

ARE CONSUMERS WILLING TO PAY FOR QUALITY EUROPEAN FOOD LABELLING? A CHOICE EXPERIMENT APPROACH

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Abstract

This paper analyses consumer preferences for European food quality labels. With the extra virgin olive oil as a case study, the Protected Designation of Origin (PDO) and the EU organic production labels are assessed in order to know if consumers are willing to pay higher prices for them, and whether these European food labels are complementarians or substitutes. A choice experiment designed to estimate two-way interactions was used. Data was gathered from a self-administrated survey in Spain to a total of 540 respondents. An Error Component Random Parameter Logit model with correlated errors was estimated to measure the effect of both labels on the utility of consumers. Results indicated that the PDO and the EU organic labels are positively valued: consumers are willing to pay an extra-price of approximately 2€/liter for a bottle of olive oil with the PDO label and approximately 1€/liter more for an olive oil with the EU organic label. In addition, the interaction between the two labels was statistically significant and negative, so the simultaneous provision of both labels does not increase consumers' willingness to pay.

Keywords: Extra virgin olive oil, Protected Denomination of Origin, organic production, Spain.

1. Introduction

Olive oil is one of the main components of the Mediterranean diet, which is considered worldwide as one of the healthiest food diets. In recent years, consumption of olive oil in Mediterranean countries has moved towards higher quality olive. Quality olive oils can be signaled using EU regulated labels such as those under EEC Regulation 1151/2012 on a quality scheme for agricultural foodstuffs and EEC Regulation 834/2007 on organic production and labeling of organic products. The first one regulates the use of the Protected Designation of Origin (PDO) labels and the second the use of the EU organic production label. Prior research has focused on analyzing the consumption of extra virgin olive oil with PDO and / or organic production label. Findings show that besides price and brand, the organic production and the origin certifications have the greatest influence on consumers' willingness to pay (Del Giudice *et al.*, 2015; Yanguí *et al.*, 2014, 2016). This paper further contributes to this stream of literature analyzing consumers' preferences for extra virgin olive oil in Spain and assessing their willingness to pay (WTP) for two European food quality labels, the PDO and the EU organic production labels. In particular, we focus on whether consumers are willing to pay a premium for these EU labels and whether these are complements or substitutes.

2. Methodology

To achieve the objective, we use a choice experiment approach as it allows valuing multiple food attributes simultaneously and is consistent with the random utility theory.

2.1. Description of the Choice experiment

The selection of the attributes and the levels was based on information on the olive oils available for purchase in different supermarkets, findings of prior research and results for a focus group. First, olive oils sold in supermarkets were inspected and information on price, bottle size, type of bottle, presence of PDO and organic production labels and geographical origin was gathered. As a result, we selected three attributes for a liter bottle of extra virgin olive oil to be included in the choice design: PRICE (3€/l, 5€/l, 7€/l or 9€/l) and the presence of PDO and organic production labels. The choice set design was generated following the Street and Burgess (2007) approach. In order to estimate main and the two-way interaction effects between the PDO label and the EU organic label considering 3 attributes with 4, 2 and 2 levels, and a choice set design consisting of 2 options and a no purchase option, the resulting design consisted of 24 choice sets. To avoid respondents having to respond to a large number of choice sets, thus increasing the risk of a fatigue effect, the total number of choice sets was randomly split into three blocks of three choices. Respondents were randomly allocated to one of the blocks.

2.2. Data collection

Data was obtained from a survey conducted in Zaragoza to a total of 540 respondents in 2014. The questionnaire was self-administrated to the responsible of the food purchase in the households.

2.3. Specification and estimation

In the empirical application and for the selected attributes and levels, the utility function specified for individual n , alternative j at choice situation t , is defined as follows:

$$U_{njt} = \alpha + \beta_1 PRICE_{njt} + \beta_2 PDO_{njt} + \beta_3 ORG_{njt} + \beta_4 PDO * ORG_{njt} + \varepsilon_{njt} \quad (1)$$

Where n is the number of respondents, j which represents alternatives A, B and the non-buying option; and t the number of choice sets. Coefficient α represents the alternative specific constant coded as a dummy variable that takes the value of 0 for the non-buy option. It is expected that α would be positive and significant, indicating that consumers obtain a lower level of utility when they select the non-buying option than for alternatives A or B. PRICE is defined by the price levels in the design (3€, 5€, 7€ and 9€). PDO and ORG are defined as dummy and the interaction variable PDO*ORG is calculated by multiplying PDO and ORG. Then, if the estimated coefficient for this interaction is negative, it implies that both labels are partially substitutes because the utility derived from the joint provision of them is lower than the sum of the utilities associated with the PDO or ORG, separately. Assuming heterogeneity in consumers' preferences, an Error Component Random Parameters Logit (ECRPL) model with correlated errors was estimated using NLOGIT 5.0.

3. Results and discussion

Approximately one-third of the respondents were in each of the age ranges (18-44, 45-54 and over 55 years). About 65 percent of the respondents were women with an average age of 49 years. Regarding education, 55.7% of the respondents had a university degree and only 14.4% of them have primary studies. The high proportion of women in the sample is due to the fact that few men recognize that they are the main responsible for purchasing food for home consumption. The greater proportion of people with university studies in the sample is common in this type of studies because more educated people are more prone to respond to questionnaires.

Equation (1) was estimated assuming that price is a fixed coefficient and that the coefficients for the three dummy variables (PDO, ORG and PDO*ORG) are random following a normal distribution. Estimated parameters for the model and the marginal WTPs are presented in table 1.

Table 1. *Estimated parameters of the ECRPL model with correlated error terms*

Parameters in utility functions			
	Parameter	Std Err	Z-ratio
α	5.5364***	0.1859	29.77
PRICE	-0.6621***	0.0126	-52.44
PDO	1.3004***	0.1155	11.25
ORG	0.6754***	0.101	6.69
PDO*ORG	-0.2632**	0.1251	-2.1
Standard deviations of parameters distribution			
PDO	1.3790***	0.1482	9.3
ORG	1.2216***	0.1114	10.97
PDO*ORG	0.3306*	0.1748	1.89
Sigma	2.5198***	0.1769	14.24
WTP			
PDO	1.9642***	0.1707	11.51
ORG	1.0205***	0.151	6.76
PDO*ORG	-0.3975***	0.188	-2.11

Note: ***, **, * Significance at 1%, 5%, 10% level.

As expected, α was positive and significant, indicating that consumers obtain higher utility from choosing any alternative than from the non-buy option. Moreover, the price variable (PRICE) was negative and statistically significant. The estimated parameters and WTP for the main effects of the PDO and ORG labels were positive and statistically significant at the 1% significance level. Then, consumers positively value the PDO and the Organic production labels. In addition, the interaction between the two labels was negative and statistically significant. This result indicated that consumer's utility for the olive oil with both the PDO and the organic production labels is lower than is the sum of the utilities derived by the PDO and the organic production labels. Thus, both labels can be considered substitutes, moreover consumers' preferences are indeed heterogeneous because the standard deviations of estimated parameters were statistically different from zero.

Marginal WTP estimates indicate that consumers' valuation for the PDO label was higher than for the Organic production label, in particular, the extra price consumers were willing to pay is double for the PDO label. Specifically, consumers were willing to pay an extra premium of approximately 2€/liter for a bottle with the PDO label respect to one without this label and approximately 1€/liter for a bottle with the organic label in relation to one without this label. However, the WTPs for the combination of both labels in the same bottle is not 3 €, due to the fact that the interaction term between the two labels has a negative impact on utility. Our data shows that close to 90% of consumers find that the presence of both labels decreases utility thus hinting toward the fact that either some of the quality attributes of each label are partly covered by the other or that information overload generates mistrust. Only a minority of our sample has a positive WTP for the interaction of both labels.

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