Consumer preferences for country-of-origin and health claim labelling of extra-virgin olive-oil

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Abstract. *Although several studies have investigated consumer preferences for olive oil country-of-origin labelling (COOL), very little is known on consumers' preferences for new health claims (EC Reg. n. 1924/2006). This paper aims to analyse the introduction of these attributes, providing more insights into Italian consumer perception and preferences for different extra-virgin olive oil labelling schemes. After preliminary focus group and in-depth personal interviews with representatives of retailers and producers' organizations, a choice experiment (CE) was employed on a sample of Italian consumers to analyse preferences for different extra-virgin olive oils. CE methodology allows to weight the relative importance of any given attribute for consumers, measuring the effects of interaction between different attributes. It can also provide an estimation of the marginal willingness to pay (WTP), or part-worth, of an attribute, such as health claim or indication of origin. The results provide supply chain actors with valuable information to develop marketing strategies, as well as concrete evidence for policy makers of consumers understanding of health claims and COOL labelling.*

Keywords: choice experiment (CE), extra-virgin olive oil, health claims, country-of-origin labelling (COOL).

1. Introduction

The recent European legislative shift in the olive oil sector, along with a medium long-term consumers' demand for traceability, transparency and more in general quality of the food chain as a whole, cast very promising scene to better investigate evolving consumers' preferences. This paper aims to analyze the consumer preference towards different extra-virgin olive oil attributes. In particular, we focus on the country-of-origin and other valuable attributes on the label such as sensorial ones and health claims. In the end, we paid a special attention to acidity level and extraction method, as suggested to assess the extra-virgin olive oil its complexity of qualitative elements differentiating from conventional olive oil.

We adopt the choice experiment method, where respondents are presented with a set of alternatives, differing in terms of attributes and levels, and asked to choose the most preferred[1]. We proceeded in a two stages approach, in order to copy with the compositional ("making out the attributes") and de-compositional ("evaluating their relevance") phases needed for a choice experiment. A preliminary focus group pooled consumers to define the attributes and the appropriate levels, subsequently discussed with olive oil operators, both producers and retailer experts. Secondly, we conducted a choice experiment in a retail store with 196 consumers. The main advantage of the adopted method compared to others, like contingent valuation methods, lies in its ability to separately identify the value of individual attributes, namely its effect on consumers' utility[1]. Furthermore, this method avoid to explicitly ask consumers the willingness to pay for a given choice, whereas the implicit price of each attribute is indirectly inferred[2]. The aim of this research is to contribute to the discussion of public authority policies for country-of-origin and new health claims labelling, considering the reaction of consumers; at the same, we provide insights for private companies to develop strategies given the opportunity of new legislation enforcements to define new labelling features and, in the meanwhile, increasing consumers' trust and willingness to pay.

2. Normative framework for extra-virgin olive oil labelling

In the very last years the labelling issue, in its capability to carry information to the consumer, gained its momentum inside the food legislation. The review of horizontal legislation first, with broad consultation of external public and stakeholders (EC Directive n. 496/90), called on to give advice on nutrition labelling. The European Commission High Level Group on Simplification of 2008, set up to speed up the competitiveness of the agri-food European companies, revealed the strong interest which accumulates on labelling as a core question to be addressed. Today, the draft proposal of the European Commission

2008(40) COM, as horizontal measure, reformulate the framework merging together Directive 13/2000 EC and Directive 496/90, although the entire labelling building is still under construction. The consumers in Europe face the paradox that while the European normative framework is considered the most protective in the world with respect to the food safety and quality, the benefits of that can be surpassed by a merely cost competition with producers of other part of the world with less stringent requirements. Furthermore, when such requirements are not displayed on the label, competition seems to become unfair and consumers not able to appreciate the real features of a product. Considering the interesting metaphor from Tim Lang, labelling has been a battleground for a number of "food wars" among different players of the food chain[3].

2.1 Traceability, food quality and safety features: an European overview of consumer perception

If the issue of country-of-origin labelling (COOL) as a quality index has been widely investigated, even with the help of choice experiment techniques and willingness to pay estimation[4, 5], the importance attached by consumers to the health and nutrition claims, as introduced by Regulation (EC) n. 1924/2006, is a relatively new issue to be investigated. The COOL is gaining more and more interest as a special case among other "territorial schemes or reassurance schemes on food safety" because of its ability to communicate to the consumers[6, 7]. In many cases, it was found to have some nice properties which stem from being somehow an "environmental friendly" proxy[7]. Moreover, the European origin on the label of foodstuff may, in some cases, stress the different philosophical approach of the European institutions to food safety, quality, animal welfare and ethical issues[8].

At the same time, researches on consumers in Europe do not agree on the fair level of territorial proximity able to give a surplus to the product[9, 10]. In fact, origin perception seems to depend on the food involved and on cross-national differences. In particular, an European North-South paradigm has been raised in some papers about food origin perception[11], and traceability technical features[7]. If boundaries of strictly defined regional or sub-regional territories entail quality promises, in many cases due to the presence of geographical indications [12, 13], national labelled product appear as a reasonable compromise to give a plus to a large amount of foods otherwise excluded from the quality track. What is interesting to our purposes is that if quality encompasses generally the notion of food safety, the reverse is not automatic: food safety appear so far as a general pre-requirement[9]. Furthermore, as previously assessed, if the perception of safety linked to a COOL scheme may be very high, the consumers' willingness to pay (WTP) is not consequential[14]. It suggests the idea that certain food labelling schemes may be more easily supported by public actors and farmers' syndicates than by retailers or industries.

2.2 Recent policy developments in the olive oil sector

In Italy there is a wide commercial use of the voluntary country-of-origin labelling in the extra-virgin olive oil segment. Both retailers and industries support this strategy, often under the "100% Italian olive oil" label. While frauds occur systematically misleading about the real origin of the product, many operators take advantage of historical Italian reputation in olive culture. Coldiretti, the major Italian agricultural union, considers that 485,000 tons of olive oil have been imported in 2008, while the national production amounts at 600'000 tons. In the meanwhile, 98% of the Italian consumers consider necessary to have the indication of the place of agricultural production on the products they buy[15].

The recent European Regulation n. 182/2009 and the initiative of the major Italian agricultural union, Coldiretti, made possible to recognise the origin of the olive oil with respect to the origin of the olives. The new European normative stresses the link between the extra-virgin olive oil claims and its particular quality features. In particular, it improves consumers' understanding of the olive oil quality, in order to let producers to promote it. The country-of-origin of the olives and the country of oil extraction are among the components to be labelled on an extra-virgin olive oil bottle. It has to be indicated the countries of origin and transformation or, in alternative, it has to be made specific reference to macro-areas such as European Community or "*non-Community*" origin. In case of blends, there are simplified provisions in order to inform consumers without declaring the specific origin of each lot of oil (i.e.: "*blend of Community*" or "*blend of non-Community*" olive oils).

EC Regulation 1924/2006 provides for inclusion of health and nutrition claims aimed to underline the link between a food product – such as the olive oil – or ingredient and its positive effects on health and nutrition. Even if it is out of the scope of this paper to outline the overall situation on health claims in

Europe, it can be useful to recall that generic health claims (not indicating a reduction of disease risk) can be shared among different commercial operators, giving advantage to several level of food chains or actors and avoiding intellectual property protection. On the other hand, proprietary data protection, with exclusive reservation in the use of labelling, is central in food items or ingredients pretending to avoid or limit the risk of developing a specific disease (art. 14).

EC Regulation n. 1019/2002 introduced other voluntary labelling items appealing consumers, such as the acidity level and the method of extraction. Acidity should be indicated only conjointly ("*in the same visual field*") with other characterizing features of the overall quality (namely, peroxides, ability to absorb ultraviolet ray, waxes in suspensions). Despite of that, the acidity level itself seems a good quality reference, and consumers generally still consider acidity alone in making their purchases. According to the current legislation, producers can label either "*first cold pressed extraction*", which includes a mere mechanical squeeze of the olives with hydraulic press extracting the oil, or "*cold extraction*", which means that the machines used refer to the centrifugation of the olive paste. It is not generally known that the "cold extraction" entails a convention and the 27 C° is the limit above which the processing can be considered as "cold". This is not due to chemical alteration incurring to the olive oil exposed to higher temperature, but it seems a merely conventional standard. It is well known that vitamins (as the E vitamin in olive oil) are steadily degrading with warm temperatures, but no threshold is set for that with respect to the extraction method indication.

3. The Italian olive oil market

The olive oil market has become very competitive during the last years, mostly because of the increased commercial competition within the Euro-Mediterranean and not European countries[16]. The world market is furthermore adding complexity, because of the different quality segments of olive oil (extra-virgen, olive oil, etc.). Even if, in general, the concentration in few hands of the olive oil production follows the major dynamics of the rest of the food supply, with many global players trying to extend their dominance over the entire market[17], the valuable quality features which emerges on one hand by improving the production-extraction methods, and on the other by stressing them on the label seem to guarantee a relevant role in the next decades to those producers able to confirm their elevate standards. It means that the possibilities to differentiate the olive oil market have been not yet fully deployed, with unexpressed marginal economic value derivable.

In order to give an outlook to the global trade, may be useful to recall that Italy is the second world olive oil producer and the first consumer. Considering the averages values of 2004-2007 (tab. 1), Italy is net importer of olive oil (principally extra-virgin olive oil, 74% of the total import).

Table 1. Olive oil trade, averages values 2004-2007, Italy.

	Import				Export				Net balance			
	Quantity		**Value**		**Quantity**		**Value**		**Quantity**		**Value**	
	.000 tons	*%*	Mln €	*%*	.000 tons	*%*	Mln €	*%*	.000 tons	*%*	Mln €	*%*
Extra-virgin / virgin	364	*70.6*	1,026	*74.3*	205	*60.2*	787	*66.8*	-159	*90.5*	-239	*118.1*
Other olive oils	151	*29.4*	355	*25.7*	134	*39.8*	392	*33.2*	-16	*9.5*	36	*-18.1*
Total	515	*100.0*	1,381	*100.0*	339	*100.0*	1,179	*100.0*	-175	*100.0*	-203	*100.0*

Source: INEA (2008).

It seems meaningful to underline that although the Italian olive oils fame, one third of the export are made on generic olive oils and, probably, it could be economically useful to improve in most convenient distribution of high-quality products in order to uptake higher margins. The phenomenon probably underline a well known "milking behavior" with respect of the Italian reputation: generic olive oils are imported and processed and, after that, exported under the Italian flag (corporate Italian sounding brand). If the trade-ratio (value per unit of imported product *vs* value per unit of exported product) is positive, nevertheless there are not signs of improving in the last decade (1996-2006), showing the competitive

pressure on the olive oil market. It should also be noted that the export ratio[1] (from 30% during 1996-1999 to 55% in 2004-2007) has been fostered by the more proportional increase in value (from 659 to 1,179 million euro) with respect to the increase in exported quantity (from 215 to 340 thousand tons). As a long-term tendency, it reveals that the entire Italian olive oil sector is on the battleground to increase its comparative advantage. The impact of the new regulation, allowing for transparency about the origin f olive oil, could increase the amount of Italian olive oil in the Italian market of around 10%. This could, in turn, result in a reduction of extra-virgin olive oils import, contributing to promote the internal production[18].

4. Methodology

Formally, choice experiment method is based on Lancastrian consumer theory and random utility theory (RUT)[19]. Random utility models assume, as neoclassical economic theory, that the decision-maker has a perfect discrimination capability. In this context, however, the analyst is supposed to have incomplete information and, therefore, uncertainty must be taken into account. Four different sources of uncertainty are generally identified: unobserved alternative attributes, unobserved individual attributes (called "unobserved taste variations"), measurement errors and proxy, or instrumental, variables. Consider the basic axiom of RUT:

$$U_{ij} = V_{ij} + \varepsilon_{ij} \tag{1}$$

where U_{ij} is the individual i's latent utility associated with choice option j, V_{ij} is a systematic, observable (explainable) component of utility and ε_{ij}, is a random, unobservable (not explainable) component. V_{ij} depends, in turn, to the exogenous variables values, corresponding to the product's attributes and to the socio-demographics of the i-th consumer, and to the weights associated to each variable in determining the utility:

$$V_{ij} = \beta_j \cdot X_{ij} \tag{2}$$

where X_{ij} is a row vector of exogenous variables (both socio-demographic and choice attributes) and β_j refers to the parameters of the model. Note that in this model the vector β_j is not specific to an individual. Considering the probability that the choice (h) is preferred to the choice (g):

$$P_{ih} = Prob\ (U_{ih} > U_{ig}) \qquad h \neq g \tag{3}$$

or in other terms,

$$P_{ih} = Prob\ [(V_{ih} - V_{ig}) > (\varepsilon_{ih} - \varepsilon_{ig})] \tag{4}$$

an explicit expression for this probability can be derived by assuming the distribution of the error terms (ε_{ij}). If errors are casual (independent) and so far identically distributed (IID), as generally assumed in multinomial logit (MNL) models[20], the probability of any alternative h being chosen as the most preferred can be expressed in terms of the logistic distribution stated in the following equation[1]:

$$P_{ih} = \frac{e^{(\beta_h X_{ih})}}{\sum_{j=1}^{J} e^{(\beta_j X_{ij})}} \tag{5}$$

Another implication that comes from equation (5) of MNL models is the Independence from the Irrelevant Alternatives (IIA), by which consumer's choices does not depend on the choice options, having an utility function that does not rely on those features[1]. The (IID) and (IIA) are generally assumed as very strong assumptions. Once the parameters have been estimated, the marginal rates of substitution can be calculated giving an estimation of the rate at which respondents are willing to trade-off one attribute for another. Where the attribute being traded is the monetary attribute (β_m), this rate estimates the implicit price, or marginal willingness to pay (WTP), of the attribute k[2]:

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[1] The export ratio is calculated as the % ratio between the export value and the internal production value. So far an increase of the export ratio value may be due alternatively to the decrease of the internal production or to the increase of the export value.

$$WTP = -\frac{\beta_k}{\beta_m} \qquad (6)$$

As noted before, in the MNL model the vector β_j is define for the overall sample. Assuming the existence of s segments in a population, and that individual i belongs to segment s ($s = 1, ..., S$), the utility parameters become segment specific and equation (5) can be defined by the following Latent Class (LC) logit model[21]:

$$P_{ih|s} = \frac{e^{(\beta_{hs}X_{ih})}}{\sum_{j=1}^{J} e^{(\beta_{js}X_{ij})}} \qquad (7)$$

where β_{hs} is the segment specific vector of utility parameters. Latent Class (LC) logit model can be seen as a specific formulation of the more general Random Parameter (RP) logit model, where parameters vary across all individuals[22]. In LC and RP models the assumptions of IIA and IID are relaxed and components error can vary across the individuals as matter of specific preferences or system of values. In particular LC and RP are ideal for panel stated preferences on multiple, repeated choices.

5. Survey and experimental design

The data were gathered through a direct survey conducted in a retail store during one week on July 2009; 196 purchasers of extra-virgin olive oil were contacted and interviewed by two trained interviewers. A socio-demographic questionnaire was first submitted to respondents and then a choice experiment was performed. This data collection phase was preceded by a focus group with ten olive oil consumers, and by two personal in depth interviews with players of the processing and retail stages of the supply chain. Several information were derived by these steps; these input were used to select those attributes and levels perceived as important by consumers in purchasing extra-virgin olive oil and, at the same time, representing an interesting valorisation strategy for the supply chain. Focus group testing, in particular, is regarded as crucial to define the appropriate format[2]. Hence, the developed framework considered the current legislation. The attributes and levels in the experimental design are shown in table 2.

Table 2. Experimental design attributes and levels.

Attributes	Levels
Health claim	• No • Yes ("*The product X belongs to the Mediterranean Diet, useful to prevent heart-diseases*")
Acidity	• None • 0.8 • 0.3 Low Acidity
Country-of-origin	• 100% Italian extra-virgin olive oil • Extra-virgin olive oil from the European Community – Mediterranean area • Extra-virgin olive oil from the European Community • Non-Community extra-virgin olive oil
Price	• 7.00 €/l • 6.20 €/l • 5.40 €/l • 4.60 €/l

Country-of-origin was one of the attributes mostly quoted by consumers in focus group and thus included in the experimental design. In our choice experiment we considered oil from olives cultivated and processed in Italy (labelled as "100% Italian extra-virgin olive oil"), extra-virgin olive oil from (olives and transformation in) the European Community and extra-virgin olive oil from (olives and transformation outside) the European Community. Among scientists, there is a lack of consensus on the possibility of extra-virgin olive oil to benefit of health claims. Informal rumours from the NDA Panel of

European Food Safety Authority (EFSA)[2], encharged to assess the list of health claims on foodstuffs, suggest that the presence of anti-oxidants such as polyphenols is likeable to be supported by EFSA. Nevertheless, the idea that olive oil is a central product in the Mediterranean diet, and that Mediterranean diet has many good healthy properties, prompted us to use this very accessible claim. The specific claim "*the product X belongs to the Mediterranean Diet, useful to prevent heart-diseases*", was submitted by several national Food Agencies to the European Commission for a pre-screening, and sent to the EFSA for approval. Even if, at this moment, the destiny of this claim is not still defined, the notion of Mediterranean diet is well understood among consumers, and so far recognizable; on the other hand, "anti-oxydants", as also emerged from our focus group, are not clearly associated to good health and may hardly improve consumers' eating behaviours. We thus considered the possibility to include the former claim on the product label. Finally, we included a further character: the acidity level. Although, as noted before, acidity should be indicated only with other quality features, the acidity level itself seems a good quality reference, and consumers generally still consider acidity alone in making their purchases. Due to that, in our choice experiment we considered only two acidity levels, even if from a strictly legislative point of view it could be incorrect[23]. Finally, price (expressed in €/l) was also included.

Once the attributes and levels were defined, we selected a fractional factorial of the available attribute level combination, maintaining the orthogonal property of the full factorial (no correlation between the attributes)[2]. We obtained an orthogonal array of 30 product profiles[3]. These were divided in ten choice sets each composed by three alternatives. Thus, in the choice experiment respondents were given the opportunity to select between three alternative extra-virgin olive oil bottles presented on cards depicting images of the different options carrying different prices and different level of attributes, plus a "*none of them*" option. The possibility for respondents of choosing "not to chose" is considered important as representing a real market behaviour[2]. Respondents were provided with help by trained interviewers to comprehend the choice set questions. Hence a section has been devoted to an explanation of the task they have been asked to perform, i.e. to select the preferred alternative through ten different choice sets. The repeated choices procedure make choice experiments economically efficient methods for collecting data regarding consumer preferences for food products[1].

6. Results

Summary statistics of the sample are shown in table 3. The majority of respondents were young (in the class 25-40 years old), with an average cultural level (high school), and well balanced between genders. The average family members at home are 3 persons, and extra-virgin olive oil is generally purchased twice (34%) or once a month (22%). These data are in line with the different handling that households make of extra-virgin olive oil, sometimes using it in any kind of recipe/usage, sometimes "crude only use" for seasoning purposes (i.e., salads, etc.).

Table 3. Descriptive statistics of the respondents (n=196).

Gender	(%)	Frequency of purchase	(%)	Education	(%)
Male	49.5	Once a year	8.2	Primary	4.1
Female	50.5	Twice a year	8.2	Secondary	21.9
Age	*(%)*	Every 3 or 4 months	8.2	Post-secondary	46.4
18-24	13.8	Every 2 months	6.6	Tertiary	27.6
25-40	42.9	Once a month	22.4		
41-50	20.9	Twice a month	33.6		
51-60	12.2	Every week	12.8		
> 60	10.2	**Family members (n.)**	3.0		

The majority of respondents were habitual purchasers of extra-virgin olive oil. Many of them showed also an attitude to purchase it directly from trusted farmers or oil mills. This tendency seems to be connected to a long dated traditional habits in the Southern Italy, with familiar links or direct ownership of olives farmlands. For other purchasers, this tendency seems more linked to a hedonistic aspect and post-material

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[2] The Nutrition, Dietetics and Allergens (NDA) Panel is the specific working group inside the European Food Safety Authority which is in charge, among other things, to ascertain the potential of a food items to bear a nutrition or health claim, due to its qualifying characteristics.

[3] The orthogonal array was derived by means of SPSS 18.0.

values; in both cases, this leads to lower purchases of olive oil bottles from large scale retailers. Where the alternative channel is direct purchasing, the purchase at retail is scarce (once year).

6.1 Empirical results

All models were estimated using Limdep Nlogit (version 4.0)[21]. More than the baseline specification of the Multinomial Logit (ML) model, we tried to evaluate the Random Parameter Logit (RPL) model and the Latent Class Logit (LC) model in order to accommodate the internal variance of taste preferences and the patterns of stochastic errors distribution. In the LC model, we supposed the presence of 2 classes of consumers, the first one more attentive towards the price factor, the second one to the origin of the product. The resulted segmentation doesn't provide an acceptable fit of the model (p-value not statistically acceptable). This can be considered as a rejection of the hypothesis of internally homogeneous classes. In the RPL model we assumed a normal distribution, despite is well known that different distribution assumptions may have different pros and cons[24]. Still the normal distribution of the random parameters is the most common one, even if further research is pending[25]. The alternative specific constants included were gender, ages and education. Despite of that it was not possible to derive a class of consumers with statistically interesting internal homogeneity, probably due to the fact that the Italian olive oil culture is somehow well spread among the population as a whole. Thus, the role of socio-demographic variables seems so far not explicative, even if more research is needed due to the preliminary character of the current research and to the limited number of observations. So far, for the basic ML model with 3 attributes (price, origin, acidity), and given the 4 levels for origin and 2 levels for acidity, it has been found a good fit of the model (pseudo-R^2 = .231; adjusted-R = .069).

Both ML and RPL models derive a good utility for the Italian origin, which by far detach the other attributes (tab. 4). A problem matched derived from the difficulty to have significative values for some attributes, due probably to collinearity. Reducing both the number of attributes considered and the levels proved to be an useful strategy, improving the fit of the model too.

Table 4. Summary of ML and RPL models.

Variable	RPL model		ML model	
	Coefficient	p-value	Coefficient	p-value
Price	-4.114	.64	-3.910	.46
Non Community origin	-5.358		-5.488	.26
European Community origin	-20.213	.00	-21.482	.00
European Community origin - Mediterranean	9.565	.00	9.577	.00
100% Italian origin	16.224	.00	17.517	.00
Health claim	.402		.400	
Low acidity (0,3)	.705	.00	2.357	.00
Ordinary acidity (0,8)	-705	.00	.677	
Pseudo R^2	0.224		0.231	
R adjusted	0.038		0.069	
Log Likelihood	-637.66		-637.19	

As expected, the main driver is the origin of the product, where Italian origin is the most preferred followed by Mediterranean. Both non-Community and European Community olive oils have negative utilities for consumers. Price coefficient is negative, although not significant, denoting that this attribute can be interpreted both as an attribute denoting quality or vice versa, simply cost. In the mean time, if low acidity is recognised generally (being constant peroxides, ultra-violet reflection and waxes) as a good quality indicator, not all respondents showed a sufficient knowledge of this parameter. Sometime a law-limit of 0.8 in acidity was considered the best one, denoting a spread lack of consumers' knowledge about this parameter. The health claim coefficient is slightly positive in both models. This attribute, referred to the importance of the Mediterranean diet to prevent heart-diseases, was perceived as deceptive by a part of the respondents, despite the increasing evidence related to its positive role in maintaining a good health status. Probably in Italy consumers are aware of the benefits of the Mediterranean diet, as well as the role of olive oil in it. So this claim could be perceived so far as pleonastic or inconclusive, adding nothing to the product.

6.2 Estimating willingness to pay for extra-virgin olive oil attributes

The WTP for a given attribute level has been calculated with the formula (6). Even if the results of WTP as generally estimated tend to boost the *value for money* and so far, the availability to support increasing cost for higher levels of an attribute, the 2 models predict similar results. The first attribute for which consumers seem able to bear a positive cost is the 100% Italian origin of the olives.

Even if it is something considered well accepted among the Italian consumers, it is not easy to understand and to translate in a marketing tool the WTP as simply derived above[4]. In our case, the actual price strategies in the marketplace are more conservative, and only a spread of about 1.50 €/l is separating the 100% Italian extra-virgin olive oil from other generic ones. Despite of that, it is useful to recall that actually, strategies to support the Italian origin with special productive requisites (i.e., agronomic conditions, processing phases, acidity level, etc.) go into the direction of increasingly make the Italian product competitive on the global scene, and able to gain a major spread.

Table 5. Willingness to pay estimates (€/l).

Variables	RPL model	ML model
Non Community origin	-1.30	-1.40
European Community origin	-4.92	-5.50
European Community origin - Mediterranean	2.33	2.45
100% Italian origin	3.94	4.49
Health claim	0.09	0.10
Low acidity (0,3)	0.17	0.60
Ordinary acidity (0,8)	-0.17	-0.17

Another interesting aspect in the sourcing of the extra-virgin oil is related to the other kind of origin labelled. If, as expected, the Mediterranean origin connected to the Communitarian belonging is deemed positive, with a WTP of about 2.4 €/l, the simple European origin of the extra-virgin oil is not a guarantee in itself for consumers. It is something on which reflection is needed, because despite of the strict normative framework, consumers feel not well protected by the regulation of the Commission. The idea of "European Community" is too wide (due also to the recent enlargement to new Member States) and hence seems not to give the trust accorded by local products or trademarks. The same health claim is not fully understood or appreciated by consumers; the fact that the claim on the label is generic and not layered on a strong assumption (i.e., the role of the product in reducing specific disease-risk factors) could have played a role in the estimated quasi-null marginal WTP value. Even in other cases, consumers attached to these *light claims* a lower attention compared to other more detailed items[25]. With regard to the low acidity level as a proxy of the quality level for extra-virgin olive oil, the ML model seems to better predict the actual consumers preferences and willingness to pay (0.60 €/l).

7. Conclusions and discussion

Aim of this paper was to provide new insights to better understand the consumer preference towards different extra-virgin olive oil attributes such as country-of-origin (COOL), health claim on positive virtues of the Mediterranean diet and the acidity level, which has recently gained relevance as indicator of the overall quality in front of the consumers. The research was conduced with both qualitative and quantitative approaches. First, a focus group was performed, discussing the desirable extra-virgin olive oil attributes and the incoming regulative framework; the results were validated by means of personal interviews performed with key-actors of the production and the retail in the olive oil sector in Italy. Then, the elicited attributes and levels were tested on a quantitative basis, via face to face interviews with consumers in a retail store. We empirically tested two models: the Random Parameter Model (RPL) and the baseline Multinomial Logit model (ML), the latter extended with the no-choice option. This last model proved to be very performing in literature, while the RPL is naturally adapt for repeated stated

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[4] Even if many researchers have pointed the possible discrepancy between hypothetical and actual payment settings in choice experiments[1], a recent study have empirically demonstrated that this difference, in the beef case, was not statistically significant[22].

choices as panel are. In any case, both models proved to give similar results, with regard to the ability to explain the attributes and the resulting willingness to pay.

Not surprisingly, the attribute related to the Italian origin carried the highest parameter relative to the other attributes, health claim and acidity level information. We can interpret the high coefficient for this attribute to mean that consumers strongly valued the Italian production and processing of olives. Moreover, according to the incoming normative framework, origin of row material are going to be compulsory on the label, framing a new relationship with the extra-virgin olive oil and consumers. Due to tendencies at odds on the global market, such as scale economy of giants of the market and niche strategy from small players with a propension to produce at a higher qualitative level, origin appears as a discriminating factor in the future competitive race. As another result, it can be said that the generic "European" normative framework it is not able per se to assure a decent level of trust. Even if the laws regulating olive oil production are the same across Europe, consumers feel more protected by a different idea of the geography itself, which is linked to the national level or even to the Mediterranean level (probably due to the natural association between olive oil and traditional presence in the Mediterranean countries). Interesting results address to go more in depth with the research on future health claims duly authorized by the EFSA. At the moment, unfortunately, there are not milestones on this ground, and a comprehensive regulatory framework is still pending. In spite of that, there are increasing clues supporting the idea of using health claims as a valuable tool for support quality features of food items. In our case, a claim on the role of extra-virgin olive oil in the Mediterranean diet and on its importance in preventing heart diseases doesn't match in a relevant willingness to pay, although exhibiting a slightly positive coefficient in the models. This general health claim doesn't seem to attract consumers probably because they are already aware of the benefits of extra-virgin olive oil within the Mediterranean diet in helping cardiovascular system. The controversial role of these *light claims* in the final purchaser decisions have also been discussed by other authors[25]. On the other hand, the acidity level, even if interesting, seems to be judged not equally among consumers. The problem here lies in literacy: not all the respondents are able to assess what the desirable level of acidity is, many confounding the high level (0.8) of acidity as a good feature in the extra-virgin olive oil.

So far it is possible to conclude that, given the specificity of the Italian production, and the ameliorating quality trend of Italian extra-virgin olive oil in the last decade (due to both the export ratio and the trade ratio), it is meaningful to favour a qualitative leap in our internal productive methods, as far as supported by a more transparent labelling. As emerged by our analysis, the WTP for the 100% Italian origin of the extra-virgin olive oil is about 4.00 €/l. Even if probably the statistical method tends to overestimates the WTP[1], we believe that there is a potential margin to increase the spread actually applied in the "Italian origin" extra-virgin olive oil segment (about 1.50 €/l over the generic extra-virgin olive oil). Further researches may also investigate the significance of the difference between the hypothetical (estimated) and the actual willingness to pay for the Italian origin attribute.

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