotion Labels, Washington Apples

- Share certain similarities with the European PGIS
 - Promotion campaigns are popular in order to enhance product recognition
- In a recent paper we assess how state promotion builds up reputation of a product, and how reputation affects market prices
- Promotion is in a way an investment in reputation that contributes to product differentiation
 - Quagraine, Kwamena K., Jill J. McCluskey, and Maria L. Loureiro. 2003. “A Latent Structure Approach to Measuring Reputation”, *Southern Economic Journal*, 69:204-215.



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- Nutritional Labeling and Obesity: Market Data in the U.S. but not in Europe

Percentage of Individuals Obese and Overweight in Selected Countries

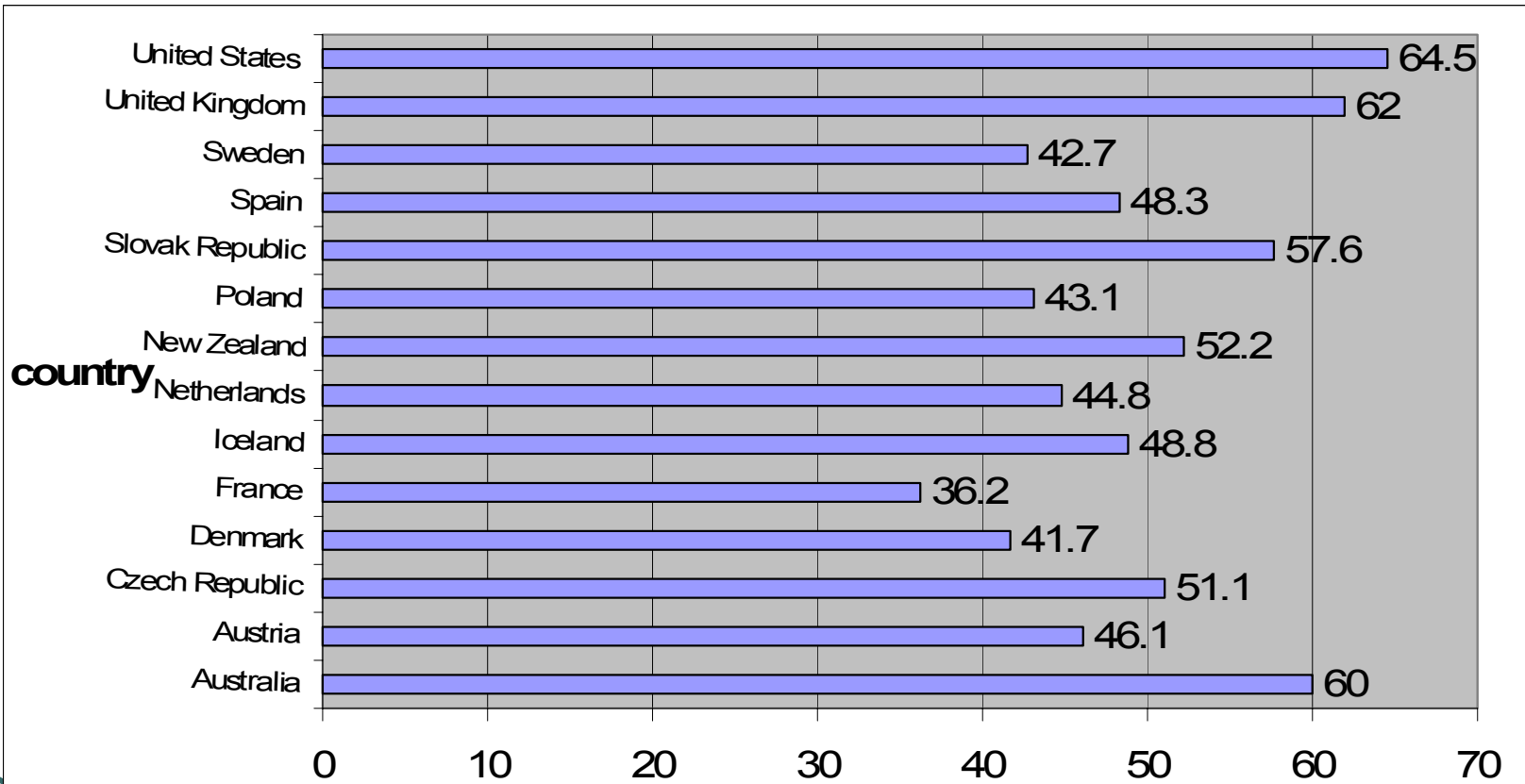
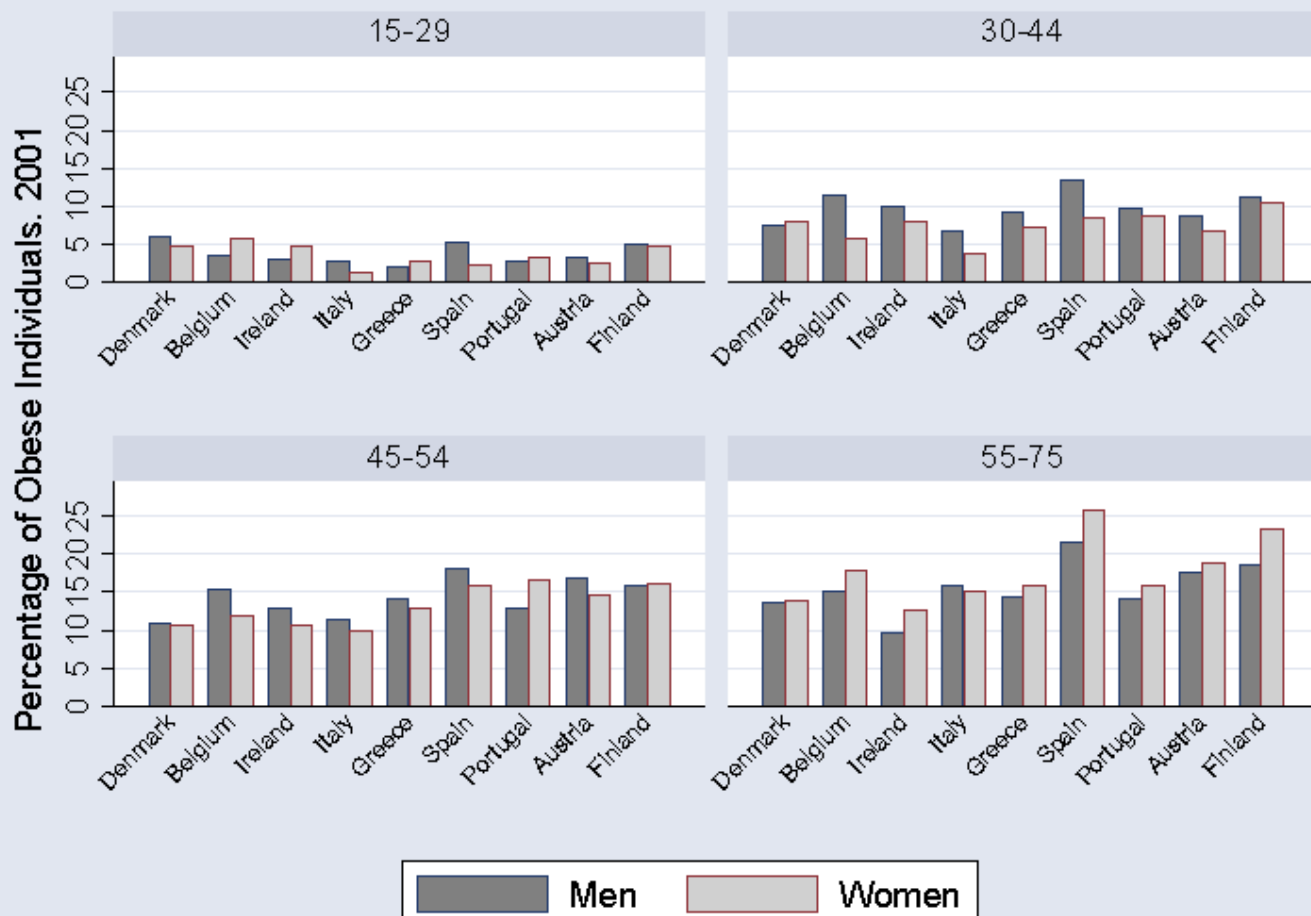


Figure 1: Incidence of Overweight Problems Internationally

Obesity by Age and Country: ECHP



Nutritional labeling: The US Nutritional Panel

Nutrition Facts
 Serving Size 1 Tbsp (15g)
 Servings per Container 32

Amount Per Serving

Calories 70 **Calories from Fat 60**

% Daily Values*

Total Fat 6g	10%
Saturated Fat 1g	5%
Cholesterol 10mg	3%
Sodium 95mg	4%
Total Carbohydrate 2g	1%
Dietary Fiber 0g	0%
Sugars 1g	
Protein 0g	

Vitamin A 0% • Vitamin C 0%
 Calcium 0% • Iron 0%

Percent Daily Values are based on a 2,000

Your Store **Reduced Fat 50%^{Less} Fat** **Ground Beef** **than regular ground beef**

Nutrition Facts

Serving Size: 4 oz. (112g)
 Servings per container varied
Calories 230
 Fat Cal 140
 *Percent Daily Values (DV) are based on a 2,000 calorie diet.

Amount/Serving	%DV*	Amount/Serving	%DV*
Total Fat 16g	24%	Total Carb. 0g	0%
Sat Fat 7g	35%	Fiber 0g	0%
Cholest. 70mg	23%	Sugars 0g	
Sodium 75mg	3%	Protein 22g	42%

Vitamin A 0% • Vitamin C 0% • Calcium 0% • Iron 15%

- specify the number of servings per container and the key nutrients of a serving
- in a 2,000-calorie-per-day diet (expressed as percentage of the Daily Value).
- Serving sizes on the label are standardized so that consumers can compare nutritional information between products.

The European Food Labels: Food Profiling



The Keyholder symbol applied in Sweden and Norway by the ICA retail group

- Non standardized
- Non-comparable information
- Still voluntary, unless a nutritional claim is made

International Concerns about Nutrition Labeling Practices

- **In the EU provision of nutritional information is done on voluntary basis.**
- **EU Nutritional Labeling Directive is under review. A proposal is expected during 2007.**
 - In a EU recent survey, it was found that 56% of all food products included tabular nutrition labeling and 44% had no tabular nutrition labeling.
Inconsistent labeling information
- Only those products healthier use labels (signaling and disclosure) and these become marketing tools.
- **In the United States the Nutrition Labeling and Education Act (NLEA) was passed in 1990.**
- The resulting nutrition labelling regulations, which became fully effective in 1994, provide consumers with an unprecedented amount of nutrition information by mandating nutrition labelling on virtually all processed foods.
- The Nutrition Facts Panel's contents, regulated by the FDA, are specific to the food product or food product category

Food Labeling: Eco-labels

- Voluntary labeling programs that signal sound environmental production practices.
- Ecolabels reduce asymmetric information between producers and consumers:
 - Help consumers to choose environmentally friendly products.
 - Reward producers for their environmental leadership.
- Popular business strategy in domestic and international markets.

Nutritional Labeling coverage

EU

- Large Geographical Differences:
 - UK: 75 % of products are labeled
 - Spain: 54% of foods carry a label
 - Germany: 50% of foods are labeled
 - Poland: 41% of foods carry labels

Assessing the Benefits of Nutritional Labeling

- Most previous studies were conducted in the US. They have shown that:
 - After the NLEA 1991, unhealthy foods were transformed to healthier foods given that they were obligated to disclose their nutritional properties (Mathios, 1995).
 - Labels help consumers selecting healthier food choices (Kim, Nayga and Capps, 1995).
 - Labels increase knowledge of nutritional properties of foods among consumers.

Benefits of Labeling

- However, in spite of these encouraging results, recent studies show limitations of the NLEA to reduce obesity.
- Variyam (2006) finds that the implementation of the NLEA was associated with a decrease in body weight and the probability of obesity among non-Hispanic white women.
- **One thing is to pass a cost-benefit analysis and another is to change radically consumers' behavior (Golan et al.,2000).**

European Preferences Towards Food Labeling

- Spanish study (Loureiro, Gracia and Nayga, ERAE, 2006) shows that consumers are supportive of future food nutritional labeling.
 - On average, in a sample of 400 representative shoppers the mean WTP for nutritional labels carried by energy dense food was about 11% of the initial price.
 - Individuals watching their diets due to medical reasons and obese were willing to pay on average more.

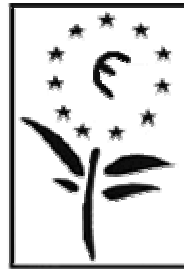
Spanish Preferences Towards Food Labeling



- However, choice experiments show that the presence of a known brand is more important than the level of nutritional information provided when facing shopping decisions.
- *Can marketers savvies offset more stringent regulations with better promotion campaigns and more interesting product design?*

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- When no market data are available: The case of eco-labels.....
 - **The case of the TFA-Ecolabel**

International Ecolabeling Programs



The Food Alliance Ecolabel

FoodAlliance.org



Certification Programs

Our Producers & Handlers

Find Certified Products

Get Certified

- TFA: The Food Alliance.
- Non profit organization located in Portland-OR.
- Market-based incentives to promote sustainable agricultural practices.
- Farmers who meet TFA criteria become eligible to market their products with the TFA-Approved seal.
- Only labeling program in the Northwest based on farm practices.

Motivation

- Increasing public awareness of environmental issues.
- Is there a market potential for this new eco-label?
- Growing empirical literature dealing with *“green marketing.”*
- Studies in ecolabels have drawn different conclusions about consumers’ WTP.

What is ecolabeling?

- Voluntary labeling programs that reduce asymmetric information between producers and consumers:
 - Help consumers to make environmental friendly decisions.
 - Reward producers for their environmental leadership.

Research Goals

- Is there a market for ecolabeled apples?
- What type of consumers choose ecolabeled versus organic apples?
- Are consumers willing to pay a premium for ecolabeled apples?
- Were consumers consistent between their valuation and their real market choice?

Data collection: 1.Survey

- Conducted in cooperation with TFA in two stores in Portland area.
- 285 completed questionnaires:
 - Consumers' purchasing habits of fresh apples.
 - Consumers' environmental and food safety attitudes.
 - Elicitation of WTP estimates with a double-bounded format type of questions.
 - Socio-demographic characteristics of the sample.

2. Experiment: Coupons

- Numbered coupons were linked to numbered surveys.
- Each consumer received three coupons (for ecolabeled, organic and regular apples).
- Randomly assigned discounts.
- Coupons expire the same.

Results: Factors that affect selection and WTP for ecolabels

- 52% of the consumers were willing to pay a premium for ecolabeled apples.
- Determinants of selection and WTP for ecolabeled apples are difficult to identify.
- Presence of children has negative effect on choosing ecolabels, but a positive one on WTP.

Are consumers “really” willing to pay a premium for ecolabeled apples?

- Two-Steps model in which,
 - First equation models stated preferences with a double-bounded model.
 - Second equation models actual behavior as a function of stated preferences and other attributes and socio-economic characteristics.
 - We will test whether consumers acted consistently in the market experiment with their stated preferences.

Real Behavior and Consistency Results

- Discount coupon is a significant factor purchasing ecolabeled apples.
- Food safety and environmental attitudes have a positive effect on actual purchase of ecolabeled apples.
- Results shows evidence that consumers' stated preferences are consistent with their stated preferences.

Publications: Eco-labels and Organic Products

- Loureiro, Maria L., Jill J. McCluskey, and Ron C. Mittelhammer, 2001. "Assessing Consumers Preferences for Organic, Eco-labeled and Regular Apples," *Journal of Agricultural & Resource Economics* 26(2): 404-416 .
- Loureiro, Maria L., Jill J. McCluskey, and Ron C. Mittelhammer, 2002. "Will Consumers Pay a Premium for Eco-labeled Apples?" *Journal of Consumer Affairs* 36(2): 203-219.
- Loureiro, Maria L., Jill J. McCluskey, y Ron C. Mittelhammer (Feb. 2003). "Are Stated Preferences Good Predictors of Market Behavior?" *Land Economics*, Febrero 2003, 79(1):44-55.

Conclusions

- Food labeling studies are becoming very popular as marketing strategies
- Useful determining marketing potential for new products
- Different types of valuation exercises:
 - Interesting and most useful results when contrasting revealed and stated behavior: what you say and what you do.

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- Some other applications...



Country of Origin Labeling

- To assess consumer preferences for COOL.
- Topic of political relevance

Colorado Consumer Study:

- 273 Consumers in Colorado
- Near 500 surveyed in the US
- Surveyed on WTP for COOL Hamburger and Steak
- Bid on “USA Guaranteed: Born and Raised in the U.S.” Labeled & Unlabeled Steak



COOL publications

- Loureiro, Maria L., y Wendy Umberger.
“Assessing Consumer Preferences for
Country-of-Origin Labeled Meat Products.”
Journal of Agricultural and Applied Economics,
33:161-171, 2005.

GM-Labeling

- Loureiro, Maria L., y Marcia Bugbee. 2005. “Enhanced GM Foods: Are Consumers Ready to pay for the potential benefits of biotechnology?”, *Journal of Consumer Affairs*, 39:52-70.
- Grimsrud, Kristine M., Jill J. McCluskey, Maria L. Loureiro and Thomas I. Wahl. 2004. “Consumer Attitudes toward Genetically Modified Food in Norway”, *Journal of Agricultural Economics*, 55:75-90.

Fair Trade

- Loureiro, Maria L., and Justus Lotade. 2004. “Does Fair Trade and Ecolabels in Coffee ‘Wake Up’ consumer Conscience?”, *Ecological Economics*, 53:129-138.
- Maria L. Loureiro y Justus Lotade. 2005. “Interviewer Effects on the Valuation of Goods with Ethical and Environmental Attributes”, *Environmental and Resource Economics*, 30:49:72.