Importance of social influence in consumers' willingness to pay for local food: are there gender differences?[1]

Azucena Gracia, Tiziana de Magistris and Rodolfo M. Nayga, Jr.

Azucena Gracia

Senior researcher in Agricultural Economics. Unidad de Economía Agraria y de los Recursos Naturales. Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), Gobierno de Aragón. Avda Montañana 930, 50059 Zaragoza (Spain). Phone: +34-976-716350. Fax:+34-976-716335. email: agracia@aragon.es

Tiziana de Magistris

Researcher in Agricultural Economics. Unidad de Economía Agraria y de los Recursos Naturales. Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), Gobierno de Aragón. Avda Montañana 930, 50059 Zaragoza (Spain). Phone: +34-976-713877. Fax:+34-976-716335. email: tmagistris@aragon.es; tmagistris@gmail.com

Rodolfo M. Nayga, Jr.

Professor and Tyson Chair in Food Policy Economics, Department of Agricultural Economics and Agribusiness, University of Arkansas, Fayetteville, AR 72701 USA. Phone: +1 479 575 2299; Fax: +1 479 575 5306 email: rnayga@uark.edu

Correspondence to be sent to: Azucena Gracia

Unidad de Economía Agraria y de los Recursos Naturales. Centro de Investigación y Tecnología Agroalimentaria de Aragón (CITA), Gobierno de Aragón. Avda Montañana 930, 50059 Zaragoza (Spain). Phone: +34-976-716350. Fax:+34-976-716335. email: agracia@aragon.es

---

Importance of Social Influence in Consumers' Willingness to Pay for Local Food: Are there Gender Differences?

Abstract

We assess consumers' willingness to pay (WTP) for a local food product using an experimental auction. As local foods involve a social component, we aim also to test if social influence affects WTP for local foods and if the effects of social influence on WTP are different between men and women. We found that consumers are willing to pay a premium for the analysed local food product. Moreover, social influence indeed affects WTP values but the effects are different between men and women. While social influence positively affects WTP for local foods for women, the effect is negative for men. Our results have significant marketing and policy implications related to the promotion of local foods [C9, C23, D12, Q18].

Keywords: experimental auction, label, lamb meat, Spain, willingness to pay.

1. Introduction

Traditionally, consumer food choice is influenced by factors such as price and quality (sensory, health, process and convenience attributes) (Grunert, 2006). However, other factors related to perceived public benefits such as sustainability are increasingly influencing the decision to buy food products at least for a minority of consumers (Weatherall et al., 2003). Along this line, Sunding (2003) stated that price premiums are more likely to be paid by consumers that are motivated to purchase alternatively produced foods for altruistic reasons. The idea that an individual's utility might well be maximized in terms of altruistic, moralistic or ethical behavior was pointed out by Becker (1996). In food products, it is becoming more evident that consumers are purchasing and using products not only for their personal pleasure and the value that these products provide them but also for altruistic reasons. This is particularly true for sustainable produced foods such as organic food, local food or fair trade.

In today's food markets, consumers are increasingly interested in local food products[1] because they are perceived to provide several benefits: *i)* higher food quality (e.g. fresher, healthier, etc.); *ii)* increase social and economic justice (including the development of local economies, community stability, etc.); and *iii)* higher environmental sustainability (including the minimization of food miles, the use of sustainable production methods) (Born and Purcell, 2006). Related to food quality, previous research had revealed that

---

[1] The term "local food" is difficult to define. According to the European Committee of the Regions (1996), the concept of local food has been used to define natural goods or services produced or provided by different enterprises in rural areas with an established socio-economic identity. Local food clearly refers to a geographic production area that is circumscribed by boundaries and in close proximity to the consumer (Hand and Martinez, 2010). However, some authors have defined local foods as those that are grown, produced and sold within certain political boundaries, such as county, region (Brown, 2003; Chambers et al., 2007) while others considered local food products as those produced and sold within a 30-150 mile radius of a consumer's house (Groves, 2005; La Trobe, 2001).

consumers perceived local foods as fresher, tastier, safer, and of higher quality compared to other food products (Murdoch et al., 2000; Brown, 2003; Zepeda and Leviten- Reid, 2004; Groves, 2005; Hein et al., 2006; Roheim et al., 2007; Chambers et al., 2007; Conner et al., 2010). According to the social and economic benefits, a number of studies have indicated that consumers perceive local foods to benefit local farmers and communities (Gallons et al., 1997; Kezis et al., 1998; Morris and Buller, 2003; Feagan et al., 2004; Zepeda and Leviten-Reid, 2004; Keeling-Bond et al., 2006; Hunt, 2007; Cranfield et al., 2008; Rainey et al., 2011). There is also evidence that consumers of local food recognise the environmental sustainable gains that could come with these products (Kezis et al., 1998; Brown, 2003; Hunt, 2007; Thompson and Coskuner-Balli, 2007; Cranfield et al., 2008).

In addition, consumer choice of local foods has been associated with the notion of social embeddedness (Cranfield et al., 2008). Social embeddedness refers to the social relationships between the actors in the local food system and the surrounding community based on reciprocity, trust and shared values (Hinrichs, 2000). Consumers would choose local foods not only for their intrinsic and extrinsic attributes but also because people are seeking to engage with the farmers, food producers and the rural community; i.e. because of their social embeddedness with the local community (Weatherell et al., 2003). In addition, Hinrichs (2000) stated that social embeddeness is often seen as the comparative advantage of local foods systems.

Except for gender effects, the literature on local foods has provided no clear relationships between consumers' socio-demographic characteristics and consumers' choice for local foods (Cranfield et al., 2008). Findings suggest that women seem to have more positive attitudes towards local food than men (Gallons et al., 1997; Kezis et al.,

1998; Jekanowski et al., 2000; Weatherell et al., 2003) and therefore, it is expected that women will be more willing to purchase and pay for local foods.

Apart from the previously mentioned studies on local foods, other empirical works studied consumers preferences and assessed consumers' willingness to pay for local food products (Loureiro and Hine, 2002; Giraud et al., 2005; Schneider and Francis, 2005; Hustvedt and Bernard, 2008; Darby et al., 2008; James et al., 2009; Carpio and Isengildina-Massa, 2009; Yue and Tong, 2009; Costanigro et al., 2011) using different valuation methods (i.e. contingent valuation, choice experiment). All of these papers had used hypothetical experimental methods except for Yue and Tong (2009) that used both a hypothetical and a non-hypothetical choice experiment. In this paper, we have a similar aim of assessing consumers' willingness to pay for a local food but using a more commonly applied non-hypothetical method (experimental auction[2]). As far as we know, no other known study has measured consumers' willingness to pay for local food using experimental auctions. Experimental auction is now becoming a popularly used elicitation method because their incentive compatibility property provides subjects an incentive to submit bids equal to their value for the good.

However, Lusk and Norwood (2009) stated that there could be an extra-utility that can be obtained from the satisfaction of social preferences related to consumption of food products with normative dimensions, such as environmentally oriented food products. They argued that social issues could increase subjects' willingness to pay (WTP) for these products. We attempt to test this hypothesis in this study by assessing the effect of social

---

[2] Lusk and Shogren (2007) showed that up until 2006, more than 100 academic studies have utilized experimental auctions to elicit consumers' preferences for various products. Numerous other studies have also used experimental auctions since 2006 (Alfnes et al., 2008; Rousu et al., 2008; Froehlich et al., 2009; Bernard and Bernard, 2009; Bernard and Bernard, 2010; Colson and Huffman, 2011; Colson et al., 2011 ; De Groote et al., 2011; Lee et al., 2011, among others).

influence on WTP for goods that involve a social component such as local foods. To our knowledge, no other known study has directly evaluated the issue of social influences in consumers' valuation for local food products. The type of social influence that we are particularly interested in examining in this paper is the notion of "social embeddedness" which is closely related to local foods as we previously mentioned. The concept of social embeddeness suggests that economic behavior is mediated by a complex web of social ties (Ilbery and Maye, 2005). Specifically, we refer to social embeddedness as the importance consumers attach to the purchase of food products produced in the region where they reside using traditional and typical production methods. If social embeddedness is important in determining WTP for local foods, then these effects need to be considered in marketing and promotion campaigns for local food products and when analyzing bidding behavior and econometrically modeling WTP values for these products. Failure to do so could render inferences based on the WTP model to be biased.

Moreover, since the economic importance of behaviour in competitive settings has led to growth in experimental economics and psychology literature on gender differences, especially in the area of consumption, risk, social preferences and response to competition (Croson and Gneezy, 2009), we also analyze the effect of social influence on bidding behavior by gender. A number of studies on gender differences argued that men and women have different sensitivity towards social issues. Specifically, women tend to be more sensitive to social cues than men (Andreaoni and Vesterlund, 2001; Croson and Gneezy, 2009; Cox and Deck, 2006). In addition, as mentioned above women seem to have more positive attitudes towards local foods than men and therefore, may be more willing to purchase and pay for local foods. Consequently, we also test if the effects of social influence on bids are different between men and women. We test the last two hypotheses

for four locally produced lamb meats familiar to participants. These four lamb meat products possess social dimensions since they are recognized as "local products" in the region of Aragon (Spain) where the experimental auction was conducted.

Our findings will be helpful for rural producers in Aragon since it will provide information about whether consumers are willing to pay an extra premium for their locally produced foods. The findings will also allow them to design effective marketing strategies based not only on the attributes of the local lamb meat products but also on the effect of consumers' personal characteristics, such as gender, and on consumers' level of social embeddedness with their rural community.

The rest of the article is organized as follows: the next section discusses the methodology and describes the experimental design. The section following this presents the results and the final section provides some concluding remarks.

2. Methodology

2.1. Experimental design and implementation of the auction

To assess consumers' WTP for local foods and to test our research hypotheses, we conducted an experimental auction during the spring 2009 in the region of Aragon (Spain), in the town of Zaragoza. Zaragoza is a town widely used by food marketers and market research consulting companies since its socio-demographics are representative of the Spanish Census of Population.

In particular, we used a simultaneous (i.e., full bidding) experimental auction to elicit consumers' WTP for a local lamb meat[3]. We asked subjects to simultaneously submit bids for each of the products of interest in our study (i.e., four lamb meat packages). In particular, we auctioned four packages of three lamb ribs: *i)* unlabelled non-suckling lamb ribs package; *ii)* unlabelled suckling lamb ribs package; *iii)* non-suckling lamb ribs labeled as "Ojinegra from Teruel" package; and *iv)* suckling lamb ribs labeled as "Ojinegra from Teruel" package[4]. Lamb ribs were chosen because they are well-known and appreciated cuts in the Zaragoza market. To avoid demand reduction effects, participants were told that they can only purchase one package. Therefore, a product was randomly drawn as the binding product at the end of the auction. To avoid deception, we used real products. In other words, the non-suckling and suckling lamb ribs labelled as "Ojinegra from Teruel" packages indeed contained lamb ribs from "Ojinegra from Teruel" breeds. We bought the unlabelled non-suckling and suckling lamb ribs in a meat store in Zaragoza. We bought the "Ojinegra from Teruel" lambs to a local producer who sends the slaughtered carcasses to the same store and the same person (the store owner) prepared all the lamb packages to make the ribs as homogenous as possible.

Among the different incentive compatible auction mechanisms, we used a 4th price auction because it provides more winners than a typical Vickrey second-price auction. The second-price auction method will only produce one winner per session and this situation

---

[3] Alfnes (2009) indicated that the simultaneous auction approach seems to be the best choice when valuing products' quality attributes.
[4] Two of them come from a lamb animal breed named "Ojinegra from Teruel" 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. We provide to participants information on the production area (in the south of Aragon) and the production characteristics of the lamb. We also inform them that lamb producers want to raise these lamb animals in the area for a long time and they have applied for a label to certify the "Ojinegra from Teruel" lamb meat so that they can differentiate this particular meat from other meat products in the local market of Aragon.

could disengage some of the participants (e.g., off-margin bidders)[5]. Moreover, several papers in the past have also utilized the 4th price auction (e.g., Alfnes et al., 2008; Shaw et al., 2006; Muller and Ruffieux, 2011).

We conducted five rounds in each session. The price and identification number of the highest bidders for each product were written on a whiteboard after each round. At the end of the session one of the rounds was randomly selected as the binding round[6].

In our experiment, we recruited consumers, instead of students, in an attempt to ensure that people in the experiments were generally representative of shoppers in the store in order to reduce sample selection bias (Chang et al., 2009). Participants were recruited in consumer associations, town hall activity and learning centres located in different districts using a random stratified procedure by age. In addition, only people directly involved in food shopping decisions and who consume lamb meat products, at least occasionally, were selected to get a representative sample of shoppers. During 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 € participation fee at the end of the session. After subjects consented to participate in the auction, they were assigned an ID number and received the experimental instructions

---

[5] Lusk et al. (2007) found that if the number of participants who could purchase the product is approximately half the session size (N) (i.e., either a fourth of fifth price for commonly used session sizes), that this auction mechanism would generally be more effective in engaging all bidders (low, medium and high value bidders).

[6] The use of multiple rounds with price feedback (posted prices) was first applied in experimental auctions because as Plott (1996) suggested, people's preferences are learned through experience and market exposure. Hence, price feedback in multiple rounds was used as a mechanism for subjects to learn the auction market. However, some researchers have cautioned that repeated exposure of subjects to market price might cause their bids to become affiliated, which could cause the incentive compatibility property of the auction mechanism to break down (Milgrom and Weber, 1982; Harrison et al., 2004; Harrison, 2006; Corrigan and Rousu, 2006) and were in favor of one-shot institutions. On the other hand, there is another group of researchers who is supportive of the use of multiple rounds, arguing that this procedure yields valuations more consistent with neoclassical economic theory (Cox and Grether, 1996; Shogren et al., 2001; Alfnes and Rickersen, 2003; Lusk and Shogren, 2007; Shogren, 2006; Corrigan et al., 2011). Given that this issue is still unsettled in the literature, we opted to use multiple rounds with price feedback based on the premise that it could enhance the learning effect.

together with the product information. The monitor then read the instructions aloud emphasizing that their dominant strategy is to reveal their true values and that one round and one product will be randomly drawn as binding. They were also asked not to communicate with any other participant for any reason, because any attempt to communicate with each other would lead to the failure of the experiment. Moreover, the monitor encouraged the participants to ask questions about the auction procedure if they have some doubts. We then ran a practice auction using four different candy bars to fully familiarize participants with the auction mechanism and to inform them that it is in their best interest to bid their true values. After the practice auction with the candy bars, we conducted the lamb meat auction in groups of approximately 11 people. We used seven sessions for the experiment, with a total number of 77 participants. First, the monitor passed the packages of lamb ribs to be auctioned around so that each participant could inspect the products. Then, the lamb auction was conducted in several steps:

Step 1. Subjects were asked to simultaneously submit a bid for each of the four lamb ribs packages. The bids were collected and ranked from highest to lowest and the ID number of the top three bidders and the 4th highest price for each of the products were posted on the board.

Step 2. Step 1 was repeated for four additional rounds.

Step 3. After all the rounds were conducted, a random drawing determined which of the five rounds was binding.

Step 4. A random drawing determined which of the four lamb ribs packages was binding.

Step 5. The top three bidders on the binding product in the binding round purchased the lamb ribs package and paid a price equivalent to the 4th highest bid for the product. After

the auctions, the participants were then asked to complete a questionnaire about their demographic information.

2.2. Hypotheses testing

To test our first hypothesis (i.e., social influence affects WTP for local foods), we pooled the four series of lamb bids into one data set. We then specified one model where bids are a function of socio-demographic variables and two explanatory social influence variables (*Lamb_Ara* and *Tradition*) using the following random effects models[7]:

$$Bids_{it} = \alpha + \beta' \; x_{it} + \delta \; Lamb\_Ara + \lambda \; Tradition + u_i + \varepsilon_{njt} \qquad (1)$$

where $Bids_{it}$ is the lamb bids for the ith consumer in the tth bidding round, x_{ij} is a vector of socio-demographic variables and *Lamb_Ara* and *Tradition* are two continuous variables[8] that measure the importance consumers attached to purchasing lamb meat produced in the Aragon region (*Lamb_Ara*) and to purchasing foods produced using a traditional or typical production method (*Tradition*). u_i is the individual specific disturbance for the ith consumer constant through time and ε_{njt} is the overall error term. The model was estimated using the STATA 10.1 software. Hence, if the estimated parameters for the *Lamb_Ara* and *Tradition* variables (δ and λ) are statistically different from zero, our hypothesis is not rejected.

---

[7] There are no zero bids in our data sets

[8] We asked respondents to rate in a 5 point-increasing scale the importance they attached to purchasing: i) meat lamb produced in the Aragon region (*Lamb_Ara*); and ii) foods produced using traditional or typical production methods (*Tradition*)

To test our second hypothesis (i.e., the effects of social influence on bids are different between men and women), we use the whole sample to test whether the bids are totally different between men and women using a covariance analysis; in particular, if the effect of the variables *Lamb_Ara* and *Tradition* (δ and λ) are statistically different. If they are, we can conclude that the effects of social influence on bids are different between men and women. If all the coefficients for the gender dummy variables are statistically different from zero, we split the whole pooled data set into two data sets, one for men and other for women and we then specified two models according to equation (1) but one for the men subsample and the other for the women subsample.

3. Results

Table 1 reports the descriptive statistics for the socio-demographic characteristics of the subjects. Most of participants are female (61%), living in households of 2.6 members on average and with an average age of 49 years old. Around 25% of participants have a university degree and a net monthly income higher than 2,500 €.

(INSERT TABLE 1)

Table 2 shows the bids for the four lamb ribs packages across the five rounds. It can be observed that bids increased from round 1 to round 2 but slightly decreased after round 2. Consequently, there seems to be no evidence of the bids being correlated or "affiliated" with the posted price. While bids increased from round 1 to round 2, it is not possible to detect whether this is due to learning effect or due to some other psychological effect (e.g., anchoring effect, competitive effect).

It can be observed that the bids for the lamb ribs labeled as "Ojinegra from Teruel" are higher than the bids for unlabelled ones for both lamb ribs (non-suckling and suckling) indicating that consumers are willing to pay a premium for the non-suckling and suckling lamb labelled as "Ojinegra from Teruel". However, the premium is higher for the non-suckling lamb than for the suckling.

(INSERT TABLE 2)

We estimated model depicted in equation (1) for the whole sample and for the men and women subsamples using maximum likelihood random effects to take into account individuals' heterogeneity (Baltagi, 2003) across the five rounds. Empirical results are presented in Table 3.

Because the whole sample dataset contains the pooled bids of each individual by round for the four products, we first checked if pooling the data for the four products was the best approach instead of using them separately. To do this, we used a covariance analyses to check whether differences across lamb meat products exist using the Likelihood Ratio test (LR). Since the LR between the whole model (products dummies for all the parameters) and the restricted model (no product dummies) is 254.02 higher than the chi-square for 30 degrees of freedom and 5% significance level (42.55), we rejected the null hypothesis, indicating that statistically significant differences across products existed. In addition, when we conducted the test between the whole model (products dummies for all the parameters, constant and slopes) and the model with only products dummies affecting the constant terms, results indicate that the null hypothesis is not rejected[9]. This means that product dummies for the slope coefficients are not statistically different across lamb

---

[9] The chi-square=28.12 is lower than the chi-square for 27 degrees of freedom and 5% significance level (40.11)

12

products, but bids are only statistically different at the mean values. Consequently, the best specification for the model is to pool the bids for the four products and differentiate the constant in equation (1) by using dummy variables for the different products[10]. The parameter estimates for the whole sample show that consumers are willing to pay a positive premium for non-suckling lamb and suckling lamb products labelled as "Ojinegra from Teruel" because the three dummy variables for the products are positive and statistically different from zero (0.632; 0.448; and 0.995).

Estimated parameters for the two social influence variables indicate that only the variable representing the importance consumers give to purchasing traditional food products (*Tradition*) is positive and statistically different from zero. On the other hand, the social influence variable (*Lamb_Ara*) is not statistically significant. Then, we can conclude that our first hypothesis is not rejected and that social influence positively affects WTP for local foods as Lusk and Norwood (2009) stated.

To investigate our second hypothesis, we estimated the model depicted in equation (1) for the whole sample and used a covariance analysis to check whether the bids are totally different between men and women. The null hypothesis that the gender dummies (affecting constant and slopes) are equal to zero was rejected (The chi-square=114.83 is higher than the chi-square for 16 degrees of freedom and 5% significance level, 25) indicating that statistically significant differences in bids exist between men and women. Moreover, when the test is conducted between the whole model (product dummies for all the parameters, constant and slopes) and the model with only a gender dummy affecting the

---

[10] Because we have four lamb meat products we introduced three dummy variables (SuckLamb:1 = if unlabelled sucking lamb; 0=otherwise; Ojinegra_Lamb: 1= if non-suckling lamb labeled as "Ojinegra from Teruel"; 0=otherwise; Ojinegra_SuckLamb: 1= if sucking lamb labeled as "Ojinegra from Teruel; 0=otherwise)

constant term, results indicate that the null hypothesis is also rejected (The chi-square=124.31 is higher than the chi-square for 15 degrees of freedom and 5% significance level, 23.68). This result suggests that the best model specification is to split the whole sample into two (i.e., by gender) and estimate two models one for men and other for women. This also means that the second hypothesis is not rejected indicating that the effects of social influence on bids are different between men and women.

Both social influence variables are statistically different from zero, but while both variables are positive for women, only the social influence variable representing the importance consumers give to purchasing lamb meat produced in Aragon (*Lamb_Ara*) is negatively related to bid values of men. This result indicates that the effects of social influence on bids are different between men and women. However, while it is possible that women get an extra-utility from the satisfaction of buying locally produced lamb meat, it is not clear why the social influence linked to locally produced lamb meat have a negative effect on bids of men. These results may suggest that compared to men, women show higher sensitivity towards social cues linked to products with social dimensions. Future research on this issue is indeed warranted given the potentially interesting reasons for these differences in social influence effects by gender and the marketing and policy implications they may bring.

(INSERT TABLE 3)

14

4. Concluding Remarks

We assess consumers WTP for local food products and evaluate the issue of social influence in experimental auctions and their influence on bids for local food products by gender. Local foods can be demanded by consumers not only for their freshness, higher quality, economic, social and environmental benefits but also for the level of social embeddedness reflected by these products in relation to the local community. Hence, local food products have a social dimension which can potentially influence consumers' WTP. Despite the growing interest in local foods, we know of no other study that has directly focused on the effect of social influence on consumers' WTP for local foods. To fill this void, we conducted an experimental auction to assess the effect of social influence on bid values. Our results suggest that consumers get an extra-utility from the satisfaction of social influence linked to purchase of local food. Our results also suggest that there are differences by gender of the effects of social influence on bids. While both social influence factors related to the importance of purchasing lamb meat produced in Aragon and foods produced using traditional methods increase women's WTP, the social influence factor related to the importance of buying local lamb meat produced in Aragon decreases men's WTP.

Our results generally imply that the social influence factors we examined in this study can indeed influence bidding behaviour, which further imply that social issues should be analyzed and taken into account in experiments involving goods with social dimensions. Non-inclusion of variables depicting social influence in WTP models for these goods from auction experiments may then render biased inferences. Our results also imply that

increasing consumers' level of social embeddeness with their local community might improve the valuation and market for local foods. Hence, programs that can enhance, in particular, the importance consumers attach to foods produced in the region and to using traditional production methods would be warranted.

Our findings have important marketing and policy implications since they suggest that local food stakeholders and policy makers should foster activities that can enhance social embeddedness of people to increase demand for local foods.

While our study provided some new and interesting results, future studies should attempt to definitively determine the reasons behind the differences in the effects of social influence in consumers WTPs by gender we found in this study. Also, future research should test the robustness of our findings in other locations, cultures, and with other types of social issues. Findings from these studies, including ours, can have significant implications for marketing and policies related to the promotion of local foods.

References

Alfnes, F., & Rickertsen, K. (2003). European consumers' willingness to pay for U.S. beef in experimental auction market. American Journal of Agricultural Economics, 2, 396-405.

Alfnes, F., Rickertsen, K., & Ueland, O. (2008). Consumer attitudes toward low stake risk in food markets. Applied Economics, 40(23), 3039-3049.

Alfnes, F. (2009). Valuing product attribute in Vickrey auctions when market substitutes are available. European Review of Agricultural Economics, 36(2), 133–149.

Andreaoni, J., & Vesterlund, L. (2001). Which is the fair sex? Gender differences in altruism. The Quarterly Journal of Economics, 116(1), 293-312.

Becker, G. (1996). Accounting for tastes. Cambridge, Massachusetts: The University of Harvard Press.

Baltagi, B.H. (2003). Econometric analysis of panel data. John Wiley & Sons, Chichester.

Bernard, J.C., & Bernard, D.J. (2009). What is it about organic milk? An experimental analysis. American Journal of Agricultural Economics, 91(3), 826-836.

Bernard, J.C., & Bernard, D.J. (2010). Comparing parts with the whole: Willingness to pay for pesticide-free, non-GM, and organic potatoes and sweet corn. Journal of Agricultural and Resource Economics, 35(3), 457-475.

Born, B., & Purcell, M. (2006). Avoiding the local trap: Scale and food systems in planning research. Journal of Planning Education and Research, 26, 195-207.

Brown, C. (2003). Consumers' preferences for locally produced food: A study in southeast Missouri. American Journal of Alternative Agriculture, 18(4), 213-223.

Carpio, C.E., & Isengildina-Massa, O. (2009). Consumers willingness to pay for locally grown products: The case of South Carolina. Agribusiness, 25(3), 412-426.

Chambers, S., Lobb, A., Butler, L., Harvey, K., & Traill, B.W. (2007). Local, national and imported foods: A qualitative study. Appetite, 49, 208-213.

Chang, J.B., Lusk, J., & Norwood, F.B. (2009). How closely do hypothetical surveys and laboratory experiments predict field behaviour? American Journal of Agricultural Economics, 91(2), 518-534.

Colson, G., & Huffman, W.E. (2011). Consumers' willingness to pay for genetically modified foods with product-enhancing nutritional attributes. American Journal of Agricultural Economics, 93(2), 358-363.

Colson, G.J., Huffman, W.E., & Rousu, M.C. (2011). Improving the nutrient content of food through genetic modification: Evidence from experimental auctions on consumer acceptance. Journal of Agricultural and Resource Economics, 36(2), 343-364.

Conner, D., Colasanti, K., Ross, B.R., & Smalley, S.B. (2010). Locally grown foods and farmers markets: consumer attitudes and behaviours. Sustainability, 2, 742-756.

Corrigan, J.R., & Rousu, M.C. (2006). Posted prices and bid affiliation: Evidence from experimental auctions. American Journal of Agricultural Economics, 88(4), 1078–1090.

Corrigan, J.R., Drichoutis, A.C., Lusk, J.L., Nayga Jr., & R.M., Rousu, M.C. (2011). Repeated Rounds with Price Feedback in Experimental Auction Valuation: An Adversarial Collaboration. American Journal of Agricultural Economics, 16, 1-19.

Costanigro, M., McFadden, D.T., Kroll, S., & Nurse, G. (2011). An in-store valuation of local and organic apples: The role of social desirability. Agribusiness, 27(4), 465-477.

Cox, J.C., & Deck, C. (2006). When are women more generous than men? Economic Inquiry, 44(4), 587-598.

Cox, J.C., Grether, D.M., 1996. The preference reversal phenomenon: response mode, markets and incentives. Economic Theory, 7, C381-C405.

Cranfield, J., Henson S., & Blandon J., (2008). The effects of attitudinal and socio-demographic factors on the likelihood of buying locally-produced food. InFERG Working Paper, No 8_FDS. (http://consumermonitor.ca/wp-content/uploads/2010/07/WP8_FSD.pdf).

Croson, R., & Gneezy, U. (2009). Gender differences in preferences. Journal of Economic Literature, 47(2), 448-474.

Darby, K., Batte, M.T., Ernst, S., & Roe, B. (2008). Decomposing local: A conjoint analysis of locally produced foods. American Journal of Agricultural Economics, 90(2), 476-486.

De Groote, H., Kimenju, S.Ch., & Morawetz, U.B. (2011). Estimating consumer willingness to pay for food quality with experimental auctions: The case of yellow versus fortified maize meal in Kenya. Agricultural Economics, 42(1), 1-16.

European Committe of the Regions (1996). Promoting and protecting local products: a trumpcard for the regions, Brussels: Committee of the Regions.

Feagan, R., Morris, D., & Krung, K. (2004). Niagara region farmers' markets: Local food systems and sustainability considerations. Local Environment, 9(3), 235-254.

Froehlich, E.J., Carlberg J.G., & Ward C.E. (2009). Willingness-to-Pay for Fresh Brand Name Beef. Canadian Journal of Agricultural Economics, 57, 119-137.

Gallons, J., Toensmeyer, U.C., Bacon, J.R. & German, C.L. (1997). An analysis of consumer characteristics concerning direct marketing of fresh produce in Delaware: A case study. Journal of Food Distribution Research, 28(1), 98-106.

Giraud, K.L., Bond, G.A., & Bond, J.J. (2005). Consumer preferences for locally made speciality food products across Northern New England. Agricultural and Resource Economics Review, 34(2), 204-216.

Groves, A. (2005). The local and Regional Food opportunity. IGD http://www.defra.gov.uk/ foodfarm/food/industry/regional/pdf/localregfoodopps.pdf .

Grunert, K.G. (2006). How changes in consumer behaviour and retailing affect competence requirements for food producers and processors. Economía Agraria y de los Recursos Naturales, 6(11), 3-22.

Hand, M.S., & Martinez, S. (2010). Just what does local mean? Choice, 1st Quarter 2010, 25(1).

Harrison, G.W., Harstad, R.M., & Rutstroöm, E.E. (2004). Experimental methods and elicitation of values. Experimental Economics, 7(2), 123-140.

Harrison, G.W. (2006). Experimental evidence on alternative environmental valuation methods. Environmental and Resource Economics, 36, 125-162.

Hein, J.R., Ilbery, B., & Kneafsey, M. (2006). Distribution of local food activity in England and Wales: An index of food relocalization. Regional Studies, 40(3), 289-301.

Hinrichs, C.C. (2000). Embeddedness and local food systems: Notes on two types of direct agricultural market. Journal of Rural Studies, 16, 295-303.

Hunt, A.R. (2007). Consumer interactions and influences on farmers' market vendors. Renewable Agriculture and Food Systems, 22(1), 54-66.

Hustvedt, G., & Bernard, J.C. (2008). Consumer willingness to pay for sustainable apparel: The influence of labelling for fibre origin and production methods. International Journal of Consumer Studies, 32, 491-498.

Ilbery, B., & Maye, D. (2005). Food supply chains and sustainability: Evidence from specialist food producers in the Stottish/English borders. Land Use Policy, 22, 331-344.

James J.S., Rickard B.J., & Rossman W.J. (2009). Product differentiation and market segmentation in applesauce: Using a choice experiment to assess the value of organic, local and nutrition attributes. Agricultural and Resource Economics Review, 38(3), 357-370.

Jekanowski, M.D., Williams II, D.R., & Schiek, W.A. (2000). Consumers' willingness to purchase locally produced agricultural products: An analysis of an Indiana survey. Agricultural and Resource Economics Review, 29(8), 43-53.

Keeling-Bond, J., Thilmany, D., & Bond, C.A. (2006). Direct marketing of fresh produce: Understanding consumer purchasing decisions. Choices, 21(4), 229-235.

Kezis, A., Gwebu, T., Peavey, S. & Cheng, H. (1998). A case study of consumers at a small farmers' market in Maine: Results form a 1995 survey. Journal of Food Distribution Research, 29(1), 91-99.

La Trobe, H. (2001). Farmers' markats: consuming local rural produce. International Journal of Consumer Studies, 25(3), 181-192.

Lee, J.Y., Han, D.B., Nayga, R.M., & Lim, S.S., 2011. Valuing traceability of imported beef in Korea: An experimental auction approach. Australian of Agricultural and Resource Economics, 55(3), 360-373.

Loureiro, M.L., & Hine, S. (2002). Discovering Niche Markets: A comparison of consumer willingness to pay for local (Colorado Grown), Organic, and GMO-Free Products. Journal of Agricultural and Applied Economics, 34(3), 477-487.

Lusk, J.L., Alexander, C., & Rousu M.C. (2007). Designing experimental auctions for marketing research: The effect of values, distributions, and mechanisms on incentives for truthful bidding. Review of Marketing Science, 5(3).

Lusk, J.L., & Shogren, J. (2007). Experimental auctions: Methods and applications in economic and marketing research. Cambridge: The University of Cambridge Press.

Lusk, J.L., & Norwood, F.B. (2009). Bridging the gap between laboratory experiments and naturally occurring markets: An inferred valuation method. Journal of Environmental Economics and Management, 58, 236-250.

Milgrom, P.R., & Weber, R.J. (1982). A theory of auctions and competitive bidding. Econometrica, 50(5), 1089-1122.

Morris, C. & Buller, H., (2003). The local food sector: A preliminary assessment of its form and impact in Gloucesterhire. British Food Journal, 105 (8), 559-566.

Muller, L., & Ruffieux, B. (2011). Do price-tags influence consumers' willingness to pay? On the external validity of using auctions for measuring value. Experimental Economics, 14(2), 181-202.

Murdoch, J., Marsden, T., & Banks, J. (2000). Quality, Nature, and Embeddedness: Some Theoretical considerations in the context of the Food Sector. Economic Geography, 76(2), 107-125.

Plott, C.R. (1996). Rational individual behaviour in markets and social choice processes: The discovered preference hypothesis. In K.J. Arrow, E. Colombatto, M. Perlaman, C. Schmidt (Ed.), (pp. 225-250). New York: St Martin's Press.

Rainey, R., Crandall, P.G., O'Bryan, C.A., Ricke, S.C., Pendleton, S. & Seideman, S. (2011). Marketing locally produced organic food in three metropolitan Arkansas farmers' markets: Consumer opinions and food safety concerns. Journal of Agricultural & Food Information, 12(2), 141-153.

Roheim, C.A., Durham, C., King, R., Johnson, A., McCluskey, J., Pardoe, I., Flores, J., & Zhao, H. (2007). Rhode Island Consumers´Preferences for Locally-produced food: Report on results from a 2006 survey. http://www.uri.edu/cels/enre/docs_CRoheim/ URI_ecolabeling_report.pdf

Rousu, M.C., Beach, R.H., & Corrigan, J.H. (2008). The effects of selling complements and substitutes on consumer willingness to pay: Evidence from a laboratory experiment. Canadian Journal of Agricultural Economics, 56(2), 179-194.

Schneider, M.L., & Francis, C.A. (2005). Marketing locally produced foods: Consumer and farmer opinions in Washington County, Nebraska. Renewable Agriculture and Food System, 20(4), 252-260.

Shaw W.D., Nayga R.M., Silva A., 2006. Health benefits and uncertainty: an experimental analysis of the effects of risk presentation on auction bids for a healthful product. Economic Bulletin, 4 (20), 1-8.

Shogren, J.F., Margolis, M., Koo, C., & List, J.A. (2001). A random Nth-price auction. Journal of Economic Behavior and Organization, 46, 409-421.

Shogren J.F. (2006). Valuation in the lab. Environmental & Resource Economics, 34, 163-172.

Sunding, D.L. (2003), The role for government in differentiated product markets: Looking to economic theory. American Journal of Agricultural Economics, 85, 720–724.

Thompson, C.J., & Coskuner-Balli, G. (2007). Enchanting ethical consumerism: The case of community supported agriculture. Journal of Consumers Culture, 7(3), 275-303.

Weatherell, C., Tregear, A., & Allison, J. (2003). In search of the concerned consumer: UK public perceptions of food, farming and buying local. Journal of Rural Studies, 19, 233-244.

Yue, C., & Tong, C. (2009). Organic or local? Investigating consumer preference for fresh produce using a choice experiment with real economic incentives. HortScience, 44(2), 366-371.

Zepeda, L., & Leviten-Reid, C. (2004). Consumers' views on local food. Journal of Food Distribution Research, 35(3), 1-6.

Table 1. Sample characteristics and variables definition (% unless stated)

Variables	Definition	
Gender (Female)	Dummy (1= female; 0=Otherwise)	61.0
Age (Age)	Continuous: number of years (average)	49.5
Income (HIncome)	Dummy (1= more than 2,500€; Otherwise=0)	24.7
Household Size (Hsize)	Continuous: Number of members (average)	2.6
Household with adults more than 65 years old (More65)	Dummy (1= more than 65 years; Otherwise=0)	37.6
Household with children less than 6 years old (Kids6)	Dummy (1= less than 6 years; Otherwise=0)	9.7
People with university degree (University)	Dummy (1=university degree; 0=Otherwise)	25.0
Social influence questions		
Importance given to purchase lamb meat produced in Aragón (Lamb_Ara)	Continuous: a five point-increasing scale (average)	4.1
Importance given to purchase foods produce using traditional methods (Tradition)	Continuous: a five point-increasing scale (average)	3.9

Table 2. Descriptive statistics of bids for the four lamb ribs packages by round (€ per package).

	Round 1	Round 2	Round 3	Round 4	Round 5
Bids (average)					
Unlabelled non-suckling lamb	2.21 (0.86)	2.34 (0.81)	2.30 (0.70)	2.29 (0.74)	2.25 (0.75)
Labelled non-suckling lamb	2.64 (1.16)	2.84 (1.06)	2.74 (0.78)	2.73 (0.79)	2.64 (0.78)
Unlabeled suckling lamb	2.75 (1.14)	3.02 (1.00)	3.00 (0.87)	2.95 (0.85)	2.83 (0.88)
Labelled suckling lamb	3.13 (1.49)	3.40 (1.28)	3.35 (0.99)	3.29 (1.07)	3.16 (1.04)

Note: standard deviations are in parenthesis

Table 3. Random-effect model results

Variables	Whole sample		Men		Women	
	Coef.	p-value	Coef.	p-value	Coef.	p-value
Constant	2.791**	0.000	4.73**	0.000	1.771**	0.000
Round 2	0.225**	0.000	0.298**	0.000	0.182**	0.002
Round 3	0.174**	0.001	0.276**	0.000	0.112*	0.055
Round 4	0.143**	0.001	0.359**	0.000	0.014	0.804
Round 5	0.045	0.309	0.290**	0.000	-0.101*	0.085
SuckLamb	0.632**	0.000	0.5327**	0.000	0.692**	0.000
Ojinegra_Lamb	0.448**	0.000	0.349**	0.000	0.508**	0.000
Ojinegra_SuckLamb	0.995**	0.000	0.906**	0.000	1.049**	0.000
Lamb_Ara	0.012	0.817	-0.281**	0.000	0.118*	0.083
Tradition	0.138**	0.003	0.359**	0.000	0.097*	0.081
Female	-0.153*	0.100	---	---	---	---
Age	-0.023**	0.000	-0.054**	0.000	-0.011**	0.028
HIncome	0.422**	0.001	0.562**	0.005	0.439**	0.004
More65	0.209*	0.096	0.964**	0.005	0.071	0.644
Kids6	0.223	0.142	-0.093	0.580	-0.541**	0.041
Hsize	-0.056	0.267	-0.243**	0.000	-0.021	0.731
University	-0.014	0.905	0.227	0.281	0.163	0.308
# of observations	1540		600		940	

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