



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

*No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.*



*International Food and Agribusiness Management Review*  
Volume 14, Issue 3, 2011

## **Conjoint Analysis of Consumer Preferences for Lamb Meat in Central and Southwest Urban Albania**

Drini Imami<sup>Ⓐ</sup>, Catherine Chan-Halbrendt<sup>ᵇ</sup>, Quanguo Zhang<sup>ᶜ</sup> and Edvin Zhllima<sup>ᵈ</sup>

<sup>ᵃ</sup> *Lecturer, Agriculture University of Tirana, Universiteti Bujqesor i Tiranës, Koder-Kamez, Tirana, Albania.*

<sup>ᵇ</sup> *Professor, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa, 1910 East-West Road, Sherman 104, Honolulu, Hawaii, 96822, U.S.A.*

<sup>ᶜ</sup> *MS Student, Department of Natural Resources and Environmental Management, University of Hawaii at Manoa, 1910 East-West Road, Sherman 214, Honolulu, Hawaii, 96822, U.S.A.*

<sup>ᵈ</sup> *Lecturer, Agriculture University of Tirana, Universiteti Bujqesor i Tiranës, Koder-Kamez, Tirana, Albania.*

---

---

### **Abstract**

The objective of this study is to inform small ruminant sector stakeholders regarding consumer preferences for lamb meat attributes such as origin, price, weight and safety/certification. Conjoint Choice Experiment (CCE) was utilized to design the survey and latent class approach to analyze the data. Within the prices and weight constraints provided in the survey, origin is an important factor for all four identified consumer classes. All consumer classes prefer domestic lamb meat, and moreover, domestic highland lamb meat is strongly preferred over domestic plain/lowland meat. The identified consumer classes prefer smaller weight lamb to larger ones. This study also analyzed willingness to pay for the main product attributes for the largest consumer groups. The two largest consumer groups were willing to pay 101 and 276 ALL/kg for domestic plain/lowland meat as opposed to imported meat. This result can be used to producers' advantage if labeling and other marketing tools are available to inform consumers of the products' origin. Therefore, enforcement of origin identification should be a priority for the government and other stakeholders, while producers should consider introducing and promoting their own brands such as producer associations' brands.

**Keywords:** Conjoint Choice Experiment (CCE), latent class analysis, lamb meat, consumer preferences, Albania

---

<sup>Ⓐ</sup>Corresponding author: Tel: + 355 4 2225237  
Email: [dimami@ubt.edu.al](mailto:dimami@ubt.edu.al)

C. Chan-Halbrendt: [chanhalb@hawaii.edu](mailto:chanhalb@hawaii.edu)

Q. Zhang: [quanguoz@hawaii.edu](mailto:quanguoz@hawaii.edu)

E. Zhllima: [ezhllima@ubt.edu.al](mailto:ezhllima@ubt.edu.al)

## **Introduction**

Small ruminant (mainly sheep and to lesser extent goat) production is an important source of income for small Albanian agricultural holdings, especially in impoverished rural mountainous areas. In these areas, enhancing small ruminants' productivity is considered a priority by the Agriculture and Food Sector Strategy of Ministry of Agriculture, Food and Consumer Protection (MoACFP 2007). Meat and byproducts from small ruminants are used both for household consumption (most Albanian farms are subsistence and semi-subsistence farms) and sold on the market. Thus, government support for the development of this sector is important from rural economic development and poverty alleviation perspectives.

It is important that any support provided to this sector (as well as other agrifood sectors) be based on in-depth understanding of market characteristics and trends. In this context, understanding consumer preferences for lamb product attributes is instrumental in assisting policy makers, private investors, and individual farmers to design efficient and sustainable intervention activities. Specifically, the objectives of this study are to assess urban Albanian consumer preferences for different lamb meat attributes, to explore the market segments for the different lamb meat products, to estimate the relative importance of the different attributes and to assess willingness to pay for certain product attributes. This information is useful for marketing experts, policy-makers, producer associations and retailers. However, given both the production base and retail sector are highly fragmented with very limited capacities to design and implement marketing strategies, the findings of this paper are of particular interest for policy-makers and donor programs active in the sector. These entities play a crucial role in shaping the sector production in context of the market trends.

This study was commissioned by United Nations Development Program (UNDP) Project "Improving the Performance of the Livestock Sector in Albania" to provide inputs for their strategy to support the Albanian small ruminants sector. This UNDP project is assisting small ruminant farmers in Southwest Albania to enhance access to market and increase profitability. Therefore, understanding of consumer preferences and willingness to pay for certain lamb meat attributes was considered important to anticipate and serve as guideline for the support of the targeted farmers and farmer associations. Our study was developed in close cooperation with several stakeholders, including the grantor, and farmer associations. The preliminary results were presented and validated at a national workshop<sup>1</sup> in October 2010 with the main stakeholders of the sector, including Ministry of Agriculture, Food and Consumer Protection, donor community, farmer associations, and researchers. Workshop participants found this study useful for their future engagement in the sector, especially the aforementioned UNDP Project that used this study as a basis for its support strategy for small ruminant farmers in Southwest Albania

## **Background**

The livestock industry is one of the fastest growing Albanian agricultural sectors in the past decade. Furthermore, since Albania has optimal conditions to breed sheep and goats as well as cows, the Albanian government considers the livestock sector a priority for development

---

<sup>1</sup> For more information on this workshop, please visit: <http://www.undp.org.al/index.php?page=detail&id=155>, last accessed on 15<sup>th</sup> August 2011

(MoAFCP 2007). Lamb meat production is considered to be a major opportunity for the development and growth of the Albanian agriculture sector (WB 2007), particularly because lamb meat is an important component of the traditional diet in Albania.

The estimated yearly per capita consumption in urban areas is 3.5 to 3.8 kg of lamb and mutton and 0.6 kg of kid goat meat, while consumption in rural areas is much higher, with an estimated consumption of more than 7 kg of lamb and mutton and 3 kg of kid goat meat (Leonetti and Kristo 2010). The yearly per capita lamb and mutton consumption rate is higher than other comparable countries in the region such as Serbia (2.2 Kg), Macedonia (1.9 Kg), Bosnia and Herzegovina (0.6 Kg) (FAO 2009) and Kosovo (0.4 Kg) (FAO 2009). Most consumers buy lamb meat from butchers, and some directly from farmers. Only about 5% of consumers in urban areas buy lamb meat at supermarkets or other types of retail shops (DSA 2010). Domestic lamb meat is typically bought fresh at the butchers whereas imported lamb meat is typically available frozen in supermarkets or minimarkets.

Albania possesses a considerable number of sheep – more than 1.7 million in 2009. The number of sheep increased in the 1990s, peaked in 2000 and subsequently declined and stabilized around 2005. However, increasing productivity has more than offset the reduction of number of animals (See Table 1). Overall, increased productivity and better access to market led to a net increase in this sector’s output, though production still fails to meet the growing urban demand (WB 2007). At the same time, though imports remain insignificant compared to domestic production, they have almost doubled since 2000, and are expected to grow further due to income growth and trade liberalization.

**Table 1.** Number of sheep heads, sheep meat production and imports by year

<b>Year</b>	<b>2000</b>	<b>2008</b>	<b>2009</b>
Sheep (000 heads)	1,939	1,800	1,768
Meat production (ton)	12,300	14,900	15,600
Meat imports (ton)	342	599	616

**Source:** MoAFCP 2010 (Production figures), UNSTAT 2010 (Import figures)

Productivity and efficiency remain key challenges of this sector, contributing to relatively high production costs and prices. Product safety is also a major problem that has to be addressed by the producers and the government. Food-borne diseases caused by microbiological contamination are one of the major public health challenges in Albania, including frequently reported cases of brucellosis (WB, 2007).

While there have been several value chain studies of the small ruminant sector, there has not been an in-depth consumer preference survey on lamb meat in Albania. It is important that policy-makers, the donor community, and other stakeholders engaged in this sector take into consideration consumer “perception” for the main meat attributes when planning intervention strategies such as subsidy schemes and extension services. More specifically, this study provides useful inputs for strategies and actions implemented by the Ministry of Agriculture, Food and Consumer Protection, and several donor organizations/projects actively engaged in the Albanian small ruminant sector, including UNDP, SNV, EU projects.

## **Methodology**

### *Research Design*

The last two decades have brought major behavioral changes to European consumers. The increased awareness of food safety, as well as changes in dietary and consumption patterns have attracted interest in studying fresh meat consumption preferences (Grunert 2005; Bernabeu and Tendero 2005). Various studies have focused on consumer behaviors related to lamb meat. Past studies have found that attributes such as quality and safety perceptions, health concerns (Rimal 2005; McEachern and Willock 2004; Schupp et al. 1998), tenderness (Dransfield 2005), packaging, production systems and origin (Roosen et al. 2003; Grunert 1997) influence consumer choices. Other scholars (such as Basiotis et al. 1993; Misra et al. 1993; Schutz et al. 1989; Adu-Nyako et al. 1999; Jimin et al. 2004; Becker et al. 1998 and Grunert 2005) emphasized that demographic factors such as age, gender, education, place of residence, household size, and income influence the choice and frequency of lamb meat consumption.

In this study, Conjoint Choice Experiment (CCE) and Latent Class Analysis (LCA) were used to develop efficient survey product profile designs and estimate consumer preference for lamb meat respectively. CCE was developed by Louviere and Woodworth (1983) and is based on the idea that a good can be described by its product attributes and their levels. The lamb meat attribute selection is based on extensive literature review on consumer's preference indication in regards to both extrinsic elements (labeling, place of purchase, price, origin, etc.) and intrinsic elements (color, texture, fat content, aroma, tenderness, freshness, etc.) of the product itself.

Few studies have used clustering methods or conjoint experiments to analyze fresh lamb meat consumption behavior; however there have been several studies for other types of meat. Various scholars such as (Lusk and Parker 2009; Lusk and Cevallos 2004; Lusk et al. 2001; and Ward et al. 2008), look into various aspects/attributes of beef meat, whereas Nilson et al. (2006) looks into pork meat. Regarding lamb meat, Bernabeu and Tendero (2005) interviewed 400 consumers in Spain focusing on the relative importance of different attributes such as price, certification, origin and commercial type; and Cunhal-Sendim et al. (1999) applied conjoint analysis to a butcher shop survey and found that the most important criteria for consumers were pricing and grading.

There are several advantages in using CCE over traditional conjoint analysis. First, the design of product attribute sets can mimic products with vary attribute levels, allowing measurements of the tradeoffs respondents make by choosing one attribute over another. Second, CCE uses discrete choices for choosing among pairs or sets of product profiles, rather than rating or ranking ten or twelve product profiles at one time. Thus, the design reduces the possibility of respondent fatigue often seen with traditional conjoint analysis. CCE also has two disadvantages. The first is that respondents repetitively choose a profile from a choice set. The respondent may "catch on" and give strategically biased answers. To minimize that possibility, the number of choice sets was reduced to about 12 per respondent. The second disadvantage is that there are no incentives for people to want to do the more complex conjoint choice survey. However, lamb meat is a traditional component in the Albanian diet and respondents are familiar with the attributes and more likely to participate if they know the product and the purpose of the survey. Overall, the advantages of CCE far outweigh its disadvantages (Chan-Halbrendt et al. 2010, a). A complete

CCE includes several steps such as attributes selection and determination level, choice set construction, data collection, and analysis.

Various studies have used several techniques for determining the most relevant product attributes. These include focus group interviews, in-depth interviews or means-end chain analysis (Krystallis and Ness 2005; Cunhal-Sendim et al. 1999). In this study, we chose the attributes based on extensive literature review of consumer preferences for lamb products (based on studies of Cunhal-Sendim et al. 1999; Bernabeu and Tendero 2005; Basiotis et al. 1993; Misra et al. 1993; Schutz et al. 1989; Adu-Nyako et al. 1999; Jimin et al. 2004, Becker et al. 1998; Corcoran et al. 2002; Bonne and Verbeke 2006) and other type of food basket products (Siskos et al. 2001; Sandalidou et al. 2002; Goering 1985; Gazquez-Abad and Sanchez-Perez 2009). We also organized two focus groups with consumers and experts (in agrifood marketing specialists, veterinarians, farmer association representatives, etc.) to determine the most important lamb meat purchasing attributes, their levels and other aspects related to the survey. As a result, four attributes were chosen for studying lamb meat preference: weight, origin, certification, and price. A summary of attributes and levels is shown in Table 2.

**Table 2.** Lamb Meat Attributes and Levels

Attributes	Levels			
Carcass Weight (Kg)	7	10	13	16
Origin	Import	Domestic Highland	Domestic Plain	
Safety Certification	VS*	NVS**		
Price ALL***/Kg	700	800	900	1,000

**Source:** Literature review and focus groups

\*: Veterinarian Stamp Any Butcher/Seller

\*\* : No Veterinarian Stamp Known Butcher/Seller

\*\*\*: ALL is the Albanian currency, 1USD ≈ 100 ALL

**Product Attributes and their Levels:**

1. *Weight.* Lambs are mostly sold by farmers when the lambs are small as there is higher demand for young lamb meat. In addition, since sheep milk is often more profitable than meat, farmers tend to “get rid” of lambs as quickly as possible in order save the ewes’ milk for sale and sell young lamb meat at a premium price. Thus, lambs that weigh between 7 – 16 kg dominate the market (Leonetti and Kristo 2010). For this attribute there were four levels: 7, 10, 13 and 16 kg (slaughtered/butchered weight).
2. *Origin.* Lamb meat origin is a very important consumer purchasing factor. Bernabeu and Tendero (2005) found that origin was an important purchasing attribute for various areas in Spain. Consumers and butchers participating in the focus groups confirmed a strong preference for domestic lamb meat as compared to imported. In addition, lamb grown in highland pastures is perceived to be of higher quality than lambs grown in the flatland. Thus, for this attribute, three levels were included: import, domestic highland, and domestic plain/lowland.
3. *Certification.* This is an essential attribute especially in the case of a developing country like Albania, which faces serious problems with food safety enforcement. The only

sources of lamb meat safety insurance in Albania are governmental veterinary inspection and certification on one hand, and personal trust in the local butcher on the other hand. According to Albanian law, butchered lambs (and carcasses of other types of animals such as calves) should be inspected by an authorized veterinarian who stamps the carcass if it met government standards of safety and quality. Imports, on the other hand, are subject to more regular control via customs inspection. In practice, the public veterinarian certification system is not found to be very reliable according to the focus groups. Alternative mechanisms of safety and quality certifications are practically non-existent in this sector in Albania, as also there are no production or retail brands applied to lamb meat. Thus, for this attribute the levels were: lamb meat with veterinarian stamp (VS) from any butcher/seller, or lamb meat without veterinarian stamp (NVS) from a trusted (local) butcher/seller.

4. *Price.* Price consisted of four levels: 700 ALL<sup>2</sup>/kg, 800 ALL/kg, 900 ALL/kg, and 1,000 ALL/kg. These prices are generally found in the market place and were confirmed by the focus group.

### *Statistical Design and Analysis*

Statistical design is used to combine the levels of the attributes into a number of alternative product profiles to be presented to respondents. Depending on how many choice sets and profiles are included in the experiment, one can have either complete or fractional factorial designs. A fractional factorial design is used to reduce the number of attribute level combinations while allowing for the efficient estimation of the effects of the individual attributes ('main effects'). In this study, there are four attributes, of which two have four levels (price and weight), one has three levels and one has two levels. Thus, the number of possible profiles totaled  $4 \times 4 \times 3 \times 2$  or 96. A complete factorial design would use all the 96 profiles, which is impossible for respondents to evaluate. The most commonly used method of constructing fractional factorial design in conjoint measurement is using orthogonal array. Orthogonal arrays build on Greco-Latin squares by developing highly fractionated designs in which the scenario profiles are selected so that the independent contributions of all main effects are balanced, assuming negligible interactions (Green and Wind 1975). From all possible profiles, sets of profiles were randomly developed and separated into 7 versions. The survey consists of two parts. The first part consisted of choosing the 12 choice sets and the second part was additional questions that included the socio-demographic details of each respondent. A sample choice set is given in Table 3. The software used to design the surveys was Sawtooth Software SSI web version 6.0. Since imports and uncertified lamb meat cannot occur together as all imports are subject to more rigorous international and custom safety standards and certification, the occurrence of this combination as a potential profile was prohibited.

---

<sup>2</sup> ALL is the Albanian currency: 1 USD  $\approx$  100 ALL.

**Table 3.** Examples of a Choice Set

Attributes	Choice A	Choice B	Choice C	Choice D
Carcass Weight (Kg)	10	13	16	7
Origin	Domestic Highland	Import	Domestic Plain	Domestic Plain
Safety Certification	NVS	VS	NVS	VS
Price ALL/Kg	800	900	1,000	900

**Source:** Current study

Interviews were conducted with 378 randomly selected people from Tirana, Vlora, Saranda and Durres during July-August 2010. These four towns are situated in central and southwest Albania and together make up more than 65% of Albania’s population with a high concentration of purchasing power. Geographical coverage, interview locations and the number interviewed were based on the aforementioned focus groups and expert assessment, constraints of the budget and the UNDP project’s geographical coverage area. According to Johnson and Orme’s (2003) formula for sample size with four attributes, the sample of 378 respondents is sufficient for the number of attributes and levels in this study.

Mail-based surveys are not possible in Albania given that the system of addresses is chaotic and information is often missing<sup>3</sup>. To the authors’ best knowledge, a mail-based household survey has never been administered in Albania. In-person interviews have been widely applied to similar consumer surveys in other countries (Lusk et al. 2002; Burton et al. 2001) and also to Albanian consumer research (Chan-Halbrendt et al. 2010, b). Therefore, this study was designed to be conducted through face-to-face interviews. The interviews were carried out by trained students at various sites within the targeted towns suggested by the focus groups. Interviews took place close to meat markets, butcher shops and supermarkets – people were approached randomly and after completing each face-to-face interview, interviewers would approach the next closest person who walked by.

In CCE (Conjoint Choice Experiment), which is applied for this study, the assumption is that a respondent will choose the product or profile that would give them the maximum utility. According to random utility model, a respondent’s utility can be written as equation (1) (Magidson and Vermunt 2003; McFadden 1974):

$$(1) \quad U_j = V_j + e_j$$

Where  $U_j$  represents total utility derived from the product and  $V_j$ , the systematic component of the utility and  $e_j$  denotes a stochastic error. The probability ( $P$ ) of choosing alternative  $A_j$  from a set of alternatives  $A'$  which is a subset of the alternatives union is given by equation (2) (Magidson and Vermunt 2003):

$$(2) \quad P_j = \exp(V_j) / \sum_{k \in A'} \exp(V_k)$$

<sup>3</sup> <http://uk.reuters.com/article/2010/05/14/us-albania-addresses-idUKTRE64D3HK20100514>, (accessed June, 2011)

As to Latent Class Model, Magidson and Vermunt (2003) also provides an equation for probability of respondents in class  $t$  choosing choice  $j$ . The population is divided into  $t$  classes, and  $t = 1, 2, \dots, T$ :

$$(3) \quad P_{j,t} = \exp(V_{j,t}) / \sum_{k \in A^t} \exp(V_{k,t})$$

Table 4 (below) shows the gender and age structure of the Tirana survey respondents. Tirana is the capital and largest city in Albania, and half of the interviews were conducted there. Most of the study sample matched the Tirana population except there were more male respondents. Men are slightly overrepresented in this study, and in Albania it is more common for men to do the food shopping, particularly for older generations.

**Table 4:** Demographic structure of the sample and population in Albania

		Survey Respondents	Albania Population
		(%)	(%)
<i>Gender</i>	Female	41.62%	50.82%
	Male	58.38%	49.18%
<i>Age</i>	20-24	14.26%	6.46%
	25-29	11.98%	10.39%
	30-34	9.87%	11.52%
	35-39	9.42%	8.71%
	40-44	9.52%	9.83%
	45-49	10.01%	12.08%
	50-54	8.80%	13.20%
	55-59	6.86%	8.15%
	60-64	5.29%	8.15%
	65 and up	5.10%	11.52%

**Data sources:** Institution of Statistics, Republic of Tirana. Available at: <http://www.instat.gov.al/> and survey data

## Results

The software used to analyze the data was Latent Gold Choice TM, Version 4.0 developed by Statistical Innovations. The first part of the Latent Class Analysis is to determine the number of classes for the model. Bayesian Information Criterion (BIC) is commonly used to assess model fitness in Latent Class Analysis (Magidson and Vermunt 2003). The lowest BIC value implies the best fit. In this case, we tested from one to 8 classes. In addition to using BIC, we used a bootstrap test to analyze the R-squares among the class models that have very close BICs. The bootstrap test was used to test between 4-class and 5-class models. The test showed that the 4-class model had the best results in terms of having a low BIC and insignificant bootstrap test between the 4-class and the 5-class model. As such, the 4-class model results were used to interpret the data. Price in the model was a continuous variable and other attributes were dummy variables using effects coding scheme to represent the levels. Table 5 below shows the estimated parameters and their statistical significance. In the 4-class choice model, Classes 1, 2, 3, and 4 represented 37%, 30%, 19% and 15%, respectively, of the interviewed sample. No socio-demographic

variables (such as age, education etc.) differ significantly between these classes. Details of the four classes' estimated parameters are described below.

**Table 5.** Parameter Estimates

Attribute	Class1	z-value	Class2	z-value	Class3	z-value	Class4	z-value
<b>Price</b>	-0.005**	-10.269	-0.004**	-13.965	-0.001	-1.437	-0.001	-0.778
<i>Origin</i>								
DH	3.111**	20.411	0.404**	6.741	1.673**	13.206	1.785**	13.035
DP	-1.303**	-6.689	0.351**	6.200	0.357**	2.913	1.389**	10.746
I	-1.808**	-7.895	-0.754**	-8.653	-2.029**	-10.371	-3.175**	-16.524
<i>Weight (Kg)</i>								
7	0.071	0.938	0.039	0.598	1.634**	12.523	-0.343*	-2.340
10	0.299**	4.032	0.155**	2.857	0.419**	4.721	0.377**	2.890
13	0.221**	2.539	0.225**	4.114	-0.357**	-3.164	0.046	0.308
16	-0.592**	-5.907	-0.419**	-6.017	-1.696**	-9.907	-0.080	-0.491
<i>Certification</i>								
VS	-0.243**	-3.244	-0.451**	-9.440	-0.268**	-3.006	1.877**	16.660
NVS	0.243**	3.244	0.451**	9.440	0.268**	3.006	-1.877**	-16.660

**Source:** Study's analysis

\*\* Significant at 0.01 level

Most estimated parameters were significant at the 0.01 level, with the exception of some of the price and lamb weights of 13 and 16 kilos. All price variables were negative as expected. All the classes preferred meat from domestic highland origins followed by domestic plain/lowland and lastly imports. There was variability in the preferences for carcass weight and certification by classes.

Respondents in Class 1 strongly preferred lamb meat from domestic highlands, but not domestic plain/lowland and imported lamb meat. For butchered weight, respondents were more likely to buy 10-13 kg lamb meat and less likely to buy the heavier lamb meat. In addition, respondents in Class 1 were more likely to buy lamb meat from a known butcher even if they did not have veterinary stamps. The price coefficient is negative (as expected) and significant.

Respondents in Class 2 significantly preferred domestic highland and domestic plain/lowland lamb meat but were less likely to buy imported lamb meat. Like Class 1 respondents, they were more likely to buy the medium size lamb meat and less likely to buy the higher weight lamb meat. The certification preference also paralleled Class 1 in that respondents were likely to buy from known butchers without certification. Also for this class, the price coefficient is negative (as expected) and significant.

Respondents in Class 3 were more likely to buy domestic lamb meat, but strongly preferred highland meat to that from the plain/lowland; their lowest origin preference was for imported meat. Class 3 was likely to buy the lowest weight lamb meat, and was more likely to buy meat from known butchers without government quality and safety certification. Price was not significant in this class.

Respondents in Class 4 were most likely to buy domestic highland lamb meat, followed by domestic plain/lowland meat and least likely to buy imported lamb meat. Respondents were more likely to buy medium weight lamb meat and less likely to buy the lower weight lamb meat. Attitude toward certification differed for this class in that Class 4 respondents were more likely to buy lamb meat with approved government certification. Price was not significant in Class 4 too. The results of the parameters above showed the significant attributes and the relative preference directions of the attribute levels for each of the classes. However, using relative importance analysis can show which attribute among all the significant attributes is the most important for each of the classes. Table 6 summarizes the relative importance for the four classes. Origin was the most important attribute for most of the classes, but particularly for Classes 1, 3 and 4 in which the importance was close to or over 50%. For Class 2, price and origin were equally important in purchasing decisions. For Class 3, origin and weight were equally important to consumers' preferences, while the group placed very little importance on price and certification. For Class 4, origin was very important followed by certification, however, price and weight are not important to this class.

**Table 6.** Relative Importance and Size of Each Class

Share of each class	Class1	Class2	Class3	Class4
	37%	30%	19%	15%
<i>Attributes</i>				
Price	19%	33%	33%	2%
Origin	63%	29%	29%	52%
Weight	11%	16%	16%	7%
Certification	6%	22%	22%	39%

Source: Study's Analysis

Another aspect analyzed was willingness to pay, which is represented by implicit prices, showing the maximum amount of money consumers are willing to pay in exchange for a different attribute level for the good. Implicit prices can be determined using the ratio of the price attribute coefficient to the difference of the coefficients of the attribute levels of interest (Colombo, 2008). In this study, the compensating surplus equation was used to estimate the implicit prices as shown in equation (4):

$$4) \quad CV = -\frac{1}{\beta_m}(V^1 - V^0)$$

Where,  $\beta_m$  is the parameter estimate of price, and  $V^0$  and  $V^1$  are the initial utility and the desired utility, respectively. As the willingness to pay involves the estimated parameter of the attribute price, it makes sense to only discuss Class 1 and Class 2 because the price parameter in Class 3 and Class 4 was not significant. Table 7 gives a summary of WTP for Class 1 and Class 2.

**Table 7.** Willingness to Pay for Origin Changes in Attribute Levels (ALL/kg)

Origin	Class 1	Class 2
Import to Domestic Plain/Lowland	101	276
Domestic Plain/Lowland to Domestic Highland	883	13

Source: Study's Analysis

As previously discussed, origin is very important for all classes. For Class 1 and Class 2, domestic highland lamb meat is the preferred lamb meat. Respondents in Class 1 and 2 are willing to pay an additional 882 and 13 ALL/kg, respectively, for domestic highland meat as opposed to domestic plain/lowland meat, and an additional 101 and 276 ALL/kg for domestic plain/lowland meat as opposed to imported meat (See Table 7). These two classes would switch to veterinary certified (stamped) meat only if it were about 100 or 200 ALL/kg less expensive than meat without formal certification but recommended by the butcher.

## **Conclusions**

This study illustrates important aspects of Albanian urban consumer preferences for lamb meat attributes including origin, price, weight and food safety (certification). Within the given range of prices, origin, certification and weight of the survey, origin is by far the most important factor for consumers when choosing to buy lamb meat (similar to studies by Bernabeo and Tendero 2005; Grunert 1997). The attribute preferences are followed by weight and certification. However, the importance of weight, as well as price and certification seem to vary significantly across the four identified consumer classes.

All identified consumer groups prefer lower (10 Kg) carcass weight, while only class 3 prefers even lower (7 Kg) carcass weight. The three largest classes show statistically significant dislike for the 16 Kg carcass weight compared to lighter weights. These findings are partially in line with a similar study on consumer preferences for lamb meat in the Mediterranean in which Bernabeo and Tendero (2005) found that Spanish consumers generally preferred suckling lamb (butchered between 25-30 days with a dead weight carcass of less than 7 kg) as compared to ‘‘ternasco’’ (lamb butchered between 60 and 90 days, with a carcass weighing between 10 and 14 kg). The lower weight preferences may be translated into different cost – benefit ratios for breeders when taking into consideration feeding costs, insemination schedule and transportation costs.

As long as proper labeling is in place to avoid cheating from butchers or retailers, it appears that competition from import lamb meat is not a major issue for the Albanian lamb meat industry. Domestic highland lamb meat is strongly preferred to plain/lowland meat, which can be used as an advantage if labeling or other marketing tools are available to inform and convince consumers of the origin. Therefore promotion of origin of the lamb meat should be a priority for the government and other stakeholders, while producers should consider introducing and promoting their own brands (i.e. producer associations’ brands).

There is obvious distrust in the government food safety enforcement system as most consumer groups do not prefer to buy veterinarian stamped meat. This has strong implications for policy-makers. Strengthening the implementation capacities and improving the image of the government veterinarians and food safety regulation system should be considered a priority in the context of the ongoing institutional and legal reforms. On the other hand, there is a relatively strong trust among most consumer groups in the local butchers. It should be noted that trusted local butchers may be perceived to have the capacity not only to guarantee meat safety but also other aspects such as quality and origin. This exceeds the scope of the current veterinarian

certification provision, in which safety is the primary concern<sup>4</sup>. Therefore, it may be concluded that currently all marketing, promotion and communication strategies of different stakeholders should largely rely on butchers to reach consumers.

The information provided by this study is useful for marketing experts, policy-makers, producer associations and retailers. Farmers can use this information to decide which would be the most profitable and preferred lamb carcass weight to sell, whereas farmer associations or production groups may consider introducing their own brands, particularly in the case of breeders of high-land-bred lamb. Retailers and intermediaries (wholesalers) can brand/label the product to promote preferred origin. Finally, the study findings are of interest to policy-makers and donor programs active in the sector, which play a crucial role in shaping the sector production in context of the market trends.

## References

- Adu-Nyako, K. and A. Thompson. 1999. Food Safety Risk Perceptions and Behavior of Consumers in the Southern Black Belt Region of the US. Paper presented at annual meetings of the *American Agricultural Economics Association*. Nashville. TN. August: 8-11.
- Basiotis, P.P. and J.F. Guthrie. 1993. Characteristics Associated with Various Types of Food Safety Concerns. In *Valuing Food Safety and Nutrition*. NE-165 Regional Research Project. *Food Marketing Policy Center* University of Connecticut.
- Becker, T., E. Benner, and K. Glitsch. 1998. Summary Report on Consumer Behavior Towards Meat in Germany, Ireland, Italy, Spain, Sweden and the United Kingdom - Results of a Consumer Survey. *Universität Hohenheim. Göttingen*. Working Paper FAIR CT-95-0046.
- Bernabéu, R. and A. Tendero. 2005. Preference Structure for Lamb Meat Consumers. A Spanish Case Study. *Meat Science* 71 (3): 464-70.
- Bonne, K. and W. Verbeke. 2006. Muslim Consumer's Motivations Towards Meat Consumption in Belgium Qualitative Exploratory Insights from Means-End Chain Analysis. *Anthropology of food*. available at: <http://aof.revues.org/index90.html>. (accessed on 1<sup>st</sup> November 2010).
- Burton, M., D. Rigby, T. Young, T. and S. James. 2001. Consumer Attitudes to Genetically Modified Organisms in Food in the UK. *European Review of Agricultural Economics* 28 (4): 479-98.
- Chan-Halbrendt, Lin, T., Fang Yang, and G. Sisor. 2010 (a). Hawaiian Residents' Preferences for Miconia Control Program Attributes Using Conjoint Choice Experiment and Latent Class Analysis. *Environmental Management* 45(2): 250-260.

---

<sup>4</sup> The issue of Albanian meat safety and quality is currently under analysis by several of this study's coauthors.

- Chan-Halbrendt, C., E. Zhllima, G. Sisor, D. Imami and L. Leonetti. 2010 (b). Consumer Preference for Olive Oil: The Case of Tirana. *International Food and Agribusiness Management Review* 13 (3): 55 – 74.
- Colombo, S., N. Hanley and J. Louviere. 2008. Modeling Preference Heterogeneity in Stated Choice Data: an Analysis for Public Goods Generated by Agriculture. Stirling Economics Discussion Papers 2008/28. University of Stirling.
- Corcoran, K., A. Bernués, E. Manrique, T. Pacchioli, R. Baines and J. P. Boutonnet. 2002. Consumers' Perception of Quality in Organic Food: A Random Utility Model Under Preference Heterogeneity and Choice Correlation From Rank-Orderings. *British Food Journal* 104 (3/4/5): 200-213.
- DSA. 2010. Analyzing Consumer Preferences for Lamb Meat in Albania. Report Prepared for UNDP Project "Improving the Performance of the Livestock Sector in Albania".
- Cunhal-Sendim, A., J. Albiac Murillo, R. Delfa Belenguer and F. Lahoz Castelló. 1999. Quality Perception of Light Lamb Carcass. *Arch. Zootec* 48: 187-196.
- Dransfield, E. 2005. Consumer Importance in Creating Demands for Meat and Meat Product Safety. *Tehnologija Mesa* 46 (1/2): 3-10.
- FAO. 2009. Agribusiness Handbook-Red meat, available at: <http://www.fao.org/docrep/012/al178e/al178e.pdf>. (Accessed July 2011).
- Ga'zquez-Abad, J. and M. Sanchez-Perez. 2009. Factors Influencing Olive Oil Brand Choice in Spain: An Empirical Analysis Using Scanner Data. *Agribusiness* 25 (1): 36–55. (Accessed on 21<sup>st</sup> November 2009).
- Goering, P. A. 1985. Effects of product trial on consumer expectations, demand, and prices. *Journal of Consumer Research* 12: 74–82.
- Green, P.E. and Y. Win. 1975. New Ways to Measure Consumers' Judgments. *Harvard Business Review* (July/August): 89-108.
- Grunert, K.G. 1997. What is in a steak? A cross-cultural study on the quality perception of beef. *Food Quality and Preference* 8(3): 157-174.
- Grunert, K.G. 2005. Food quality and safety: consumer perception and demand. *European Review of Agricultural Economics* 32 (3): 369.
- Jimin,W., Z.Z. Yue and R. J. Cox. 2004. Animal product consumption in China. Asian Agribusiness Research Centre (AARC) Working Paper Series No. 35.

- Johnson, R. and B. Orme. 2003. Getting the Most From CBC. Sawtooth Software Research Paper Series: <http://www.sawtoothsoftware.com/education/techpap.shtml> (accessed November 2010).
- Krystallis, A. and M. Ness. 2005. Consumer Preferences for High Quality Olive Oil in Greece: A Conjoint Study. *International Food and Agribusiness Management Review* 8(2): 62-91.
- Leonetti, L. and I. Kristo. 2010. Value Chain Study of Lamb Meat in Albania Report Prepared for UNDP Project "Improving the Performance of the Livestock Sector in Albania".
- Louviere, J.J. and G. Woodworth. 1983. Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based on Aggregate Data. *Journal of Marketing Research*. 20: 350-367.
- Lusk, J.L. and N. Parker. 2009. Consumer Preferences for Amount and Type of Fat in Ground Beef. *Journal of Agricultural and Applied Economics* 41:75-90.
- Lusk, J. L., M. Moore, L. House and B. Morrow. 2002. Influence of Brand Name and Type of Modification on Consumer Acceptance of Genetically Engineered Corn Chips: A Preliminary Analysis. *International Food and Agribusiness Management Review* 4: 373-383.
- Lusk, J.L. and E. Cevallos. 2004. Factors Influencing Demand for a Producer-Owned Beef Retail Outlet. *Journal of Agricultural and Applied Economics* 36:97-112.
- Lusk, J.L., J. A. Fox, J.A., T. C. Schroeder, J. Mintert and M. Koohmaraie. 2001, In-Store Valuation of Steak Tenderness. *American Journal of Agricultural Economics* 83:539-550.
- Magidson, J. and J. Vermunt. 2003. Latent Class Models. <http://www.statisticalinnovations.com/articles/sage11.pdf> (accessed November 2009).
- McEachern, M.G. and J. Willock. 2004. Producers and Consumers of Organic Meat: A Focus on Attitudes and Motivations. *British Food Journal* 106 (7): 534-552.
- McFadden, D. S., ed. 1974. Conditional Logit Analysis of Qualitative Choice Behavior. Edited by I. Zarembka. *Frontiers in econometrics*. New York: Academic Press.
- Misra, S.K., S. M. Fletcher and C. L. Huang. 1993. Pesticide Residue and Food Safety: Consumer Attitudes and Confidence. In *Valuing Food Safety and Nutrition*. NE 165 Regional Research Project. *Food Marketing Policy Center*. University of Connecticut.
- MoAFCP. 2007. Strategy Agriculture and Food Sector for the period 2007-2013. Tirana, Albania.
- MoAFCP. 2010. Statistical Yearbook. Tirana, Albania.

- Nilsson, T., K. Foster and J. L. Lusk. 2006. Marketing Opportunities for Certified Pork. *Canadian Journal of Agricultural Economics* 54:567-583.
- Rimal, A. 2005. Meat labels: Consumer Attitude and Meat Consumption Pattern. *International Journal of Consumer Studies*. 29 (1): 47-54.
- Roosen, J., J.L. Lusk, and J. A. Fox. 2003. Consumer Demand for and Attitudes Toward Alternative Beef Labeling Strategies in France, Germany, and the UK. *Agribusiness: An International Journal* 19:77-90.
- Sandalidou, E., G. Baourkis and Y. Siskos. 2002. Customers' Perspectives on the Quality Of Organic Olive Oil in Greece: A Satisfaction Evaluation Approach. *British Food Journal* 104(3/4/5): 391-406.
- Schupp, A., J. Gillespie and D. 1998. Consumer Choice among Alternative Red Meats. *Journal of Food Distribution Research* 29:35-43.
- Schutz, H.G., C.M. Bruhn, and K.V. Diaz-Knauf. 1989. Consumer Attitude Toward Irradiated Food: Effects of Labeling and Benefits of Information. *Food Technology* 43:80-86.
- Siskos, Y., N. F. Matsatsinis and G. Baourakis. 2001. Multicriteria Analysis in Agricultural Marketing: The Case of French Olive Oil Market. *European Journal of Operational Research* 130: 315-331.
- UNSTAT Trade Database. 2010. available at: [www.unstats.un.org](http://www.unstats.un.org) (accessed November 2010).
- USAID. 2006. Development of the Lamb Export Market in Kosovo, Kosovo Cluster and Business Support Project, available at: [http://pdf.usaid.gov/pdf\\_docs/PNADF951.pdf](http://pdf.usaid.gov/pdf_docs/PNADF951.pdf), (accessed July, 2011).
- Verbeke, W. 2003. Consumer Perception of Food Safety: Role and Influencing Factors, at New Approaches to Food-Safety Economics (Annet G. J. Velthuis, H. Hogeveen, L. J. Unnevehr) <http://library.wur.nl/ojs/index.php/frontis/article/viewFile/989/560> (accessed November 2010).
- Verbeke, W., J. Viaene and O. Guiot. 1999. Health Communication and Consumer Behavior on Meat in Belgium: From BSE until Dioxin. *Journal of Health Communication* 4 (4): 345-357.
- Ward, C.E., J. L. Lusk and J. M. Dutton. 2008. Extent and Type of Fresh Beef Branding in Grocery Stores. *Journal of the Food Distribution Research Society* 39: 79-89.
- WB. 2007. Strategic Policies for a More Competitive Agriculture Sector in Albania available at: [www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/11/29/000310607\\_20071129100849/Rendered/PDF/AAA18optmzd0AL.pdf](http://www.wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/11/29/000310607_20071129100849/Rendered/PDF/AAA18optmzd0AL.pdf). (accessed November 2010).

