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Wine consumers' demand for social sustainability labeling: Evidence for the fair labor claim

Giovanna Piracci | **Fabio Boncinelli** | **Leonardo Casini**

Department of Agriculture, Food, Environment and Forestry, University of Florence, Florence, Italy

Correspondence
Giovanna Piracci, Department of Agriculture, Food, Environment and Forestry, University of Florence, Piazzale delle Cascine, 18 – 50144 Florence, Italy.
Email: giovanna.piracci@unifi.it

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Abstract

This study aims to investigate consumer preferences for social sustainability labeling for wine. We explored the potential demand for a fair labor label that certifies wine produced through the fair treatment of workers in Italy, since the exploitation of migrant labor has become a pre-eminent issue in the country. We conducted a choice experiment on a sample of 500 consumers. Results indicated that they were willing to pay a considerable premium for wine produced by wineries that respects workers' rights and that there is a wide heterogeneity in consumer preferences for sustainability labeling according to the different dimensions underlying the label.

KEYWORDS

ethical consumption, fair working conditions, food label, food values, wine marketing

JEL CLASSIFICATION

D12, Q13, Q18

The pursuit of environmental and social sustainability is an important emerging trend influencing food consumption patterns (Annunziata, Agnoli, et al., 2019; Annunziata, Mariani, & Vecchio, 2019; Asioli et al., 2020; Reisch et al., 2013). Sustainable production methods adopted by firms aim to adapt to this change in consumer demand; as a result,

during the last decades, many voluntary certification schemes have been implemented, including in the wine sector (Pomarici & Vecchio, 2019).

Most sustainability labels concerning wines rely primarily on environmental principles while neglecting the social aspects (Klohr et al., 2013; Nilipour, 2020; Schäufele & Hamm, 2017; Szolnoki, 2013). At the root of this disproportion could be the fact that the concept of sustainability has primarily declined under an ecological perspective and that a conspicuous concern of the current society is related to environmental degradation or climate change (for an extensive review, see Bangsa & Schlegelmilch, 2020). Notwithstanding this lack of attention, social sustainability stands out as one of the three pillars within the definition of sustainable development. In agriculture, this dimension has been found to encompass crucial topics such as farmers' quality of life, social justice, food security, and fair labor conditions (Diazabakana et al., 2014; McKenzie, 2004). The essential requirement for a successful dissemination of sustainability schemes is that consumers are willing to pay a premium to cover the higher costs stemming from the implementation of these practices. Hence, we aimed to explore consumer willingness to pay (WTP) for the provision of social sustainability labeling in the wine market.

The present study was conducted in Italy where there is a very strong and old tradition of winegrowing and winemaking. In 2018, Italy was the third largest global consumer of wine in absolute terms, with an estimated demand of 22.4 million hl, and the biggest world producer with 54.8 million hl, accounting for 19% of the total global wine production (OIV, 2019). Moreover, regarding social inequity, over the last years, the exploitation of migrant labor has drawn widespread attention from the Italian public, media, and policymakers. The last official report on Italian organized crime syndicates in agriculture indicates that irregular forms of employment occur at an estimated rate of 39% and that 400,000–430,000 agricultural workers (more than 50% of the total workforce) were employed without a regular contract or under *caporalato* conditions in 2015; among them, more than 132,000 are considered exposed to high risks of exploitation (Corrado et al., 2018; Macrì, 2019; Osservatorio Placido Rizzotto, 2018). *Caporalato* is a form of illegal gang-master system involving the recruitment, intermediation, and exploitation of irregular, underpaid farm labor that extends all across the country. Labor contractors and providers are responsible for human trafficking, forced labor, health and safety violations, economic exploitation, housing abuses, lack of holiday and/or sick pay, daily dismissals, and other severe infringement of human and worker rights (Melossi, 2021; Williams & Horodnic, 2018; Zawojska, 2016). In this regard, Seifert and Valente (2018) performed a counterfactual analysis applying the Synthetic Control Method to evaluate the causal effects of migrants' illegal recruitment and *caporalato* on labor productivity and wages in the wine supply chain in southern Italy. Results indicated that the illegal, hence underreported, workforce input in vineyards competes with and sometimes substitutes legal labor.

Corrado et al. (2018) and Williams and Horodnic (2018) conducted a comprehensive analysis of the phenomenon of worker exploitation in agriculture at the Italian and European levels, respectively. They investigated drivers and possible initiatives to eradicate unfair labor practices. Among others, they suggested that the implementation of specific food certification schemes tackling this preeminent issue may prove effective given the growing public concern and consumer awareness. Food labels are considered one of the promising "soft approach" policy tools aimed at encouraging voluntary changes toward more sustainable diet by allowing consumers to make informed buying decisions (Noblet & Teisl, 2015; Reisch et al., 2013; Van Loo et al., 2017). To this end, the European Commission announced the proposal for a legislative framework for a sustainable food labeling system that covers the nutritional, climatic, environmental, and social aspects of food products (European Commission, 2020). This action is

provided within the new Farm to Fork Strategy which is part of the European Green Deal. A European labeling scheme for sustainability should be including critical social plagues such as labor exploitation in the agricultural sector, if this could effectively foster more sustainable food choices and production methods. Furthermore, the provision of information on workers' rights to consumers would possibly integrate and strengthen the new engagement with social fairness aspects and labor rights compliance of the European Union's Common Agricultural Policy (CAP) for the period 2023–2027 (European Commission, 2021).

Within the food domain, Drichoutis et al. (2017) is the only study that focuses on consumer acceptance regarding the certification of fair working conditions in agricultural production. They investigated Greek consumers' preferences for strawberries with fair labor claims, and they found that people were willing to pay an average premium of 0.53 €/500 g (almost 70% more compared to the average price of conventional strawberries). No previous studies have assessed how consumers may value compliance to the standards guaranteeing respectful treatment to workers in the Italian context. Therefore, we sought to explore the impact of the introduction of a fair labor label that certifies wine produced without exploitation and discrimination of workers on consumer preferences. We investigated the Italian consumer demand for a potential fair labor certification and determined if consumers are willing to pay a premium for this attribute. In addition, we performed a segmentation analysis based on respondents' socio-demographic characteristics and personal orientation to better understand the source of taste heterogeneity. Moreover, since certifications addressing environmental concerns in production have already been found to be important drivers for wine preferences (Pomarici et al., 2018; Ruggeri et al., 2020; Scozzafava et al., 2021; Tait et al., 2019), we also tested for complementarities or possible competition effects between different attributes pertaining to the social and environmental domain of sustainability.

To pursue our research objectives, we conducted a hypothetical choice experiment on a sample of 500 Italian wine consumers. Data obtained through the experiment were analyzed by applying the Random Parameter Logit Model to detect consumers' taste heterogeneity and elicit marginal WTP values; then, the data were further inspected using a Latent Class Model (LCM) to define and describe the potential market segments interested in fair labor certification. The article is structured as follows: the next section describes the methodology and econometric approach used in the study; after that, our results are presented and discussed; lastly, conclusions and the main implications of this work are reported.

METHODS

To elicit consumer preferences for social sustainability attributes on wine, we applied a Choice Experiment (CE) approach. Since the fair labor label does not currently exist in the Italian wine market, we addressed this research gap by performing a hypothetical experiment. CEs are consistent with the Lancaster theory of consumer demand (Lancaster, 1966) and Random Utility Theory (McFadden, 1974) and are one of the most popular stated preference methods used in applied economics. One of their main advantages is that they allow to elicit the value of both private and public goods capturing the trade-offs between multiple products' attributes. For this reason, they have been extensively applied in food research (Lin et al., 2020; Luckstead et al., 2021; Syrengelas et al., 2018), as well as studies on wine preferences (Bazzani et al., 2020; Boncinelli et al., 2019; Ghvanidze et al., 2017; Lim & Reed, 2020; Mueller Loose, 2013; Tait et al., 2019).

The data were collected by performing a cross-sectional online survey involving Italian consumers while incorporating the CE. The survey was conducted through a panel recruitment agency (Toluna Inc.) in April 2021. People over 18 years of age, that is, the legal drinking age in Italy, who had purchased the product at least once were eligible to participate in the research. In addition, those who declared to never consume wine were screened out from the survey. Besides the CE, the survey was intended to collect consumers' socio-demographic characteristics, wine consumption habits, and the food values scale (Lusk & Briggeman, 2009). Lusk and Briggeman (2009) identified a set of food-specific properties that motivates food choices and it has been extensively applied to explain consumer behavior (Bazzani et al., 2017, 2018; Yang & Hobbs, 2020). In our survey, respondents were asked to rate the importance of each food value in the purchasing decision for wine on a 7-point Likert scale ranging from 1 (not at all important) to 7 (extremely important). As per Lusk and Briggeman (2009), each food value was accompanied by a brief description. The items of the scale provided to the consumers were slightly adjusted for the wine-purchasing situation and described as follows: (i) Appearance (extent to which wine looks appealing); (ii) Safety (extent to which consumption of wine will not cause illness); (iii) Fairness (the extent to which all parties involved in the production of the wine equally benefit); (iv) Taste (extent to which consumption of the wine is appealing to the senses); (v) Environmental impact (effect of wine production on the environment); (vi) Naturalness (extent to which wine is produced without modern technologies); (vii) Origin (where the agricultural commodities were grown); (viii) Convenience (ease with which wine is consumed); (ix) Price (the price that is paid for the wine); (x) Tradition (preserving traditional consumption patterns); and (xi) Nutrition (amount and type of fat, protein, vitamins, etc.).

Product and attributes' selection

In the CE, participants were asked to make repeated hypothetical buying decisions for a bottle of red wine. Wines are very diversified, complex goods compared with any other food product and their supply varies according to a huge number of different attributes and context-related features (Boncinelli et al., 2020; Lockshin & Corsi 2012). To make the choice situation appear more realistic, consumers were instructed to imagine that they wanted to buy a bottle of Chianti Classico DOCG* wine for a special occasion. This specific consumption situation was defined because different purchasing occasions have been proven to condition the preference formation for wine (Boncinelli et al., 2019; Hall et al., 2001). The Chianti Classico designation of origin was chosen since it is one of the most prominent designation of origin in the Italian wine market (Casini et al., 2020) that simultaneously fits for special occasion choices (Scozzafava et al., 2018). With regards to the experimental design, we selected five attributes regarding wine: the price, the fair labor condition claim, the 100% recycled glass label, the organic label, and the Wine Spectator quality score (Table 1).

As wine prices vary across a very broad range,† we set the monetary attribute levels as individual-specific (following Erdem, 2015). Specifically, before introducing the choice task, each respondent had to indicate the price range he/she usually paid for a bottle of red wine for a special occasion. We provided four options: (i) 5.50–12.49€; (ii) 12.50–19.49€; (iii) 19.50–26.49 €; and (iv) 26.50–33.49. These price ranges cover 90% of the distribution of retail prices for Chianti Classico DOCG wine (IRI-Infoscan, 2017). We considered the reference price level as the average value in each segment. The other price levels were obtained as 20% and 40% increase and 20% decrease for each reference level. This mechanism provided realistic alternatives to

TABLE 1 Attributes and levels used in the CE

Attribute	Levels
Organic	None[a], EU "Organic" label
Fair Labor	None[a], Fair Labor label
Recycled glass	None[a], "100% recycled glass" label
Wine Spectator score	80/100[a], 95/100
Price (€/0.75 L bottle)	
Reference price 9€	7.20€, 9€, 10.8€, 12.6€
Reference price 16€	12.8€, 16€, 19.20€, 22.40€
Reference price 23€	18.40€, 23€, 27.6€, 32.2€
Reference price 30€	24€, 30€, 36€, 42€

[a]Denotes the base level. The reference price depends on each individual response to the following: "Please, select how much would you spend to purchase a bottle of wine for a special occasion."

respondents since the price levels in the choice tasks were consistent with their wine purchasing habits (for other choice experiments applying attribute levels pivoted from individual-specific reference levels, see Boncinelli et al., 2020; Thiene et al., 2018).

Given our research objective for exploring the social sustainability label's effect on consumers' wine preferences, we included the fair labor attribute as the absence or presence of the corresponding label on the wine bottle. The fictitious claim that we proposed reads as follows: "wine produced without the exploitation and discrimination of the workers" which was accompanied by a logo. The whole label was implemented starting from the existing fair labor label applied by COOP, one of the major Italian food retail chains, on its products. At the time the study was conducted, COOP's claim was absent on wine bottles. On the other hand, other social responsibility certifications were available (e.g., "S.A.8000," "V.I.V.A. sustainable wine," and "Equalitas"). However, these sustainability labels are unknown to most consumers or do not explicitly address the protection of workers' rights. In contrast, we opted for adjusting COOP's fair labor claim to our research purpose since it was clear and self-explanatory. This last feature is relevant as we wanted to avoid biasing consumer responses by instructing them on the meaning of the certification ex-ante.

We included two other environmental attributes, namely the organic and recycled glass claim, to test for complementarities or potential competition effects between the social and environmental dimension of sustainability attributes. We assessed this by allowing for interaction effects in the experimental design. To this end, the organic certification was selected as it is the most well-known sustainability label. The levels were defined as the presence or absence of the European organic certification. However, organic certification cannot be considered an attribute of environmental sustainability stricto sensu. Indeed, many authors recognized the multiple halo effects exerted by the presence of organic labels with regard to manifold product dimensions. In other words, consumers tend to perceive organic products not only as more environmentally sustainable but also as, for instance, healthier, tastier, lower in calories, or more appealing with respect to their conventional counterparts (Apaolaza et al., 2017; Lee et al., 2013; Wiedmann et al., 2014). For this reason, we included in the experimental design a purely environmental attribute, namely the recycled glass label. It was presented to consumers as the absence or presence of the "100% recycled glass" claim. Lastly, the Wine Spectator score (Wine Spectator, 2021) was added using the 80/100 and 95/100 ratings as levels,‡ because critic

scores are an established quality cue among wine consumers (Costanigro et al., 2014; Ruggeri et al., 2020; Tait et al., 2019; Williamson et al., 2016) and are commonly adopted by Italian wine retailers.

As mentioned previously, no information about the fair labor claim, as well as the other attributes, was provided to consumers before the CE to avoid any learning effects. Before participants started the CE, a cheap talk script with a budget constraint reminder was applied as ex-ante hypothetical bias mitigation strategy (Cummings & Taylor, 1999). Furthermore, the choice sets and alternatives within each set were randomized among respondents to avoid ordering effects.

Experimental design

The full combination of the five attributes results in 64 ($2^4 \times 4^1$) wine bottle profiles and 2016 ($64 \times 63 \times 0.5$) unique choice sets. We applied a Bayesian D-efficient heterogeneous design (Sándor & Wedel, 2001, 2005) to allocate attributes and attribute levels among alternatives, reducing the number of choice tasks per respondent while considering heterogeneity for the reference price level. Heterogeneous designs consist of multiple simultaneously optimized sub-designs such that a group of respondents in the sample is assigned to only one of the different sub-designs. Sándor and Wedel (2005) demonstrated that heterogeneous designs are more efficient and robust for discrete choice model estimation than homogeneous designs (i.e., all respondents get the same design). Indeed, heterogeneous designs allow for a greater variation in the attribute levels, that is, a higher number of choice sets, without increasing the cognitive burden for the respondents. Following Jonker and Bliemer (2019) and de Bekker-Grob et al. (2020), we generated a heterogeneous design consisting of 4 sub-designs with 16 choice sets each (one sub-design per each group defined by the four reference prices). Every sub-design was divided into two blocks of eight choice tasks to further reduce the cognitive burden on respondents and to mitigate fatigue effects. The combination of the four sub-designs was optimal in estimating a Multinomial Logit Model (MNL). MNL-optimized designs are proven to perform well in the estimation of Random Parameter Logit Models too (Bliemer & Rose, 2010). To obtain the Bayesian priors and gather the relative weight of each sub-design in the final heterogeneous design, a pilot survey was previously run on a sample of 78 respondents, implementing a D-efficient design with zero-fixed priors. Both in the pilot and final stage, the designs were specified to allow for the robust estimation of all main effects plus the two-way interactions among the three sustainability attributes. This provides the possibility to test for complementarities or substitution effects between the social and environmental attributes. The design was constructed using the software Ngene (ChoiceMetrics, 2018). As a result, each choice set included two unlabeled alternatives of wine plus a no-buy option to avoid forcing the participants to choose one of the presented alternatives of wine. The choice task was displayed to participants in a visual format (see Appendix S1 for a sample choice task).

Econometric model

According to the Random Utility Models (McFadden, 1974), the utility that consumer i derives from the wine alternative j in the choice task t can be written as follows:

$$U_{ijt} = V_{ijt} + \varepsilon_{ijt}, \quad (1)$$

where V_{ijt} is the systematic part of the utility function, and ε_{ijt} is the stochastic component capturing the unobservable determinants of choices. V_{ijt} can be expressed as.

$$V_{ijt} = nobuy + \alpha Price_{ijt} + \boldsymbol{\beta}'\mathbf{X}_{ijt}, \tag{2}$$

where *nobuy* is an alternative-specific constant for the no-buy option. *Price* enters the model as a continuous variable taking the experimentally designed price levels. α is the marginal utility of price, and $\boldsymbol{\beta}'$ is the vector of the parameters of the $\mathbf{X}$ attributes in the choice task t. Further, ε is the random error term i.i.d. Type 1 extreme Value. We estimated the parameters using a panel structured Random Parameters Logit Model with an Error Component (RPL-EC) (Scarpa et al., 2005, 2007) that accommodates for taste heterogeneity, assuming that β_i varies randomly across individuals. Moreover, the error component takes into account that the unobservable utilities from the two hypothetical wine alternatives in the choice tasks are more likely to be mutually correlated than with the no-buy option (Scarpa et al., 2005). The model allows capturing the extra variance of the purchasing alternatives by letting them share an extra zero-mean error term. Therefore, stemming from Equation (2), two RPL-ECs were specified. Model 1 is estimated in utility space and can be written as follows:

$$\begin{aligned} U_{ijt} = {} & nobuy + \beta_{1i} Fair\_labor_{ijt} + \beta_{2i} Organic_{ijt} + \beta_{3i} Recycled_{ijt} + \\ & \beta_{4i} Scores_{ijt} + \gamma_1 (Organic * Fair\_labor)_{ijt} + \gamma_2 (Organic * Recycled)_{ijt} + \\ & \gamma_3 (Recycled * Fair\_labor)_{ijt} + \alpha PRICE_{ijt} + \eta_{ijt}\left(1 - Nobuy_{ijt}\right) + \varepsilon_{ijt}, \end{aligned} \tag{3}$$

where *Fair_labor*, *Organic*, *Recycled*, and *Scores* are dummy variables, taking the value of 1 if the wine has the fair labor, organic, 100% recycled glass labels and 95/100 Wine Spectator score, respectively, and 0 otherwise. The coefficients of these parameters were assumed to be independently and normally distributed, allowing individual preferences for these attributes to be either positive or negative. γ_s are the parameters of the interaction terms representing the shift in utility when the attributes are simultaneously present in the wine alternative and are assumed to be fixed, in addition to the price coefficient. η_{ijt} is the error component of the buying options specified as normally distributed.

To assess the robustness of our results and estimate the marginal WTP values, we employed a WTP space approach (Scarpa et al., 2008; Train & Weeks, 2005). The utility in Equation (3) may be reparametrized such that the coefficients enter the model already scaled by the price/scale parameter; hence, they can directly be interpreted as the marginal WTP values for the non-monetary attributes. Therefore, Model 2 is specified as follows:

$$\begin{aligned} U_{ijt} = \varphi_i \Big[& (-1) PRICE_{ijt} + nobuy + \omega_{1i} Fair\_labor_{ijt} + \omega_{2i} Organic_{ijt} + \omega_{3i} Recycled_{ijt} \\ & + \omega_{4i} Scores_{ijt} + \delta_1 (Organic * Fair\_labor)_{ijt} + \delta_2 (Organic * Recycled)_{ijt} \\ & + \delta_3 (Recycled * Fair\_labor)_{ijt} + \eta_{ijt}\left(1 - Nobuy_{ijt}\right)\Big] + \varepsilon_{ijt}, \end{aligned} \tag{4}$$

where φ_i is the price/scale parameter following a log-normal distribution. ω and δ are the marginal WTP estimates. The remaining elements of Equation (4) are specified as in Equation (3).

In addition, the variability in consumer tastes for sustainability labels was further inspected by estimating a LCM, the semi-parametric version of a mixed model such that the heterogeneity is modeled as discrete in C mass points. C is the number of classes assumed for the model specification (Hynes & Greene, 2016). Each class represents a group of consumers, and thus individual preferences are homogeneous within a class, whereas they are heterogeneous between classes. Therefore, the parameters for each attribute are class-specific, β_c. The choice probability for individual i belonging to class c can be modeled as Multinomial Logit (Greene & Hensher, 2003). As the classes are latent to the analyst, the probabilistic assignment of individual i to one of the C classes also needs to be defined. The probability that the consumer i belongs to class c also takes the MNL form (Boxall & Adamowicz, 2002). Thus, the probability P_{ijt} that individual i chooses alternative j among J alternatives in the choice task t, unconditionally on the latent class the individual belongs to, can be expressed as the product of probabilities and is given by the following equation:

$$P_{ijt} = \sum_{c=1}^{C} \left[\frac{\exp(\boldsymbol{Z_i}'\boldsymbol{\theta_c})}{\sum_{c=1}^{C} \exp(\boldsymbol{Z_i}'\boldsymbol{\theta_c})} \frac{\exp(\boldsymbol{X_{jt}}'\boldsymbol{\beta_c})}{\sum_{j=1}^{J} \exp(\boldsymbol{X_{jt}}'\boldsymbol{\beta_c})} \right], \tag{5}$$

where $\mathbf{Z}_i$ is the vector of the observed respondent's characteristics; namely, the food values and the socio-demographic features, and $\boldsymbol{\theta}_c$ is the parameter vector for each class.

All the models were estimated using the maximum likelihood method in R (gmnl package).

RESULTS AND DISCUSSION

A total of 500 Italian wine consumers completed the questionnaire. The descriptive statistics of the sample are reported in Table 2. The respondents were mainly men (58.6%), with a median age of 43 years. Almost 70% of the sample was employed and declared to have a fair economic situation. Although all the socio-demographic categories were well represented, there was a slight predominance of younger respondents and well-educated categories. Figure 1 displays the individual ratings for the 11 food values, bars are sorted from the most to the least important. The top three stated food value items driving wine purchasing choices are Taste, Origin, and Safety, whereas Appearance, Convenience, and Nutrition were noted to be the bottom three. In line with Yang and Hobbs (2020) referring to Canadian consumers, we found that Italian respondents deliberately stated to prioritize private attributes rather than the public ones when making purchasing decisions.§

Table 3 lists the results from the two RPL-EC models, and as expected, the two models were consistent. As a concern for Model 1, the no-buy constant was negative and statistically significant, indicating that consumers increase their utility when choosing one of the two alternatives of wine. This suggests that the attributes selected in the experimental design were relevant to consumers' purchasing decisions for a bottle of wine. The price coefficient was also negative and statistically significant, which indicates that consumer utility decreases when price increases. The coefficients of the non-monetary attributes were all positive and statistically significant at 99%, proving that each one of them positively affects individual utility, albeit differently. In contrast, the interaction effect between the fair labor claim and the recycled glass label

TABLE 2 Descriptive statistics of the sample ($n = 500$)

Characteristic	(%)
Gender	
Male	58.60
Female	41.20
Not declared	0.20
Age group	
18–34	24.40
35–54	57.00
>54	18.60
Education	
Primary education	6.20
Secondary education	51.20
Tertiary education	42.60
Occupational status	
Employee	68.40
Student	7.40
Retired worker	2.80
Unemployed	9.40
Homemaker	12.0
Monthly income[a]	
With high difficulty	3.40
With difficulty	6.20
With low difficulty	44.00
With ease	41.30
With high ease	4.80
Wine consumption frequency	
Less than once per month	2.4
Once or more per month	10
Once or more per week	47
Daily	40.6
Wine subjective knowledge (mean score)	4.64

[a]Respondents' answers to the question: "How do you make ends meet?"

was not statistically significant. This outcome implies that the preference toward the fair labor wine does not depend on the importance people attach to the pure environmental dimension of sustainability, at least for the labels included in the experiment. Conversely, we found statistically significant interactions between the organic and recycled glass labels and between the organic and fair labor labels, both with a negative sign. In other words, our findings indicate a possible competition effect between the organic certification and the other two schemes, whilst no detrimental effect was observed between the social and pure environmental label. The

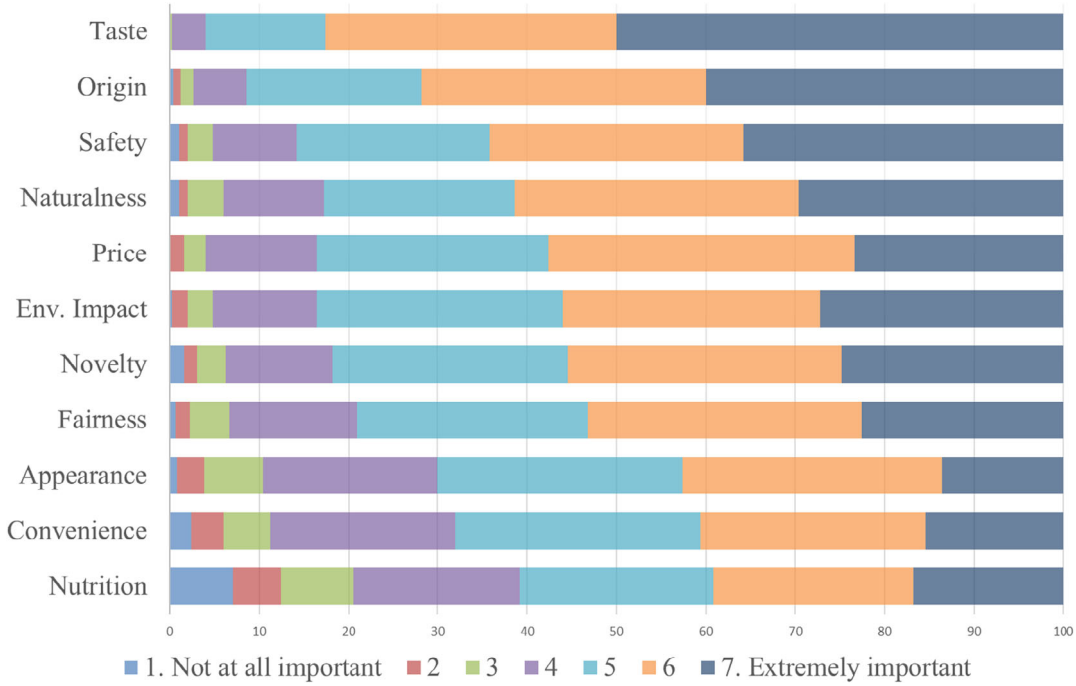

FIGURE 1 Individual ratings for the 11 food values

results suggest that these certifications share part of the dimensions of wine quality and that the organic attribute captures heterogeneous and diverse interests, including social fairness benefits, as underlined in other food-related studies (Akaichi et al., 2020; De Marchi et al., 2016; Meas et al., 2015), and for wine preferences (Mueller Loose, 2013). The standard deviation of the error component was statistically significant, confirming the hypothesis of heteroskedasticity across the utilities of the hypothetical alternatives. Furthermore, standard deviations of all attributes were significant, denoting a high variability in the parameters' distribution across the population. This highlights the strong heterogeneity in consumer tastes for the wine attributes being considered. Therefore, the implementation of RPL-EC was appropriate to the analysis.

From the RPL-EC in WTP space, we derived the marginal WTP for the attributes. Considering the sustainability of the wine, the organic certification received the highest price premium (€9.58 per bottle). As expected, the organic attribute was the most preferred among the sustainability labels on wine bottles. Lim and Reed (2020), Mueller Loose (2013), Bazzani et al. (2020), and Ruggeri et al. (2020) also found evidence that the organic claim was the most valuable sustainability attribute for wine choices. This might be due to the fact that, among the sustainability certifications, the organic claim is the most trusted and familiar. The fair labor label ranked second, and, on average, consumers were willing to pay €7.42 more for a bottle of wine certified to be produced in compliance with fair labor conditions compared with the same wine without this guarantee. The result was unexpected since it refers to a fictitious label, although it is in line with previous findings by Drichoutis et al. (2017), applying the fair labor certification for strawberries. The plausible reason may be rooted in the fact that we likewise focused on a salient societal concern among Italian consumers. Other studies on the wine industry derived negligible interest

TABLE 3 Results from the RPL-EC models specified in preference and WTP space

	Model 1 Preference space model		Model 2 WTP space model	
	Coefficient	**z-value**	**Coefficient**	**z-value**
Random parameters				
Organic	1.90***	13.99	9.58***	15.48
Fair labor	1.41***	10.95	7.42***	12.61
Recycled glass	1.19***	9.26	5.59***	9.56
Wine Spectator score	0.51***	8.86	2.90***	11.30
Non-random parameters				
Price	−0.18***	−20.19		
No buy	−4.43***	−16.48	−24.81***	−28.26
Organic × fair labor	−0.53***	−4.26	−2.39***	−4.19
Organic × recycled	−0.59***	−4.42	−2.56***	−4.14
Fair labor × recycled	−0.15	−1.09	−0.56	−0.95
Standard deviations of random parameters				
Organic	1.80***	14.36	8.89***	17.53
Fair labor	1.25***	10.65	6.01***	12.40
Recycled glass	0.79***	8.38	4.33***	10.64
Wine Spectator score	1.07***	11.32	4.84***	12.65
Error component (η)	3.79***	19.41	23.11***	24.76
Participants	500		500	
Observations	4000		4000	
Akaike Information Criteria	6258.64		6259.29	
Bayesian Information Criteria	6409.69		6416.64	
Log-likelihood	−3105.30		−3104.60	

***Indicates significance at a 1%.

toward social issues when compared with other environmental aspects, as seen in Mueller Loose (2013), Ghvanidze et al. (2017), and Tait et al. (2019). However, in these cases, fair social attributes were addressed through a generic claim, for instance, "socially responsible" or "social responsibility," which may have resulted too vague or unclear to consumers. Indeed, Grunert et al. (2014) found that low usage of environmental or ethical labels is associated with little understanding by consumers. This corroborates our decision to opt for a direct and self-explanatory claim, albeit fictitious. The marginal WTP for the recycled glass label and the Wine Spectator quality score were €5.59 and €2.90 respectively. The latter was the least valued attribute, in contrast with Costanigro et al. (2014) and Tait et al. (2019). Probably, fixing the denomination of origin across the alternatives and asking participants to make buying decisions for a bottle of Chianti Classico DOCG wine was already a guarantee for strong quality to drive their choices. As an indication of the consistency of our findings, the estimated WTP for wine sustainability attributes were in line with the one elicited by Tait et al. (2019) and Ruggeri et al. (2020) for Sauvignon Blanc wine in California and Franciacorta DOCG wine in Italy respectively.

Figure 2 displays the distribution of the individuals' conditional mean for the parameter for each of the attribute considered based on Model 1 estimates. Even though the curves were very different from each other, most of the respondents concentrated on the positive part of the distributions. The density for the Wine Spectator score was higher around zero and lower for negative conditional means. Conversely, both the organic and fair labor label was described by platykurtic curves with the largest part of the conditional means assuming positive values. In addition, a consistent group of respondents exhibited values in the ties of the distributions, underlining the high preference heterogeneity for these attributes. As pointed out by the distributions, the vast majority of the sample (more than 80%) was found to be willing to pay a premium for the provision of the fair labor certification on wine bottles.

To further investigate the heterogeneity among consumer tastes, we ran a LCM using the food values, gender, age, and education as class membership predictors. We adopted a three-class structure as it was the model minimizing the Bayesian Information Criteria. In addition, we observed only a marginal improvement in the Akaike Information Criteria, switching from a 3- to 4-class representation.

Table 4 shows the results of the segmentation analysis. The price coefficient was always negative and statistically significant and, overall, all the classes were positively prone to the three wine sustainability labels proposed. Class 1 is the reference level in defining the effect of the individual characteristics on consumer preferences and accounted for the 43% of respondents. The fair labor claim ranked third among the SL and a possible competition effect with the recycled glass label was detected. Indeed, the interaction term was negative and significant ($p < 0.1$). Class 2, which comprised 37% of the interviewees, attached positive value to the sustainability attributes as well, albeit less pronounced in contrast to Class 1. This segment showed the lowest interest for the presence of the fair labor label. Moreover, as compared with the other groups, consumers were more sensitive to the Wine Spectator score and price attribute. In addition, they were the most interested in purchasing a bottle of wine, as denoted by the highest coefficient of the no-buy option. This segment was denoted by younger respondents, whereas the other two socio-demographic characteristics were not significant. With regard to the food values, Class 2 exhibited inferior attention to the Fairness aspect when making wine purchases, which was consistent with the magnitude of the fair labor coefficient. Conversely, they were

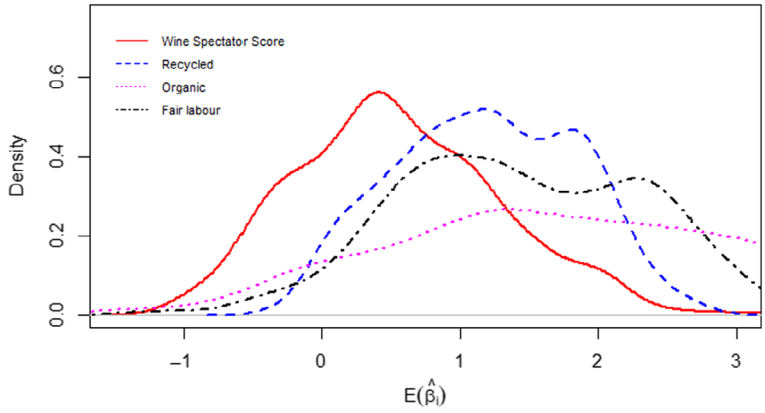

FIGURE 2 The distribution of the individuals' conditional mean for the wine attributes

TABLE 4 LCM results

	Class 1		Class 2		Class 3	
	Coeff.	**z-value**	**Coeff.**	**z-value**	**Coeff.**	**z-value**
Organic	1.40***	4.80	0.87***	5.76	1.60***	8.10
Fair labor	1.17***	3.90	0.30**	2.10	1.46***	7.81
Recycled glass	1.42***	4.94	0.43***	3.10	0.97***	5.21
Wine Spectator score	−0.01	−0.10	0.67***	7.05	0.25***	2.74
Price	−0.13***	−6.43	−0.22***	−15.18	−0.02**	−2.25
No buy	0.49	1.11	−5.72***	−14.19	−1.29***	−3.78
Organic × fair labor	−0.30	−1.15	−0.11	−0.69	−0.33*	−1.76
Organic × recycled	−0.99	−3.71	−0.66***	−3.85	−0.05	−0.27
Fair labor × recycled	−0.53*	−1.88	0.17	1.04	0.08	0.45
Estimated prior probabilities for class membership						
Constant	-		−0.16	−0.35	−0.77*	−1.66
Age	-		−0.01***	−3.36	−0.03***	−5.85
Male	-		−0.02	−0.18	−0.25**	−2.24
Tertiary education	-		0.14	1.37	−0.40***	−3.79
Food values						
Appearance	-		0.08*	1.92	0.09*	1.68
Safety	-		0.16***	3.36	0.13**	2.23
Fairness	-		−0.27***	−5.07	0.26***	4.00
Taste	-		0.29***	4.36	−0.37***	−4.93
Environmental impact	-		−0.09	−1.56	0.47***	6.54
Naturalness	-		−0.06	−1.27	0.15**	2.48
Origin	-		0.09	1.63	−0.01	−0.21
Convenience	-		0.03	0.68	−0.08	−1.51
Price value	-		−0.15***	−2.90	−0.52***	−9.03
Tradition	-		0.00	0.10	0.17***	3.10
Nutrition	-		0.17***	4.39	0.30***	6.15
Class size	0.43		0.37		0.20	
Akaike Information Criteria	6390.22					
Bayesian Information Criteria	6748.98					
Log-Likelihood	−3104.6					

Abbreviation: Coeff., coefficient.

***, **, * indicate significance at a 1%, 5% and 10% respectively.

significantly more attentive than Class 1 to the private attributes, that is, Taste, Nutrition, Safety, and Appearance, when making wine choices. Class 3 (20% of the sample) reported the same preference structure of the RPL-EC models for the sustainability labels. In this case, the fair labor label reported the highest coefficient. A remarkable detrimental effect was found

when the social and organic certifications were simultaneously present on the bottle as the interaction term was negative and significant. Class 3 consisted of a higher proportion of female, younger, and less educated consumers than Class 1 and 2. The probability of belonging to this segment was higher for individual devoting a stronger attention to public values (i.e., Fairness and Environmental Impact) and less consideration to Price and Taste with respect to the other two groups. We also found important emphasis on Nutrition, Tradition, Naturalness, Safety, and Appearance as food values driving their purchase decisions.

The LCM results confirm the high heterogeneity among consumer tastes for sustainability labeling. Overall, the segments of consumers were all positively inclined toward the three labels, differing only in the ranking order of the preference structure and in the magnitude of the relative weights in the utility functions. The group less involved in the sustainability of the wine devoted higher attention to private values (such as Safety or Taste); conversely, the class denoted by a higher interest in the fair labor claim attached more importance to public values (i.e., the fairness of the production system and the environmental impact). This suggests that consumers strongly associated with the fair labor certification gain utility from purely altruistic attributes rather than from the egoistic ones, in line with Briggeman and Lusk (2011) and Maaya et al. (2018).

CONCLUSIONS AND IMPLICATIONS

The findings confirm that producing and marketing wine with labels addressing environmental aspects is a profitable strategy for firms as well as a promising tool to promote more sustainable production patterns (Pomarici et al., 2018; Pomarici & Vecchio, 2019; Ruggeri et al., 2020; Schmit et al., 2013; Tait et al., 2019). In addition, we provided evidence that consumers also attach significant importance to the provision of socially relevant attributes. Specifically, we outlined the potential effect of the presence of a fair working condition label in the Italian market. Overall, our results suggest that the social attribute was valuable to wine consumers and that preferences toward sustainability labeling are complex and very heterogeneous in terms of which one of the two underlying sustainability dimensions is incorporated in the product quality.

Our findings indicate that winemakers may consider adopting fair labor production schemes as consumers exhibit a high premium for the label; thus, it is expected that including this kind of credence attribute would increase the demand for the product. This premium price could potentially foster wineries and winegrowers to engage in more socially sustainable practices as they may generate profits. One of the reasons for the exploitation of workers in the agri-food supply chain is due to the pressure by the oligopolistic downstream and upstream sectors on farmers. Their market powers bring about an iniquitous distribution of risks, costs, and profits along the supply chain (Hunt, 2014; Melossi, 2021). This imposes farmers to adopt price-cutting strategies, and, as a result, labor costs get squeezed. Therefore, to mitigate the issue, retailers should pass the premium associated to the fair labor certification to producers to alleviate the pressure on costs.

On the policy side, our results emphasize that efforts toward the achievement of sustainable consumption and production patterns should truly embrace a holistic approach to sustainability. Preeminent social concerns are often disregarded in favor of environmental aspects; instead, both dimensions should be equally weighted in the implementation of legislative acts and policy tools aimed at pursuing sustainability.

More specifically, the spread of food certification schemes involving fair working treatment would be synergic to the European and National regulatory efforts to prevent and eradicate unethical or illegal labor practices in the agri-food supply chain. The European labeling scheme on sustainability is already advocated within the European Farm to Fork strategy (European Commission, 2020). Our findings are expected to inform policymakers that such an overarching scheme should tackle unfair labor treatment in agriculture, among other sustainable aspects, as we found that this issue is of concern to wine consumers and that vineyards constitute valuable assets in the European agricultural sector. This would satisfy a potential market demand while promoting improvements in the farm laborers' protection. Furthermore, the Farm to Fork strategy should encompass the respect for agricultural workers' rights to synergistically reinforce the new CAP focus on fairer labor conditions. Indeed, for the first time since its introduction in 1962, the policy has incorporated the social conditionality to bind the farmer income support to the respect of basic social rights and employment conditions for all agricultural workers alongside the environmental requirements (European Commission, 2021). Strenuous efforts are warranted by governments and authorities in the monitoring process to ensure that requirements on labor conditions for the label are effectively fulfilled as also that mandatory minimum standards imposed through law are in place.

At the national level, the Italian Senate has initiated the regulatory path to establish a new ethical label ("*Marchio etico del lavoro di qualità*"), which certifies respect for workers' rights. The aim is to counteract the exploitation of workers and the *caporalato* phenomenon which severely affect the agri-food system in Italy. The law proposal currently states that firms which adhere to the scheme will benefit from fiscal incentives, advantages in public calls for tenders and promotion and information campaigns about the new label (Senato della Repubblica, 2021). To this extent, our findings can effectively inform national policymakers since the stated WTP for a fictitious fair labor label may reflect Italian consumers' acceptance of the provisions of this potentially ethical label. The premium price would ultimately further encourage companies to enter the labeling scheme.

The existing international certification covering the same issue is the "S.A.8000," which actually attests the social responsibility and commitment of the enterprise toward workers. Alternatively, both the Italian voluntary wine schemes "V.I.V.A. sustainable wine" and "Equalitas" address the overarching concept of sustainability in the production process, including the corporate social commitment of the wineries toward workers, along with many other environmentally sustainable practices. Future research should concentrate on uncovering the reasons why the existing labels tackling this issue are not commonly used on food products, remaining largely unknown among consumers despite there being a considerable WTP for these. Moreover, given the hypothetical nature of our experiment, more studies should focus on this topic by applying a real experiment or an experimental auction to correct for the hypothetical bias. Consistently, our results may also suffer from social desirability bias, hence future works should try to mitigate or control for the social desirability responding behavior of participants. Lastly, we ran the choice experiment focusing on a bottle of Chianti Classico DOCG for a special occasion. This specific designation of origin was chosen since it is the most commercialized in the Italian large distribution chains (Casini et al., 2020), as also one of the most familiar and consumed wines in the Italian supply. These characteristics were held constant across all wine alternatives to minimize the choice task complexity to participants while preserving attributes critical to the decision-making process. As a result, the conclusions can be extended to the market segment of medium-high priced wines, although not generalizable to the whole wine supply. Further studies should address the applicability of our findings to different wines and purchase occasions.

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ENDNOTES

* The Italian DOCG (Denominazione di Origine Garantita e Controllata) label is a PDO (Protected Designation of Origin) certification. This Geographical Indication is a quality scheme recognized under EU Regulation (CE) 479/2008.

† According to the 2017 IRI-Infoscan data, the large-distribution price range of PDO wine was 0.5–240 €/L in Italy, whereas the Chianti Classico DOCG price range was 2.5–67.9 €/L.

‡ The 80/100 and 95/100 Wine Spectator ratings correspond respectively to the following definitions: Very Good, a wine with special qualities; Classic, a great wine. These statements were not provided to the respondents during the survey.

§ Public attributes relate to desirable unobserved qualities in foods whose production implies improvement in public goods or positive externalities for the society (such as eco-friendly, animal welfare, low greenhouse gas emissions, etc.). Conversely, private attributes provide benefits strictly to those who consume these specific products (for instance, health properties, taste, and nutritional composition).

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