# Consumer's willingness to pay for sustainable food products: do food miles labels matter?

**10th Wageningen, International Conference on Chain and Network Management. Wageningen, May 23rd-25th, 2012**

Documento de Trabajo 12/03

**GOBIERNO DE ARAGON**

Departamento de Ciencia, Tecnología y Universidad

# Consumer's willingness to pay for sustainable food products: do food miles labels matter?

**Tiziana de Magistris**

(**tmagistris@aragon.es**)

**Azucena Gracia**
**Rodolfo M. Nayga**

**GOBIERNO DE ARAGON**

Departamento de Ciencia, Tecnología y Universidad

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# 1. Sustainable consumption: current debate

## Sustainable consumption

- Refers to consumption partners that are economically, socially and environmentally compatible with all areas of the food system, starting from production to waste disposal.

- One example of sustainable consumption is buying foods produced under environmentally sustainable methods (e.g., organic food).

# 1. Sustainable consumption: current debate

However, increased demand for organics, has resulted in retailers sourcing organically grown food from around the globe, thereby **increasing food miles** (i.e., <u>distance that food travelled from location where it was grown to the location where it is sold</u>) and **increasing carbon emissions** in the transportation process.

<u>Consequently, it is possible that some locally grown non-organic food might be less energy intensive than organic foods which travelled long distances.</u>

# 1. Sustainable consumption: current debate

## Local foods

reduce "food miles" (due to the presence of less intermediaries between the producer and the end consumer), thereby cutting the energy and pollution associated with transporting food around the world

# 2. Objective

The objective of this study is to examine consumers' preferences for food products carrying organic and/or "food miles" labels in Spain.

Due to our interest in the local food issue, one of the "food miles" labels we utilized corresponds with a product that has been locally produced.

# 2. Almond sector

•Spain has been a traditional almond producer.
         It is the second largest producer of almonds in  the world while the first producer is US.

•The area cultivated with almonds in Spain accounts for 70% cultivated in marginal lands.

Approximately three-fourths of Spain's total        almond cultivated area is located in three  regions- the Ebro region (Aragón) the Levante         region and     Andalusia

## 2. Almond sector

•**Aragón produces 12.3% of Spanish almond production (i.e., 46,734 of the over 279,000 tons harvested in the country)**

## 2. Almond sector: weakness

**Almonds locally produced in Aragón face international competition from almonds imported from the U.S. and other Mediterranean countries (like Italy) and sold at more competitive prices in the Spanish market.**

**Hence, local almond farmers need to find ways to differentiate their product in the market.**

## 2. Almond sector: strategies

1.  Local almond farmers could implement to get higher value for their products is to sell them with a "food miles" label indicating the number of miles (kilometres in Europe) that the almonds have travelled from the area where it was grown to the market where it is sold.

2. Organic almond producers could sell their organic almonds using the new EU organic label recently introduced.

3. Use the "food miles" label instead of the organic one if consumers' valuation for the "food miles" label is higher than for the organic one.

## 3. Experimental procedure

# *Real choice experiment*

- We randomly recruited people in different location across the city
- Participants, received 10€ at the end of the session for participating in the experiment. Each subject was assigned an identification number (ID).

- People undertook two tasks: task I (main task) and task II (hold-out task).

# 3. Experimental procedure

## *Real choice experiment: Main task*

**Participants faced 16 different choice set scenarios and they had to choice between two products with different attributes and prices**

# 3. Experimental procedure

## *Real choice experiment: Hold-out task*

**Participants faced 8 different almonds, which were the remaining profiles of the design that were not used in Task 1, plus a no-choice option**

# *Real choice experiment*

- Monitor draw a bidding task
- If task 2 was selected, participants had to buy the product they had chosen, if any

- If task 1 was selected, the experimenter draw a number between 1 and 16. This number determined the bidding choice set .
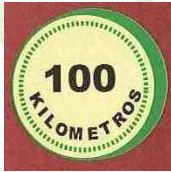
# 3. Experimental procedure

In both tasks, people paid the price market in the alternative and they received the corresponding product

## Choice design

| Attributes | Levels | | |
|---|---|---|---|
| Price (€per package) | 1.35, 1.84, 2.33 and 2.82 (*PRICE*) | | |
| EU organic label | No label<br>EU organic label (*ORGANIC*)<br> | | |
| "Food miles" label | No label | | |
| | 100 kilometers<br><br>(*km100*)<br> | 800 kilometers<br><br>(*km800*)<br> | 2000 kilometers<br><br>(*km2000*)<br> |

# 3.Model specification

The utility is taken as a random variable where the utility from the nth individual is based on the choice among *j* alternatives within choice set *J* in each of *t* choice occasions. In our empirical specification, the utility function include as explanatory variables the different food labels in the choice experiment, as well as an alternative-specific constant (ASC) representing the no buy option. The utility function is specified as follows:

$$U_{njt} = ASC + \beta_1 PRICE_{njt} + \beta_2 ORGANIC_{njt} + \beta_3 km100_{njt} + \beta_4 km800_{njt} + \beta_5 km2000_{njt} + \varepsilon_{njt}$$

# 4. Results

| Variable definition | Name (type) | Sample | Population * |
|---|---|---|---|
| Gender<br>  Male<br>  Female | FEMALE (dummy 1=female; 0 otherwise) | 47.4<br>52.6 | 47.3<br>52.7 |
| Age<br>  Between 18-35 years<br>  Between 35-54 years<br>  Between 55-64 years<br>  More than 64 years | YOUNGER (dummy 1= less than 35 years; 0 otherwise) | 27.5<br>34.9<br>16.0<br>21.4 | 25.1<br>30.8<br>11.6<br>19.4 |
| Education of respondent<br>  Elementary School<br>  High School<br>  University | UNIVERSITY (dummy 1=university; 0 otherwise) | 24.0<br>38.3<br>37.7 | 29.0<br>44.0<br>27.0 |
| Average household monthly net income<br>  Low income=Between 900 and 1,500 Euro<br>  Mid Income=Between 1,501 and 3,500 Euro<br>  High income=More than 3,500 | HIGH INCOME (dummy 1=high income; 0 otherwise) | 28.0<br>52.0<br>20.0 | N.A |

*Source: IAEST (2010).
N.A: not available

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# Results

## Model 3: ECRPL cholesky

| Mean Values Parameters (t-ratios) | Parameters (t-ratios) | Parameters (t-ratios) |
|---|---|---|
| ASC | -3.396 (-16.74)** | |
| PRICE | -1.746 (-34.36)** | |
| ORGANIC | 0.535 (9.65)** | |
| Km100 | 1.324 (13.78)** | |
| Km 800 | -0.189 (-2.35)* | |
| Km 2000 | -1.339 (-12.37)** | |
| *Standard deviations of parameter distributions* | | |
| ORGANIC | 0.551 (10.57)** | |
| Km100 | 0.755 (6.74)** | |
| Km 800 | 0.167 (1.60) | |
| Km 2000 | 0.770 (5.75)** | |
| *Standard deviation of the latent random effect* | | |
| σ | 1.813 (10.80) | |
| N | 8,400 | |
| Log likelihood | -2,191.25 | |
| | 1,767.53 | |
| Pseudo $R^2$ | 0.28 | |
| % actual choice prediction | 42.3 | |
| Population mean WTP (€100 grams) | | |
| ORGANIC | 0.61 (9.91)** | |
| Km100 | 1.51 (-2.36)** | |
| Km 800 | -0.22 (-2.36)* | |
| Km 2000 | -1.53 (-3.03)** | |

# 4. Results

| Parameters | ORGANIC | km100 | km800 | km2000 |
|---|---|---|---|---|
| ORGANIC | **0.551\*\*** | | | |
| Km100 | 0.155 | **0.739\*\*** | | |
| Km 800 | -0.074 | -0.138 | 0.057 | |
| Km 2000 | -0.154 | -0.636\*\* | -0.405\*\* | 0.043 |

# 3. Conclusion

- seems that Zaragoza consumers would prefer products marketed as locally grown within 100 kilometers (within Zaragoza province) than products sell with the new EU organic label.

- The decision on whether to sell the product undifferentiated or using any of the two labels (locally grown within 100 kilometers or organic) will depend on the cost of production (including the cost of certification) for the different labelled products.

## 3. Further research

First, the study has been conducted in a particular country within the European Union and, although results are similar to previous research in other geographical settings, the study should be replicate in other countries to validate our results.

Second, although we used to calculate the willingness to pay a model specification that takes into account the possible heterogeneity of preferences which has been in fact detected, we should further investigate the reasons of this heterogeneity.

# 3. Further research

**Finally, we find that locally grown food products within 100 kilometers are more value than organic food products but our main effects design does not allow to conclude if consumers value more an organic and locally grown within 100 kilometers product or a locally produced non-organic or a non-locally produced organic because interaction effects can not be estimated unless we have used a two-way interaction design.**

# Thanks