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## **Willingness to pay for a local lamb meat label in Spain**

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## **Willingness to pay for a local food label for lamb meat in Spain**

**Abstract.** The aim of the paper is to assess consumers' willingness to pay (WTP) for a local food produced in a less-favoured area in the Aragon region (Spain). In particular, we examine whether consumers value lamb meat products (lamb and suckling lamb) labelled as "Ojinegra from Teruel", traditionally produced in these area. We use a non-hypothetical experimental auction to elicit Spanish consumers' WTP for "Ojinegra from Teruel" labelled lamb products. Results show that consumers are willing to pay a positive premium for a lamb and suckling lamb labelled as "Ojinegra from Teruel".

**Keywords:** Aragon; auction; label; preferences; willingness to pay

### **1. INTRODUCTION**

In recent years, a growing number of consumers are increasingly interested in food products that are produced locally or in a specific region. One possible reason for this increased interest in local foods is the industrialization and globalization of production agriculture and the food safety, food security and environmental issues associated with it. Hence, consumers are becoming more concerned about where and how food products are produced.

In Europe, rural areas are adapting their marketing strategies to the continued globalisation of production agriculture, the increasing liberalisation of trade, and the reduction in direct farm subsidies from the last reforms of the Common Agricultural Policy (CAP). While the most prosperous agricultural areas are likely to respond to these challenges, peripheral (lagging) rural areas are increasingly marginalised. Therefore, one potential strategy is the development of higher quality regional speciality food products marketed as local foods.

Local or regional food productions have received a strong support from the European Union (EU). The EU Regulations 2081/92 and 2082/92 of 14 July 1992 have defined the standards for a designation under different collective trademarks: Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Specialties Guaranteed (TSG). The promotion of these collective trademarks gives small and medium enterprises in rural areas an opportunity not only to differentiate their products in the market but also to contribute to a more sustainable environment and employment of local people in rural areas. Several local food products are now recognized under these collective quality marks (eg, PDO and PGI), while others are being considered as possible candidates for registration.

The European Committee of the Regions (1996) defined local or regional natural goods or services produced by different enterprises in rural areas with an established socio-economic identity. However, this concept is not well-defined yet due to large diversity in the production of food products in Europe and the different climatic conditions in Northern and Southern Europe.

In Northern Europe, the production of traditional or regional foods is rather narrow and the concept of local or regional food is related to a geographical area. Chambers et al. (2007) referred to local products as those food products grown, produced

and sold within a single region, whereas Groves (2005) and La Trobe (2001) considered local food products that are produced and sold within 30-50 mile radius of a consumer's house. Therefore, the definition of local food clearly refers to the area from which a locality derives its food supply, extending beyond geographic boundaries where consumers care about how and whom the food is produced, distributed and marketed (Hand and Martinez, 2010).

Nevertheless, in Southern European countries like Spain, Italy and France, the term local or regional food has a broader meaning, containing different dimensions which range from the geographic boundaries of production and consumption to tradition or culture of a specific area or climatic conditions that make the product unique. According to Bertozzi (1998), a traditional local food is a "representation of a group, it belongs to a defined space, and it is part of a culture that implies the cooperation of the individuals operating in that territory". Moreover, Jordana (2000) stated that a requisite of traditional local food product is its link with a territory, and that it is part of a set of traditions that ensures its continuity over time.

Previous studies revealed that consumers' preferences towards local foods are derived not only from preferences for product quality, freshness or taste, but also from the demand for public benefits related to job and income generation in the community as well as improvement of the environment (Weatherell, Tregear and Allison., 2003; Jones, 2002; Roininen et al., 2006; Chambers et al., 2007; Pieniak et al., 2009). To illustrate, Weatherell, Tregear and Allison., (2003) found that moral and health concerns are the most important reasons why British consumers choose local food, whereas taste and freshness attributes are perceived as less important. They also found that approximately 25% of urban and 30% of rural respondents are willing to pay up to 5% and 10% premiums for local foods.

Jones (2002) investigated British consumer behaviour towards local and regional foods. The author found that freshness and sustainability are the main reasons why consumers buy local and regional food, followed by high quality and taste. In addition, Roininen, Arvola and Lanteenmaki, (2006) explored consumers' perceptions of local food in Finland. The authors revealed that locally produced food was perceived fresher than conventional ones. In the same line, Chambers et al., (2007) revealed that consumers were enthusiastic towards local food and perceived them as of higher quality than imported foods. In addition, the authors stated that respondents endorsed the idea of supporting local farmers and their national economy. However, strikingly, results from Pieniak et al., (2009) suggested that ethical concern of sustainability neither has significant association with attitudes nor with consumption of traditional local food in all six analysed European countries (Belgium, France, Italy, Norway, Poland, Spain). In addition, there was no significant difference across Northern and Southern European countries.

The findings of these studies imply that the stakeholders in marginal rural areas who are able to provide speciality food products of higher quality, communicate the economic and environmental benefits for the rural area, and satisfy current consumers' demands will be able to improve their incomes. Therefore, it would be of paramount importance to examine whether consumers value local foods and are willing to pay a premium for these products. Hence, the aim of our paper is to assess consumers'

willingness to pay (WTP) for a local food (i.e., fresh lamb meat) produced in a less-favoured area in the south of the Aragon region (Spain).

The product of interest, lamb meat, comes from a lamb animal breed named “Ojinegra from Teruel”<sup>1</sup> that has been raised in the area of interest for a long time because their breeding requirements suit the climatic and geographic characteristics of the area. Farmers in the area and the regional government are promoting the expansion of these lamb animals to improve the rural development of this area and to retain population. Currently, “Ojinegra from Teruel” lamb farmers are selling two lamb meats as undifferentiated products (lamb and suckling lamb) but one of the strategies they are examining to get higher added value to their products is to sell the product with a label, indicating the name of the breed and to access the Zaragoza<sup>2</sup> city market. Before implementing this labelling strategy, however, it is very important for producers to know whether Zaragoza’ consumers value the “Ojinegra” lamb meat (either suckling or not) and how much they are willing to pay for both lamb meats labelled as “Ojinegra from Teruel”. To answer these questions, we use a non-hypothetical experimental auction to elicit Spanish consumers’ WTP for four types of local/regional lamb meat products, two of which are labelled “Ojinegra from Teruel”.

The rest of the article is organized as follows: the next section discusses the traditional local lamb meat produced in Aragón; section 3 presents the experimental design. The section following this describes the results and the final section presents the concluding remarks.

## **2. “OJINEGRA FROM TERUEL” LAMB MEAT AND THE AREA OF INTEREST**

The lamb carcass classification system in the EU is comprised of two different schemes. Carcasses weighing more than 13 kg are evaluated according to conformation E.U.R.O.P<sup>3</sup> and fatness score<sup>4</sup>. Nevertheless, for carcasses weighing less than 13 kg (light carcasses), typical of the Mediterranean area, the conformation score is not considered since they are systematically penalized due to their naturally poor morphology. Thus, in the light carcasses classification system, carcasses are divided into three categories according to weight: “A” with carcass less or equal to 7.0 kg, “B” with carcass between 7.1 to 10.0 kg and “C” with carcass between 10.1 to 13.0 kg. Each weight category includes two quality classes: quality 1 where carcasses have pink meat and a fatness score 2 or 3; and quality 2 where carcasses have red meat and fatness score 1 or 4 (EEC 2137/92 and EEC 461/93 regulations). The lamb carcass analyzed in the present study belongs to the light carcass classification system (Mediterranean scheme) and in particular, corresponds to categories A (i.e., suckling lamb) and B (i.e., lamb).

The lamb sector in Aragon has a long tradition linked to the rural area. The harsh geography, the extreme continental climate and the remarkable demographic dispersion of Aragon have led families in rural areas to search for animal production alternatives that are able to use the area’s resources. Therefore, sheep breeding has been for long time an important economic activity in the rural areas in Aragon. In particular, in the southern Aragon counties of Bajo Aragon, Andorra and Maestrazgo (Teruel province), the breed “Ojinegra from Teruel”, native from this area, has been produced for long time because other breeds cannot be adapted due to the difficult climatic and geographic environment.

This breed has a high capacity to run on top of mountains in semi-extensive farms, maximizing the use of the natural resources of the area. In addition, Ojinegra sheep is not fed with supplements, which is perceived to guarantee a higher degree of safety for consumers and a higher meat quality than other sheep meats. Moreover, “Ojinegra from Teruel” is a breed promoted in the Official Catalogue of Cattle Breeds in Spain.

Currently, there are 55 “Ojinegra from Teruel” medium sized family farms with semi-extensive farming systems that have a total of 28,634 heads of Ojinegra sheep. The presence of these family farms guarantees the retention of population, and plays an important socioeconomic role by supporting the local economy in terms of jobs and income generated in this rural area. In 1999, the 55 farms created an association to maintain the breed called AGROJI (Association of Ojinegra farmers) in collaboration with the Government of the Teruel province, and the Government of Aragon, which were jointly responsible for the conservation, maintenance, improvement and promotion of the “Ojinegra from Teruel”.

About of 60 per cent of farms directly sell Ojinegra sheep to “Carnes Oviaragón-Grupo Pastores” in Zaragoza. This big cooperative slaughters, produces and markets lamb meat mainly in the Aragón Region. The rest of the farms sell their animals to other slaughterhouses mainly located in Zaragoza and Teruel, respectively. In both cases, the final lamb meat is sold undifferentiated, without indication that the meat comes from this particular breed. However, the farms which do not sell to the big Cooperative (Grupo Pastores) decided to create a cooperative (CENRO- Centro Reproductores de Raza Ojinegra) in 2003 to directly market “Ojinegra from Teruel” lamb meat and to differentiate it using a label. To reach this aim, recently, CENRO applied for a label to certify the “Ojinegra from Teruel” (OJITER). Once this label is approved, producers could sell their lamb meats with the label to differentiate them in the local market of Aragon from other meat products imported from France and Italy. At this point, it is very important for producers in this cooperative (CENRO) to know whether Zaragoza’s consumers would value the “Ojinegra from Teruel” lamb meat (either suckling or not) and how much they are willing to pay for both lamb meats labelled as “Ojinegra from Teruel”. This information is useful for the cooperative and the lamb producers since it will suggest whether marketing these lamb products with the label would provide them more incomes or not. This study will also provide information on the profile of consumers who are more or less likely to pay more for a “Ojinegra from Teruel” labelled lamb products. This information is important in the design of market segmentation strategies for the products.

### **3. EXPERIMENT DESIGN**

The use of non-hypothetical experimental auctions has become very popular in estimating people’s WTP for product attributes or new products (e.g., Shogren et al., 2001; Fox, Hayes and Shogren et al., 2002; Alfnes and Rickertsen, 2003; Huffman et al., 2003; Rousu et al. 2004a; 2004b; Lusk et al., 2004a; Lusk, Feldkamp and Schroeder, 2004b; Corrigan and Rousu, 2008; Nalley, Hudson and Prkhurst, 2006; Drichoutis, Lazaridis and Nayga, 2008; Depositario et al., 2009;; Bernard and Bernard, 2009) because of its incentive compatibility properties where subjects have the dominant strategy to submit bids equal to their value for the good. In our experiments, we recruited

consumers, instead of students, in an attempt to ensure that people in the experiments were generally representative of shoppers in the store (Chang, Lusk and Norwood, 2009). The experiment was conducted during the spring 2009 in the region of Aragón (Spain), in the town of Zaragoza. Recruitment of participants was done via consumer associations located in different districts that provided the room for the experiments. The first criterion to selecting the participants was their involvement in food shopping decisions and lamb meat consumption. Only individuals who stated to be involved in these two activities were selected. At the recruitment stage, participants were not informed about the specific objective of the study. After arrival of the participants, subjects were informed that they would receive 10 € at the end of the session and were invited to participate in the auction.

We used 14 sessions of approximately 11 people per session (a picture of one session can be seen in Appendix I). Before the auction, the participants were shown the four lamb meats (i.e., unlabelled lamb, unlabelled suckling lamb, lamb labeled as “Ojinegra from Teruel”, and suckling lamb labeled as “Ojinegra from Teruel”) to be analyzed and received neutral information on the product and how the production of these products contributes to the development and sustainability of the rural area of interest and its labor market. A picture of the products and the information provided to participants can be seen in Appendix II. After providing the subjects an extensive training session that made them fully knowledgeable about the auction mechanism and made them aware that their dominant strategy is to reveal their true WTP values, they were then asked to bid on these four local lamb meat products.

We used the full bidding approach to elicit subjects’ WTP as it has been done in several studies in the past (e.g., Hoffman et al., 1993; Shogren et al., 1994; Huffman et al., 2003; Lusk, Feldkamp and Schroeder, 2004b; Corrigan and Rousu 2006; Nalley, Hudson and Prkhurst, 2006; Bernard and Bernard 2009). Moreover, Alfnes (2009) indicated that the full bidding approach seems to be the best choice when valuing products’ quality attributes.

Using this approach, we asked subjects to simultaneously submit bids for each of the four lamb meat products we are auctioning. We used the 4<sup>th</sup> price auction for three reasons. First, it satisfies the requirement of a theoretically incentive compatible mechanism. Second, it combines the advantages of the 2<sup>nd</sup> price Vickrey auction and the random *n*th-price auction (Lusk, Feldkamp and Schroeder, 2004b; Shogren et al., 2001). Finally, compared to the random *n*th price auction, the use of 4<sup>th</sup> price auction is easier to use logistically since it provides an exact estimate of the amount of products we would need for the auctions. This last point was important since we had to keep the products refrigerated.

Following other studies (i.e., Shogren et al., 2001, Alfnes and Rickertsen, 2003), we ran a practice auction using four different candy bars to familiarize participants with the 4<sup>th</sup> price auction mechanism and their dominant strategy. After the practice auction with the candy bars, we then conducted the lamb auctions. The auctions were conducted in four steps, standard in auction experiments:

**Step 1.** Each subject was assigned an identification number (ID).

**Step 2.** Subjects were asked to read the instructions, then the four lamb meat products of interest were shown to subjects with their respective information.

**Step 3.** In each round, subjects simultaneously submitted a bid for each of the four lamb meat products. The bids were then collected and rank-ordered. A binding product was

randomly chosen in each round. Subjects were then informed of the winning price of the binding product (i.e., 4<sup>th</sup> highest bid) after each round.

**Step 4.** The experimental auctions were conducted for five rounds in each session. After all the rounds were conducted, the binding round was then randomly chosen and subjects were asked questions on socio-demographic characteristics. The top three bidders on the binding product in the binding round paid the 4<sup>th</sup> highest bid for the product.

#### 4. RESULTS AND DISCUSSION

The total number of participants in the experiment was 155 and table 1 reports the descriptive statistics for the socio-demographic characteristics. Most of participants are female (66%) living in households of 2.8 members on average and with an average age of 52 years old. Around 26% of participants have a university degree and a net annual income higher than 2,500 €.

Table 1. Definition and Means or Percentage of Variables

Variables	Definition	
Gender (GENDER)	1= female; 0=Otherwise	65.8
Age (AGE)	years	51,7
Income (HINCOME)	1= more than 2500€; Otherwise=0	25.8
Household Size (HSIZE)	Number of members	2.8
Household with adults more than 65 years old (MORE65)	1= More 65 years; Otherwise=0	38.1
Household with children less than 6 years old (KIDS6)	1= Less than 6 years; Otherwise=0	9.7
UNIVERSITY	1=University degree; 0=Otherwise	25.8

Table 2 shows the mean bids for the four products and the implied WTP between the unlabelled lamb and the one labeled as “Ojinegra from Teruel”(0.454 € per package) and the unlabelled suckling lamb and the one labeled as “Ojinegra from Teruel” (0.319 € per package) calculated as the difference between bids. It can be observed that the bids for the lamb products labeled as “Ojinegra from Teruel” are higher than the unlabelled ones for both lamb meats (suckling and not). Moreover, the t-tests and the corresponding p-values between them indicates that statistically significant differences are found between the bids for the unlabelled and the labelled lamb meats (i.e., suckling and not suckling lamb). The implied WTP’s are positive indicating that consumers are willing to pay a premium for the lamb and suckling lamb labelled as “Ojinegra from Teruel”. However, the premium is higher for the non-suckling lamb than for the suckling lamb. Assuming that the bids for the unlabelled lamb meat products are the price of the products as they are sold in the market, consumers are willing to pay, on average, a 20% premium for the lamb labelled as “Ojinegra from Teruel” versus the unlabelled lamb and a 11% premium for the suckling lamb labelled as “Ojinegra from Teruel” versus the unlabelled suckling lamb.

Table 2. Mean Bid Values and Implied WTPs

	Bids	t-test	Implied WTP
Unlabelled lamb	2.22		
Lamb labeled as “Ojinegra from Teruel”	2.68	-21.55**	0.454 €/per package
Unlabelled sucking lamb	2.85		
Sucking lamb labeled as “Ojinegra from Teruel”	3.17	-14.13**	0.319 €/per package

\*\* (\*) Statistically significant at 5% (10%) level.

Nevertheless, it is necessary to assess whether these results hold after we control for differences in socio-demographic variables of participants. Hence, we modelled the elicited bids for the four lamb meat products for each individual as a function of socio-demographic variables. We estimated the model using maximum likelihood random effects to take into account individuals’ heterogeneity<sup>5</sup> (Baltagi, 2003). We pooled the bids for the four products to conduct a covariance analysis and to check whether bids are totally different across products using the Likelihood Ratio test (LR). The null hypothesis that all the lamb product dummies (affecting constant and slopes) are equal to zero has been rejected<sup>6</sup> indicating that statistically significant differences in bids exist across products. However, when the test is conducted between the whole model (with product dummies for all the parameters, constant and slopes) and the model with only product dummies affecting the constant terms, results indicate that the null hypothesis is not rejected<sup>7</sup>. This means that lamb meat product dummies for the slope coefficients are not statistically different across lamb products. The bids are only statistically different at mean values across the analysed lamb products.

Table 3 presents results for this model. The first three columns present the estimated model with the unlabelled lamb as reference product (model 1), while the last three columns present the estimated model with the unlabelled sucking lamb as reference product (model 2). Results show that statistically significant differences exist between the bid estimates for the unlabelled and the labelled lamb (0.454) and for the unlabelled and the labelled suckling lamb (0.319). Moreover, the implied WTP are positive and statistically significant indicating that consumers are willing to pay a positive premium for labelled lamb (suckling and not) as “Ojinegra from Teruel”. Results also suggest that consumers are willing to pay a higher price for the unlabelled sucking lamb than for the unlabelled lamb (0.633).

Table 3 also presents the impact of socio-demographic characteristics on participants’ bids. WTP values of females and those from households with higher incomes are higher than their counterparts while WTP values from people living in bigger households and in households with kids less than 6 years old and households with elderly people tend to be lower than their counterparts.

## 5. CONCLUSIONS

Marginalised rural areas have higher difficulties to adapt to the increasing globalisation of agriculture, liberalisation of trade and the reduction in direct farm subsidies. One way producers in these areas could increase their incomes, retain

population and therefore, improve the development of the area is to differentiate their food products and promote them as traditional local foods. This paper provides information on whether the differentiation of a locally produced meat product in a marginalised area in the south of the Aragon region (Spain) could be successful. The aim of the paper is to assess the value to consumers of a locally produced lamb meat. In other words, we wanted to know if consumers' would be willing to pay more for a locally produced and labelled lamb meat than an undifferentiated lamb meat. This information is important since a lamb meat producers' cooperative in a less favoured area in the south of Aragon (Spain) has been created to differentiate their lamb meats ("Ojinegra from Teruel").

Table 3. Regression Results

	Model 1		Variables	Model 2	
	Coef.	p-value		Coef.	p-value
Constant	2.585**	0.000	Constant	2.585**	0.000
Round 2	0.181**	0.000	Round 2	0.181**	0.000
Round 3	0.129**	0.000	Round 3	0.129**	0.000
Round 4	0.124*	0.000	Round 4	0.124*	0.000
Round 5	0.102*	0.001	Round 5	0.102	0.001
SucLamb_Unlabel	0.633**	0.000	Lamb_Unlabel	-0.633**	0.000
Lamb_Ojinegra	0.454**	0.000	Lamb_Ojinegra	-0.178**	0.134
SucLamb_Ojinegra	0.952**	0.000	SucLamb_Ojinegra	0.319**	0.007
GENDER	0.1153**	0.209	GENDER	0.1153**	0.209
AGE	-0.004**	0.257	AGE	-0.004**	0.257
HINCOME	0.353**	0.001	HINCOME	0.353**	0.001
HSIZE	-0.106**	0.008	HSIZE	-0.106**	0.008
MORE65	-0.300**	0.005	MORE65	-0.300**	0.005
KIDS6	-0.242**	0.106	KIDS6	-0.242**	0.106
UNIVERSITY	0.011	0.920	UNIVERSITY	0.011	0.920
N	3,100			3,100	

\*\* (\*) Statistically significant at 5% (10%) level.

Lamb-Unlabel: 1= if unlabelled lamb; 0= otherwise

SucLamb-Unlabel: 1 = if unlabelled suckling lamb; 0=otherwise

Lamb-Ojinegra: 1= if lamb labeled as "Ojinegra from Teruel"; 0=otherwise

SucLamb-Ojinegra: 1= if suckling lamb labeled as "Ojinegra from Teruel; 0=otherwise

Result shows that consumers are willing to pay a positive premium for non-suckling lamb and suckling lamb products labelled as "Ojinegra from Teruel". The extra premium consumers are willing to pay is 20% of the price for the unlabelled non-suckling lamb and 11% of the price of the unlabelled suckling lamb. The objective of the newly formed Cooperative is to differentiate their lamb meats with the "Ojinegra from Teruel" label. Our results generally suggest that the potential is there to successfully differentiate their lamb products with the label considering the premiums that respondents (e.g., especially females, those with higher incomes, and those in smaller households) in this

study are willing to pay. However, future studies should compare these premiums with the costs of implementing the labelling strategy before definitively deciding whether to push forward with the labelling program or not.

## ENDNOTES

- 1 “Black eyes” because the animals have black colour around the eyes.
- 2 Zaragoza is the largest town in the Aragon region located at around 150 kilometers from the producing area.
- 3 E.U.R.O.P. classification: five classes, from E=“good”, to P=“bad” conformation
- 4 5 classes, from 1=lean, to 5=fat.
- 5 There are no zero bids in our data.
- 6 The LR=67.94 is higher than the chi-square (24 degrees of freedom, 0.05) =36.42.
- 7 The LR=4.59 is lower than the chi-square (21 degrees of freedom, 0.05) =32.67.

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