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Animals or Humans: What Do Greek Consumers Care More about When Buying Feta Cheese?

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Abstract: Over the last few years, the global consumer concerns for quality standards in food production and distribution have increased, and actions towards a more sustainable agrifood system have become necessary. Ethical labeling schemes, such as animal welfare and fair labor, can help in this direction. To better understand if these labels are indeed an important element in consumer's buying decisions and to be able to quantify the magnitude of their importance, this study uses the contingent valuation method. Results reveal that respondents place a positive value on both labeling schemes, and they are willing to pay an average premium of 27% and 36% for feta cheese carrying an animal welfare and a fair labor label, respectively. Estimated willingness to pay (WTP) values are affected by demographic characteristics as well as attitudinal variables such as gender, age, prior knowledge of ethical certification labels, purchase frequency and ethically minded purchasing behavior. Overall results suggest that there is a strong market opportunity for both labeling schemes Ethical labeling can be an effective marketing tool for producers and distributors seeking to differentiate their feta cheese products. Furthermore, it is implied that consumers value issues related to labor exploitation in the dairy farming sector higher than inhuman treatment of animals.

Keywords: animal welfare; fair labor; ethical labeling; willingness to pay; contingent valuation; sustainability

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1. Introduction

The ethical values related to environmental protection, animal welfare and human rights fall within the multidimensional framework of sustainable development which aims at protecting the planet, ending poverty, and improving the lives of humans and animals. The increased consumer demand for these values can be expressed by means of ethical consumption which can be defined as the purchase of products for their positive qualities (e.g., animal welfare) or the boycott of products for their negative qualities (e.g., not buying products made by children) [1,2].

Literature indicates that consumers' attitudes towards ethical consumption choices have become more positive. In 2008, a top leader survey in Norway indicated that more than 70% of leaders experienced increasing demands to deliver results on ethical, environmental, and other social conditions complementary to financial results. The main driver behind this was customer demand [3]. Consumers regard their ethically conscious choices as a means to influence the food system and enhance their well-being. Managers on the other hand, embrace ethical and moral aspects in their processes as a marketing strategy for enhancing brand image and profits [4].

Unfortunately, the ethically produced or traded products have unobservable quality attributes, which cannot be noticed in a simple and straightforward way at the point of purchase or even be determined after consumption. In this case, product-attribute labeling can be an effective marketing tool to promote the ethical dimensions of a product.

Labels have been shown to play a crucial role in driving more ethical purchasing decisions as they inform consumers about the product's characteristics [5]. Thus, ethical labeling can be used to influence producers, retailers and consumers towards a more sustainable food market by encouraging the first to consider ethics in their production, the second to increase transparency along the food chain, and by empowering the latter to make conscious consumption choices based on ethical considerations.

Up to a point, ethical purchasing has mostly been used to refer to ecological buying choices [6]. However, ethical purchasing has gradually incorporated several other aspects such as animal welfare, fair labor, fair trade, etc. [1]. Specifically, animal welfare has increasingly been recognized as one of the most important dimensions of the responsible food chains [7], but it often falls victim to the inconsistency between consumers' positive attitude and actual purchase behavior, referred as the attitude-behavior gap [8–10]. The Eurobarometer results in 2016 pointed that 57% of European citizens express strong concern on animal welfare [11]. In Greece, more than nine out of ten citizens (91%) believe that the welfare of farmed animals should be better protected than it is today [12]. However, while consumers typically understand the broad issue of good production ethics, many tend not to understand the complexities of the processes in animal production (e.g., the big debate related to the need for weaning a newborn or using milk replacers to get enough milk in the market, etc.). The key aspects of animal welfare include freedom from thirst, hunger and malnutrition; freedom from discomfort; freedom from injury, pain and disease; freedom to express normal behavior; and freedom from fear and distress [13].

These aspects are linked to extra production costs, which most of the time are paid by the end user. Thus, it is crucial to investigate if consumers intend to pay a premium for goods produced with animal-friendly raising techniques. Previous research has focused on meat and eggs, but very little work has been done for dairy products, especially in Europe. The authors in [14] examined consumers' willingness to pay (WTP) for animal welfare labeling on dairy products and concluded that on average, participants were willing to pay extra for a scoop of certified ice-cream although they were unwilling to pay a premium for certified cheese. The positive effect of animal welfare label on consumers WTP in dairy production was also found among Italian consumers [15]. Specifically, a higher WTP was detected for yogurt labeled with high welfare standards, as compared with yogurts labeled with intermediate and low welfare standards. In a meta-analysis [16] conducted to examine consumer's WTP for different credence attributes (that cannot be directly experienced or identified), "animal welfare" was predicted to produce the third highest WTP a price premium for dairy products (31%) following "food safety" (39.2%) and "hormone/antibiotic free" (34.3%).

Recent trends in the agricultural farm sector have not only decreased farmed animals' standards of living but have also worsened the working conditions. Conventional Greek farms are mostly family owned, who seek to reduce farming costs by utilizing non-paid family labor or by hiring seasonal, low-skilled and low-waged workers [17] who most of the times are migrants. Several studies detail how the agricultural Greek economy has been revitalized due to the cheap and disposable labor of an agricultural migrant workforce [18], with one estimating that 90 percent of agricultural laborers are migrants [19]. In practice, migrants are mostly seen as a flexible and temporary labor force that offers a response to the seasonal agriculture needs [20]. In Greece there has been a massive and continuous inflow of migrants to rural areas in recent decades who have significantly contributed to the restructuring of the livestock sector by empowering the agro-pastoral salaried workforce [21,22]. For example, migrant workers today represent about half of the agro-pastoral salaried workforce in the Epirus and Peloponnese regions and about a one-third in Crete [23]. Livestock and dairy farmers under the pressure of competitiveness and profitability, adopt unfair working practices such as the backbreaking labor performed for very low payment and the exploitation of illegal migrant workers who most of the time have less access to resources through traditional legal channels.

Fair trade is most relevant to the good working conditions ethical claim that is already in place in the global agrifood system. Previous research has confirmed a willingness by consumers to pay premiums for ethically related food marketing claims related to fair trade [2,24–26] which, however, is a labeling scheme mainly focused on helping agricultural producers in developing countries. Research related to the underlying preferences of consumers towards a labeling scheme that certifies safe and fair working conditions, such as legal employment of workforce, maximum number of working hours, legal compensation, labor benefits etc., for the agricultural workers is limited. Authors in [27] explored U.S. consumers' WTP for strawberries embodying a living wage and safe working conditions for farmworkers and concluded that respondents were willing to pay a median of 68% more for these criteria, with frequent organic consumers and those who make purchases based on environmental criteria to be the most willing to pay higher amounts. Similar was the price premium (72.6%) estimated for Greek strawberries with a labeling scheme that certifies fair working conditions for the workers employed in all stages of agricultural production [28]. Finally, two more surveys have suggested a positive willingness to pay for labor related attributes ([29] for living wages and [30] for fair and safe working conditions).

We contribute to this literature by conducting a contingent valuation survey among Greek consumers to elicit and compare their WTP for animal welfare and fair labor certification labels. This is the first time, to our knowledge, that both ethical attributes are investigated simultaneously in the case of feta cheese. We also explore the determinants of WTP for ethical labels because the review of the relevant literature reveals that demographics, attitudes and values have been used as predictors of the positive ethical behavior [31]. For example, females and younger people of higher education show higher levels of concern for animal welfare [32].

We chose feta cheese as a product of interest for several reasons. First, it is considered an important fresh product in terms of supply and demand in Greece. The production of cheese is one of the most important activities in Greek agricultural economy. For example, in most Greek islands, the extensive grazing of small ruminants represents the main source of livelihood for many rural communities through the processing and the sale of feta cheese [33]. As far as demand concerns, it is considered the national cheese of Greece, and it covers almost 70% of the cheese consumption of Greek people [34]. Thus, it is widely consumed and would appeal to most consumers in our survey. Second, the livestock and dairy industry has been blamed for several ethical issues in relation to inhuman treatment of animals, as well as to migrant exploitation. Finally, it is a protected designation of origin (PDO) agricultural product that can be sold in packages and, therefore, it could carry certification labels.

The objective of this research was twofold: (1) to estimate and compare consumers' average willingness to pay for animal welfare and fair labor certification labels in the case of feta cheese; and (2) to explore the socio-economic factors that potentially affect consumers' willingness to pay for the different labeling schemes. The results can provide valuable information for producers and retailers who are wondering whether costs associated with these different labeling schemes can be re-couped from potential customers. In the next section we present our data collection and questionnaire design. We then present our results in Section 3 and conclude with a discussion of our findings in the last section.

2. Materials and Methods

The data collection was carried out through in-person interviews in a randomly selected sample of consumers, outside supermarket chains and shopping centers in different parts of Attica region during November 2019. The final sample consisted of 403 consumers and the only criterion that participants had to meet was being over 18 years old.

To uncover consumers' preferences and WTP for ethical labeling we employed the contingent valuation method (CVM). The CVM was principally developed in environmental economics, but it has been widely used in the valuation of food products in recent decades [35]. Several studies have used the CV method to estimate WTP for different

quality attributes of food products [28,36–38]. This method is based on a questionnaire that offers the respondents the opportunity to make an economic decision on goods in a hypothetical context [39,40]. Specifically, respondents are asked to state their WTP, contingent on a particular scenario described to them. As mentioned before, in this study we investigate the WTP for two different ethical labels: animal welfare and fair labor.

To answer our research question, we created two treatments based on the two versions of the questionnaire and subjects were randomly allocated to one of the two versions. The only difference between the two versions was about the valuation question. In one version subjects valued a 400 g pack of feta cheese certified with an animal welfare label (Figure A1a) while in the other version, subjects valued a 400 g pack of feta cheese certified with a fair labor label (Figure A1b). Subjects were asked to indicate the premium (if any) they would be willing to pay over the price of a conventional product priced at €4.5 (which had not been produced following specific ethical production methods). The bid amounts chosen for the valuation questions (30 cents, 60 cents, 90 cents and 120 cents) were selected based on historical prices of feta cheese with different certifications, as well as feedback we received from the pilot survey. The bids were varied on a between-subject basis so that each respondent saw a single price and was asked a Yes/No question about it. The single bounded dichotomous choice format was employed because it is generally considered the least cognitively demanding elicitation method and was most likely to ensure incentive compatibility [41,42]. Figure 1 shows the questionnaire design and the number of subjects per treatment. Subjects who responded "No" to the valuation question, were asked why they would not be willing to pay a price premium for the certified feta cheese.

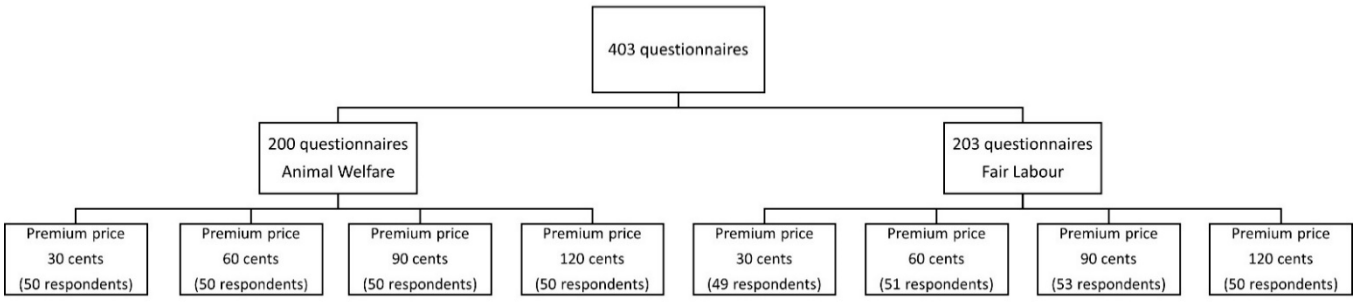


Figure 1. Questionnaire design and number of respondents per questionnaire.

Before eliciting WTP, the CV question section of the survey began by asking if the respondents were familiar with the context of the label under investigation, to get a better understanding of awareness of these labels. All subjects, regardless of their response, were then provided with a small script with relevant information about the ethical label that they were going to see. We did this because we wanted to make sure that all subjects (familiar or not with the ethical labels) would be valuing the specific label having in mind the same information.

To encourage and motivate respondents reveal their preferences with the necessary precision and minimize any hypothetical bias in the WTP estimates, we used a cheap talk script combined with a budget constraint reminder (set up similar to one used in [28]) and a consequentiality script [43], prior to the valuation question. The script read as follows:

> *"You will soon be asked if you are willing to pay a certain amount to buy a pack of 400 g feta cheese. This question will be hypothetical, meaning you will not actually have to pay. It has been observed that people find it difficult to answer hypothetical questions and they often state they are willing to pay a larger amount of money than what they are actually willing to pay. One reason why this happens is because when the time comes to actually make the payment, they think that this money will not be available for other purchases. Therefore, your honesty is of great importance for us to be able to draw reliable conclusions.*
>
> *Finally, we would like to inform you that the results of this survey will become available to producers, traders, and retailers of dairy products as well as to the general public of consumers. This means that this survey might influence the decision of producers, traders,*

and retailers to adopt the Animal Welfare label for the feta cheese." (We made the appropriate adjustment in the script between the two versions of the questionnaire to account for the two labels. Thus, the other version was saying " . . . adopt the Fair Labor certification label for the feta cheese")

In addition to the standard demographic information (age, gender, education, household size and income level), the questionnaire also solicited respondents' beliefs about the likelihood of hypothetical bias for their stated WTP on a 5-point Likert scale, anchored by not confident at all and completely confident. Moreover, given that the ethically produced products carry a social desirability attribute and subjects may be inclined to state higher WTP values to reflect what is presumed to be desired rather than the truth, we elicited the short form of Marlowe-Crowne social desirability scale [44].

We also elicited respondents' ethically responsible behavior using the Ethically Minded Consumer Behavior Scale [45] that focuses on recalling actual sustainable consumption practices of consumers. Respondents were asked to state their level of agreement with several statements related to ethical consumption. Accumulating several various behaviors across different situations can help us understand their concerns about ethics and predict behavioral outcomes. The statements are then individually scored and summed to form a single index of ethical purchasing consciousness. The higher the score on this scale, the more likely it is for the person to consume ethically [45].

Finally, respondents were asked about other attitudinal characteristics such as purchase frequency of feta cheese per week, food price sensitivity in purchasing decisions, trust on information provided by companies and whether they buy packed or unpacked feta cheese.

3. Results

3.1. Descriptive Analysis

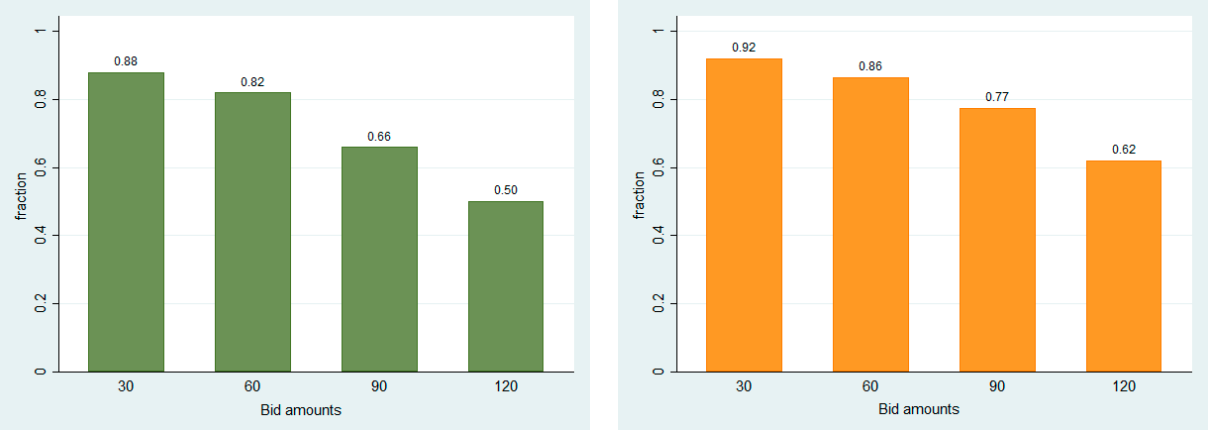
Before we proceed with the analysis and results, we first explored the demographic profile of our sample. Table 1 shows the basic summary statistics for a set of subjects' observable characteristics. The majority of respondents were females (53.8%), which is representative of the population of the city (52.2%) according to the Census of Population and Housing 2021 [46]. On average our sample were 40.2 years old (min = 20, max = 78), and the vast majority held a university degree (75.7%). Moreover, only 20% of the sample was aware of the context of animal welfare and fair labor certification labels, which is very low.

We also explored whether there are any significant differences between the two treatments along demographic characteristics and attitudinal variables. With respect to the socioeconomic status of participants, results indicated that our between-subjects treatments did not differ at 5 percent significance level in terms of gender, age and education. With respect to some attitudinal variables, we found no difference between treatments with respect to the ethically minded score, hypothetical bias of stated WTP, prior knowledge of the labels, type of feta cheese consumed, purchase frequency of feta cheese per week and beliefs about credibility of business information regarding their ethics. However, we did reject the null hypothesis of no difference for the between-subjects treatments for net income, social desirability scale and beliefs about low food prices. Although it is debatable whether such balance tests are meaningful, we conclude that treatments were balanced on a wide set of observable characteristics.

Before we proceed with the econometric analysis, we could gain some first insights by comparing the positive responses per stated bid and ethical label. Figure 2a,b show WTP responses for feta cheese carrying an animal welfare certification label and a fair labor certification label, respectively.

Table 1. Summary statistics of subjects' observable characteristics and test statistics comparing the between-subjects treatments.

Description of Variables	Scale of Measurement	Frequency	Mean (SD)	Tests
Certification label	1 if Fair labor 0 if Animal welfare		0.5 (0.50)	
Age	(Continuous)		40.2 (13.79)	t-test = −0.94, p-value = 0.35
Gender	1 if male 0 if female		0.46 (0.50)	Pearson's χ^2 = 1.79, p-value = 0.18
Income (yearly net household income)	1 = <€6000 2 = €6001–€12,000 3 = €12,001–€18,000 4 = €18,001–€24,000 5 = €24,001–€30,000 6 = >€30,000	=6.45% =24.07% =21.59% =14.64% =16.38% =16.87%	3.61 (1.57)	Pearson's χ^2 = 11.98, p-value = 0.04
Education level	1 = Compulsory educ/Highschool diploma 2 = Technical school diploma 3 = University graduate 4 = Postgraduate studies	= 13.90% =10.42% =46.40% =29.28%	3.91 (0.97)	Pearson's χ^2 = 3.81, p-value = 0.28
Perceived hypothetical bias	1 = Not confident at all 2 = Slightly confident 3 = Somewhat confident 4 = Fairly confident 5 = Completely confident	=0.99% =1.49% =8.44% =41.44% =47.64%	4.33 (0.78)	Fisher's exact = 0.25
Feta purchase frequency (per week)	1 = 0–250 g 2 = 251–500 g 3 = 501–750 g 4 = 751–1000 g 5 = >1001 g	=24.07% =26.55% =24.07% =15.63% =9.68%	2.80 (1.70)	Pearson's χ^2 = 7.82, p-value = 0.10
Ethically minded consumer behavior	(Continuous)		33.79 (7.60)	t-test = −1.30, p-value = 0.19
Social desirability	(Continuous)		8.01 (2.62)	t-test = −2.18, p-value = 0.03
Familiar	1 if they know the label 0 otherwise		0.2 (0.40)	Pearson's χ^2 = 0.20, p-value = 0.65
Feta cheese type	1 = unpacked 2 = packed 3 = other	=62.53% =35.24% =2.23%	1.40 (0.53)	Fisher's exact = 0.70
Low food prices are more important than ethical production processes	1 = Completely disagree 2 = Disagree 3 = Neither agree, nor disagree 4 = Agree 5 = Totally agree	=26.55% =42.43% =21.84% =7.20% =1.99%	2.16 (0.96)	Pearson's χ^2 = 10.27, p-value = 0.04
How reliable do you think the information provided by companies regarding their ethics	1 = Low reliable 2 = Somewhat reliable 3 = Very reliable	=55.58% =38.46% =5.96%	1.50 (0.61)	Pearson's χ^2 = 1.77, p-value = 0.41



(**a**) (**b**)

Figure 2. (**a**) Distribution of positive responses per bid value for the animal welfare label; (**b**) Distribution of positive responses per bid value for the fair labor label.

First, in all treatments we observed a decline in positive responses when the price (bid amount) increased, which is consistent with the principles of basic economics. Second, in both treatments, there was a significant percentage of subjects that stated high values even when the premium over the price of a package of 400 g of conventional product was up to 120 cents which represented a 27% increase in the price of feta cheese. Second, when we compared the two graphs it appeared that the fair labor treatment yielded higher proportions of positive responses as compared with the responses in animal welfare treatment. A Pearson's χ^2 test confirmed that responses differed between the two label treatments at $a = 10$ percent (χ^2 = 3.316, p-value = 0.069). Thus, we expected that subjects might be affected more by an ethically related food marketing label related to labor exploitation in the agricultural farming sector than to inhuman animal living conditions.

Moreover, we explored why 99 respondents (25%) out of 403 answered negatively to the valuation question. Specifically, they said they would be unwilling to pay anything more for the labeled feta cheese in comparison to the conventional feta cheese. The primary recorded motive was their limited income, and a secondary reason was a protest reason such as "the state should pay for the price difference". It is interesting that 20.2% of negative respondents stated that they "don't have faith in such food certification schemes".

3.2. Econometric Analysis

In this section, we investigated whether insights gained from the descriptive analysis of the previous section held under the scrutiny of conditional analysis. In addition, we quantified treatments effects.

Given the nature of the dependent variable, we estimated interval regression models for each label treatment, as well as a pooled model. We chose to estimate interval regression models because the estimates from these models are easier to interpret and the variance of WTP is directly estimated [47]. In the interval regression, the lower limit is set to the price if the respondents' answer is "Yes", and the upper limit is set to the price if the answer is "No". The model is completely equivalent to a probit model with price as one of the independent variables but with the likelihood function reparametrized in terms of WTP [48,49]. The model is showed in Equation (1):

$$\begin{aligned} WTP_i = \alpha \quad & +\beta_1 age_i + \beta_2 gender_i + \beta_3 income_i + \beta_4 education_i + \beta_5 frequency_i + \beta_6 ethicalScale_i \\ & +\beta_7 desirabilityScale_i + \beta_8 bias_i + \beta_9 familiar_i + \beta_{10} packed_i + \beta_{11} lowprice_i \\ & +\beta_{12} credibility_i + \varepsilon_i \end{aligned} \quad (1)$$

where WTP_i is the dependent variable of i-*th* respondent and it is a variable for willingness to pay identified by a lower and upper limit to purchasing animal welfare labeled feta

cheese, a is the intercept, β_s are the coefficients of the sociodemographic and attitudinal features of the respondent, while ε_i is the error term. The independent variables are thoroughly described in Table 1. The same specification of Equation (1) was replicated for evaluating willingness to pay for feta cheese certified for fair labor practices. For the pooled model, we only added the independent variable for the treatments (certification label), which was equal to 1 if respondents faced the fair labor certification label, 0 otherwise. Table 2 shows coefficient estimates from three specifications. Model (1) and (2) show results for the sample of subjects in which valuations were elicited for the animal welfare and fair labor label, respectively and model (3) depicts a pooled model. In accordance with the descriptive analysis presented above, results from model (3) indicated that fair labor certification label was preferred over animal welfare. Consumers were willing to pay a higher premium for feta cheese carrying a fair labor certification rather than an animal welfare label. This suggests that subjects were aware of the serious unfair working condition in the Greek dairy sector and valued issues related to labor exploitation higher than inhuman treatment of animals.

With respect to demographic characteristics, gender and age had a significant effect on WTP while the rest did not produce systematic effects. Males and females differed in their stated WTP and specifically, males were less willing to pay a premium across both labels. In addition, younger individuals were more willing to pay a premium for ethical certifications which might have been due to their greater environmental and social consciousness. Thus, the demographic profile of a potential consumer is a female of a younger age.

With respect to attitudinal characteristics, the Ethically Minded Consumer Behavior score was a significant predictor of WTP in all three specifications. Specifically, a greater level of reported ethically minded behavior indicated a higher price premium for feta cheese certified for animal care standards and fair working conditions. The Marlowe-Crowne social desirability score was not a significant predictor of willingness to pay. Moreover, prior knowledge of ethical certification labels and high consumption of feta cheese per week (751 g to 1 kg) were associated with higher WTP premiums. Finally, subjects purchasing packaged feta cheese were more willing to pay a premium for fair labor certification label rather than those buying unpacked. The perceived hypothetical bias dummies were not significantly different than zero, indicating no significant effect of stated uncertainty over WTP.

Table 2. Interval regression estimates.

	WTP for Animal Welfare Label		**WTP for Fair Labor Label**		**Pooled Regression**	
	(1)		**(2)**		**(3)**	
Constant	261.321	(20,896.022)	−7.101	(121.961)	48.908	(61.283)
Certification label	-	-	-	-	19.131 *	(9.769)
Age	−0.547	(0.537)	−0.761	(0.816)	−0.664 *	(0.398)
Gender	−21.883 *	(11.293)	−62.184 **	(28.208)	−25.014 **	(9.738)
Income						
€6001–€12,000	−3.943	(35.916)	40.075	(35.781)	21.052	(20.585)
€12,001–€18,000	−19.416	(35.451)	−6.598	(36.922)	−1.408	(21.01)
€18,001–€24,000	−33.204	(35.768)	0.483	(36.818)	−8.474	(21.627)
€24,001–€30,000	−8.098	(37.709)	32.886	(41.934)	17.883	(22.605)
>€30,000	−4.37	(36.313)	8.29	(40.602)	10.707	(22.126)
Education level						
Technical school	−13.09	(25.508)	−6.144	(38.255)	−8.137	(18.648)
University graduate	−14.502	(19.862)	16.064	(29.679)	−8.295	(14.495)
Post–graduate studies	−2.401	(21.639)	32.785	(38.524)	4.01	(16.996)

Table 2. *Cont.*

	WTP for Animal Welfare Label		WTP for Fair Labor Label		Pooled Regression	
	(1)		(2)		(3)	
Feta purchase frequency						
251–500 g	−15.103	(15.895)	−2.908	(27.382)	−10.553	(12.93)
501–750 g	8.817	(16.398)	17.248	(30.41)	13.568	(13.848)
751–1000 g	22.665	(21.564)	28.273	(30.545)	28.235 *	(16.249)
>1001 g	19.831	(28.033)	40.608	(34.656)	20.408	(18.407)
Ethical minded consumer behavior	3.511 ***	(0.951)	4.362 **	(1.9)	3.607 ***	(0.812)
Social Desirability	0.722	(2.086)	−5.16	(4.382)	−0.67	(1.752)
Perceived hypothetical bias						
Slightly confident	−9.489	(26,580.082)	25.023	(127.11)	−34.887	(67.532)
Somewhat confident	−233.273	(20,896.011)	−15.89	(107.595)	−51.08	(55.614)
Fairly confident	−228.653	(20,896.001)	56.002	(105.18)	−33.291	(53.337)
Completely confident	−−235.982	(20,896.009)	65.223	(106.585)	−39.302	(53.54)
Familiar	26.709 *	(15.649)	17.599	(26.998)	22.574 *	(12.736)
Feta cheese type						
Packed	2.281	(12.409)	46.205 *	(25.5)	15.073	(10.316)
Other	7.461	(47.346)	−15.416	(56.398)	−17.518	(31.522)
Low food prices are more important than ethical production processes						
Strongly Disagree	−18.213	(18.481)	21.311	(29.026)	0.855	(13.868)
Disagree	17.808	(15.629)	15.262	(25.212)	19.264	(12.301)
Agree	23.127	(24.195)	−6.217	(50.221)	28.251	(20.756)
Strongly agree	253.424	(14,737.805)	18.559	(56.521)	48.135	(33.921)
How reliable do you think the information provided by companies regarding their ethics						
Somewhat reliable	−15.469	(12.544)	−37.992	(24.624)	−16.743	(10.414)
Very reliable	10.158	(25.6)	57.624	(66.543)	19.799	(23.226)
σ_u	3.844 ***	(0.187)	4.334 ***	(0.315)	4.039 ***	(0.152)
N	200		203		403	
Log-likelihood	−83.578		−73.875		−168.429	
AIC	229.1568		209.751		400.8574	
BIC	331.4046		312.4604		528.8234	

Notes: Standard errors in parentheses, * < 0.1, ** < 0.05, *** < 0.01.

Using predicted values from econometric models (1) and (2), we graphed the demand curves and calculated mean WTP values separately for each label. The average WTP premium associated with the animal welfare label was estimated at €1.20 and the average WTP premium for the fair labor certification label was estimated at €1.61.

Figure 3 shows the demand curves where each point on the curves indicates the percentage of respondents that would be willing to purchase a package of 400 g feta cheese with an animal welfare and a fair labor label, respectively, at the premium projected on the Y-axis The curve for the fair labor is sifted to the right, indicating a higher rate of acceptance. It is interesting that almost 30% of subjects were willing to pay a premium of at least 2 euros for the fair labor certified feta cheese. Based on average market price, this estimate corresponded to a premium of 44%. Thus, some part of the cost related to fair working conditions could be recouped by charging the associated premium on market prices.

Figure 3. Demand curves based on predicted WTP valuations per label.

4. Discussion

In an era of growing interest for actions that promote sustainability, understanding whether ethical labeling is an important element in consumers' decision-making process can be an effective tool towards a more sustainable agrifood system. In this survey we elicit valuations for animal welfare and fair labor certification labels on feta cheese and explore whether consumers reveal a preference for either of the two labels. This can be a valuable information for farmers, producers and retailers who are wondering whether costs associated with animal welfare and fair working conditions can be recouped from potential customers. Moreover, we explore whether willingness to pay can be affected by demographic characteristic and attitudinal factors.

Unlike the results of [14] which indicated that subjects were not willing to pay a premium price for semisoft cheese with a humane animal care label, we found an average WTP premium of up to 27% for animal welfare labeled feta cheese compared with the price of the conventional product. In the literature we find the same price increase being recorded for certified farmed animal welfare broiler fillets [50]. For the fair labor certification label, our results show a price increase of about 36% in comparison with the actual price of conventional feta cheese which is much lower than Greek consumers' WTP (72.6%) for fair labor certified strawberries [28].

Overall, the positive premiums that our respondents are willing to pay suggest that people are aware of the ethical issues in the Greek agricultural farming system, and they believe that their individual purchasing habits will make a difference towards a more sustainable future. Hence, the insights from our survey can be used to support the design of labels and other sustainable policies in the livestock and dairy sector. Moreover, it seems that respondents value issues related to labor exploitation in the dairy farming sector higher than inhuman treatment of animals. Most relevant to our work is [51] who, among other ethical attributes of milk, analyzed WTP for animal welfare and support for small-below-average income farmers (thus they focused on the farmer rather than on the farmworkers) and, unlike our results, they ranked animal exploitation higher than human exploitation.

Our findings can also be used by dairy farmers, retailers and marketers who are looking to build the profile of consumers that are more likely to purchase ethically labeled feta cheese. Specifically, women and consumers of a younger age are willing to pay higher premiums for both labels, which is consistent with previous studies related to ethical, as well as sustainable, labels [2,52–54]. However, income and education do not exert a statistically

significant effect on WTP values. Previous research on demographics associated with purchasing organic fresh products indicates that income has become essentially irrelevant. Specifically, people from all income levels are almost equally likely to be willing to pay price premiums for eco-labeled products [55]. Furthermore, in line with [56], we found that prior knowledge about the animal welfare label as well as the fair labor label can play a significant role in influencing purchase decisions. As we expected, results, also, indicate that the more conscious consumers are about ethical minded behavior during purchases, the higher their WTP is for both labels. Finally, consumers who purchase high quantity of feta (about 0.75 kg to 1 kg) per week are willing to pay higher premiums than those who buy little. This might happen because they feel that this quota of feta is sufficient to make the difference in the agrifood system.

Although these results indicate a promising potential market for ethically produced feta cheese, we refrain for generalizing our results to other livestock production systems and products (such as poultry, swine etc.) as well as the entire Greek population given limitations in our data collection. Specifically, assessing WTP for other food products is needed because it may differ substantially for different commodities. For instance, evidence show that consumers' concerns for animal welfare are not equally distributed among the different animal species [57–59]. Furthermore, the study outcomes would be different if the product under investigation was an essential food item that is non-elastic in terms of demand. Moreover, given that this sample is not fully representative (e.g., biased towards higher education), generalizations beyond the sample at hand are speculative. Specifically, using data from the Attica region, which is one of the most developed cities of Greece with high income, education and exposure to innovative food labels, limits our ability to generalize from the study results. It would also be interesting to use a non-hypothetical methodology to elicit WTP values for ethical standards in dairy production because, given the hypothetical nature of our questions WTP estimates may suffer from hypothetical bias (although we took all the necessary steps described in the literature to eliminate hypothetical bias). However, as long as hypothetical bias uniformly affects the two labeled products, it might be less of a problem in the comparison of the treatments. Finally, results should be interpreted with caution given that consumers sometimes form positive attitudes about ethical consumption but fail to follow through with their actual purchase behavior [60,61].

Overall, this study suggests that Greek consumers are willing to pay a price premium for feta cheese certified for animal welfare and fair labor conditions and shows a preference over the certification related to good working practices of farmworkers. Moreover, the empirical findings suggest that several sociodemographic variables have significant influence on WTP estimates. Despite the limitations, our findings could be considered as the first study analysing ethical labeling in Greece, which may foster future studies in this field.

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Appendix A

(**a**) (**b**)

Figure A1. (**a**) Picture of the animal-welfare-labeled feta cheese in Greek (on the upper left says "FETA", and on the upper write a label exists which says "product certified for animal welfare practices"; (**b**) Picture of the fair-labor-labeled feta cheese in Greek (on the upper left says "FETA", and on the upper write a label exists which says "product certified for fair labor practices".

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