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The Effect of Information on Willingness to Pay for Canned Tuna Fish with Different Corporate Social Responsibility (CSR) Certification: A Pilot Study

The objective of this study was to assess the role of information in consumers' willingness to pay (WTP) for food products with corporate social responsibility (CSR) certification. The item used for the experimental design was canned tuna fish, a product on the market that is already exhibiting various kinds of certification related to social and environmental attributes. Two different kinds of certifications were examined, namely *Friend of the Sea*, which involves environmental aspects, and *SA8000*, related to workers' rights and more general social attributes. We implemented experimental auctions, taking into account three information treatments. The initial findings show that the WTP for both CSR labels is higher than the WTP for tuna fish without any CSR certification. Nevertheless, the information provided on CSR certification did not change consumers' WTP among the certification schemes. Our findings could also serve to fine-tune marketing strategies to consumer preferences and determine which CSR activities are worth undertaking.

In the past two decades, the demand for food has undergone profound changes. In terms of food production, a wide range of strategies have been implemented to cater for the increased interest in products with a larger array of attributes. This differentiation process involves both experiential eating quality and credence attributes related to environmental and other social outcomes. Consumers' perception of quality is increasingly influenced by extrinsic indicators and cues provided by the product seller (Caswell, Noelke, and Mojduszka 2002). Many of these aspects are classified as credence attributes. Due to the well-known difficulties in obtaining related information directly from consumers even after food consumption (Grunert, Bredahl, and Brunsø 2004; Nelson 1970), credence attributes

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require a judgment or certification from an authority figure, such as a governmental agency or an organization that consumers trust to give information on them. As it stands, the current consumer needs have generated an increasing demand for more complex credence attributes that include a wide range of intangible and connected characteristics, such as public health, environmental conservation, product origin, employment creation, support for small-scale agriculture and local rural communities, and workers' rights (Moser and Raffaelli 2011). Therefore, new types of certification on both a public and a private basis have proliferated in the food market. For example, modern processors and retailers have created and adopted private standards to establish themselves as the main market standard, which could work better than the inadequate, or even absent, public standards. In addition, food companies could reduce the costs and risks in their supply chains by standardizing products across suppliers and could increase their competitiveness and profits thanks to product differentiation as well. In particular, firms could use their own standards as a strategic tool for market penetration and segmentation. In this way, consumers might perceive higher-quality products because of quality or labor and environmental standards' certification (Caputo et al. 2013; De Pelsmacker, Driesen, and Rayp 2006; Henson and Reardon 2005).

Recently, increasing ethical and environmental concerns on the part of consumers have also driven some companies to implement standards stemming from the concept of corporate social responsibility (CSR). According to the European Commission, CSR is "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis" (European Commission 2001). In addition, ISO 26000 defines CSR as "the responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that contributes to sustainable development, including health and welfare of society, takes into account expectations of stakeholders, is in compliance with applicable law and consistent with international norms of behaviour and is integrated throughout and practised in an organization's relationships." Finally, Carroll and Shabana (2010) define CSR as an established umbrella term intersecting with business ethics and sustainability.

On the basis of the above-mentioned definitions, we can conclude that CSR could be identified by two key issues: the environment and social responsibility. The former mainly relates to corporate activities protecting the natural environment, whereas social responsibility comprises initiatives that protect the social welfare of key stakeholders (Lindgreen and Swaen

2009; Lockett, Moon, and Visser 2006). However, to make this vision compatible with the neoclassical theory, companies should be able to derive some benefit from the adoption of ethical behavior. Such benefits can be both nonmonetary, such as social prestige, and monetary, such as obtaining a premium price for their products. As a rule, CSR activities are not expected to change the intrinsic product characteristics directly. Nevertheless, the portfolio of CSR activities might positively influence consumers' perceptions of the firm's products if properly advertised. More particularly, if the consumption side is taken into account, CSR may help create a loyal customer base, positively contribute to the development of a firm's reputation, enhance consumers' trust and satisfaction, and improve their product purchase intention (see Hartmann 2011 for a detailed survey of consumers' perception of and behavior toward CSR). A key aspect is that a firm showing better CSR may sell its products at a premium price if CSR-based product differentiation is feasible and sufficiently perceived by consumers. This especially holds in the context of the contemporary shift in preferences and values, especially among more developed Western consumers, toward more environmentally and socially friendly products (Gifford and Bernard 2011; Loureiro, McCluskey, and Mittelhammer 2002; Mohr and Webb 2005; Moon and Vogel 2008; Sirieix et al. 2012; Vecchio and Annunziata 2012).

Reviews of the literature on CSR suggest that the topic is complex and can be approached from a variety of perspectives. Several studies have actually valued consumers' willingness to pay (WTP) for different CSR labels. Various studies have dealt with the price premiums that consumers are ready to pay for different CSR dimensions (e.g., fair trade, improved animal welfare, organic production, and carbon output). Among these, Teisl, Roe, and Hicks (2002) carried out a consumer analysis based on scanner data, which provided a partial measure of the total welfare effects of the dolphin-safe labeling policy. The findings showed that the dolphin-safe label had increased the market share of canned tuna over time. Other studies (Marette, Roosen, and Blanchemanche 2008; Roosen et al. 2009) have sought to understand how experiments on fish consumption revealing information about food quality and safety can contribute to regulatory debates on food and health. In particular, Marette, Roosen, and Blanchemanche (2008) implemented laboratory and field experiments in order to evaluate the impact of health information on tuna fish consumption in France. The results reported that the WTP for tuna fish was lower in the laboratory experiments than in the field experiment after having provided information about its health benefits (i.e., omega-3). However, the authors stated that the laboratory experiment led to realistic results for tuna because

the products had been clearly memorized and regularly purchased by the consumers.

Finally, other authors have examined the changes in consumers' WTP for food products characterized by labor-related information. They found that consumers who believed in social responsibility and fair trade had significantly higher WTP once labor-related labeling was added (Hustvedt and Bernard 2010; Krystallis and Chryssohoidis 2005; Loureiro et al. 2002; Loureiro and Lotade 2005; Sirieix et al. 2012; Vecchio and Annunziata 2012).

The main objective of our study was to investigate whether supplying information about two forms of CSR certification, "Friend of the Sea" and "SA8000," for canned tuna fish products could influence consumers' WTP. We undertook this study using data from an experimental laboratory auction conducted in Italy. Three treatments differing in the information provided to the participants were taken into consideration. This study expands the literature on consumers' preferences for different kinds of CSR certification using the experimental auction method. Currently, the use of a nonhypothetical auction method has gained popularity in estimating the WTP for product attributes or new products more accurately (Lusk and Shogren 2007). A major reason for the increasing popularity of experimental auctions is their incentive compatibility property. That is, subjects have the dominant strategy to submit bids equal to the true value of the goods. The experimental auction would then be demand-revealing and hence the participants would provide truthful bids (Corrigan and Rousu 2008). Indeed, in accordance with Chang, Lusk, and Norwood (2009), the WTP values from experimental auctions can be assumed to be the true values corresponding to the actual payments in the marketplace (i.e., scanner data from shopping); thus, they are a better approximation of the true preferences. In line with Chang, Lusk, and Norwood (2009), Marette, Roosen, and Blanchemanche (2008) also found that the laboratory experiment led to realistic results for a product that had been regularly purchased by consumers and thus clearly memorized before the experiment.

The rest of the article is organized as follows: the section titled "Experimental Design and Procedure" discusses the experimental design and procedure, the section titled "Results" describes the results, and the section titled "Conclusion" provides some concluding remarks.

EXPERIMENTAL DESIGN AND PROCEDURE

We undertook the experimental auction in the metropolitan area of Naples (southern Italy) in April 2012. In order to reduce the sample

selection bias (Chang, Lusk, and Norwood 2009), the sample consisted of 88 consumers directly involved in food shopping decisions who consumed canned tuna fish products, at least occasionally. We used canned tuna fish in this study because it presents a high market share in Italy[1] and then we tried to avoid the price and availability of field substitutes biasing the relative WTP, which may result from artificially restricting consumers' choice, since people could buy tuna cans outside the experiment (Marette, Roosen, and Blanchemanche 2008).

The participants were recruited using a random stratified procedure (by age and sex) selecting those who had experience with the product in question. During the recruitment stage, the participants were not informed about the specific objective of the study. Finally, a total of nine sessions were conducted, and at least 10 participants were invited to each session.

Our experimental design consisted of three treatments of three types of canned tuna fish: a tuna fish product without any quality certification and two types of CSR certification, called "Friend of the Sea" and "SA8000," respectively. To avoid deception, we used real products consisting of three tins of canned tuna fish per package.

The first two treatments are a between-subjects design type, while the third one is a within-subjects design. We decided to use both the within-subject and the between-subject design for the following reasons. The within-subject design presents three main advantages: internal validity, the fact that because it does not depend on random assignment it shows a more powerful econometric technique, and the provision of a closer match with the theoretical perspective (Charness, Gneezy, and Kuhn 2012). However, the main disadvantage of the within-subject design is the "demand effect" that occurs when the participants' decisions are influenced by the experimenter's intention. Hence, to overcome this issue, we also used a between-subject design because of its greater external validity due to not having a natural anchor (Charness, Gneezy, and Kuhn 2012).

The first treatment, namely "Noinfo," consisted of providing the participants with information only about the presence of CSR certification for two of three canned tuna fish products. Moreover, we informed the consumers of the gross and net weight in grams and the type of olive oil in each box of tuna fish product. No information was given about the brands in order to avoid the brand effect on participants' WTP.

In the second treatment, namely "Info," the consumers received not only the same information as the "Noinfo" treatment but also additional neutral information about the two types of CSR certification. In particular,

1. Italy is the largest market for canned tuna in the EU.

the subjects were informed that "Friend of the Sea" certification aims to ensure conservation of the marine environment by banning any exploitation of fishing, whereas the second, called "SA8000," indicates the social responsibility of enterprises to improve the economic conditions (i.e., wages) of employees, avoid any discrimination in the workplace, support the schooling of children, and improve job safety.

Finally, the third treatment, namely "Infoshock," consisted of two parts. The first part of the experiment (the first three rounds) was similar to the "Noinfo" treatment, in which the participants did not receive any neutral information on CSR certification. However, in the second part of the treatment (the last three rounds), the consumers received an "information shock" (Lusk et al. 2004), as implemented in the "Info" treatment. We decided to consider this additional treatment in order to test whether an "information shock" could significantly influence those individuals who participated in the same auction.

We implemented three treatments in which each respondent participated only in one of the treatments (Lusk and Schroeder 2004). A total of 30 subjects participated in the "Noinfo" treatment, 30 in the "Info" treatment, and 28 in the "Infoshock" treatment. As shown in Table 1, Pearson chi-square tests suggest that there are no statistically significant differences across the treatments by gender (p-value = 0.301), age (p-value = 0.094), education (p-value = 0.062), or income (p-value = 0.504), meaning that we were able to equalize the characteristics of the participants and compare the results across the three treatments.

For this experiment, the fifth-price mechanism with a full bidding process was employed. Currently, a fifth-price auction is considered an incentive-compatible mechanism; it is more effective in engaging all the bidders because the number of participants who could purchase the product is approximately half the session size (N) (Lusk and Shogren 2007). In addition, the fifth-price mechanism represents an attempt to combine the advantages of the second-price mechanism and the random nth-price mechanism. The second-price mechanism has the advantage of being incentive-compatible, and several studies have shown that although participants "overbid" in the second-price auction, it works well for on-margin bidders. On the other hand, Shogren et al. (2001) stated that the nth random price works well for off-margin bidders whose values are far from the market price. Therefore, using the fifth-price mechanism could engage bidders with values on both tails of the value distribution (Lusk et al. 2004). Finally, the fifth-price mechanism has the advantage of planning the exact number of products to be sold in each session, massively reducing waste and associated costs.

TABLE 1
Definition and Means of the Exogenous Variables

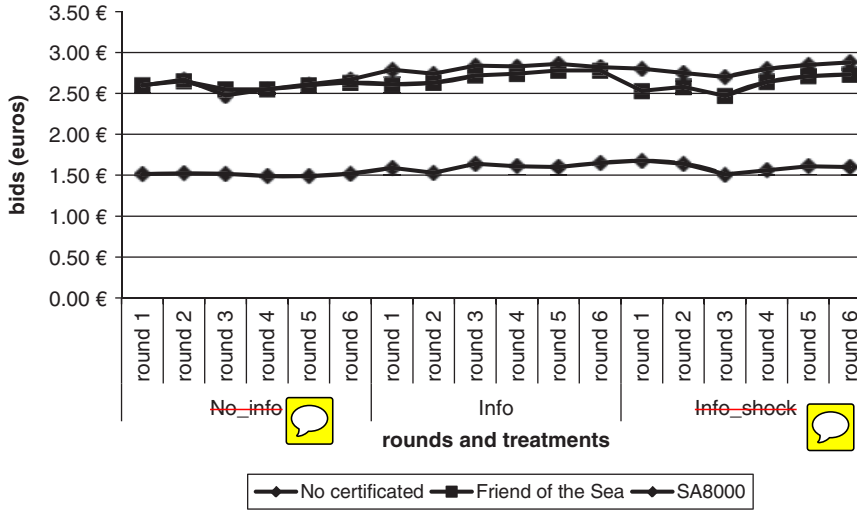
Variable Definition	Name (Type)	Noinfo	Info	Infoshock
Gender	FEMALE	0.33	0.50	0.46
Male	(dummy 1 = female;	0.66	0.50	0.54
Female	0 otherwise)			
Age	YEARS	40.4	32.4	40.8
	~~(dummy 1 = age more than 60 years; 0 otherwise~~)			
Education of respondent	UNIVER	3.3	0	0
Elementary	(dummy 1 = university;	3.3	3.3	10.7
High school	0 otherwise)	20	43.3	53.5
College		73.3	53.3	36
Degree				
Average household monthly income	LOWINC	16.7	13.8	11.1
Below €600	(dummy 1 = less than €1,500; 0	33.3	51.7	44.4
Between €600 and €1,500	otherwise)	10	20.7	22.2
Between €1,501 and €2,500		23.3	6.9	14.8
Between €2,501 and €3,500		16.7	6.9	7.4
More than €3,500				

We used the full bidding process instead of endowment bidding to eliminate any aversion to loss and risk exchanging of the participants (Hellyer, Fraser, and Haddock-Fraser 2012; Lusk and Shogren 2007). Following Drichoutis, Lazaridis, and Nayga (2008), Bernard and He (2010), and Hellyer, Fraser, and Haddock-Fraser (2012), we did not use the reference price of field substitutes of cans during the auction because the above studies found that the reference price of field substitutes would increase the bid values. On the other hand, since we were aware of the possibility of the occurrence of bid affiliation, no price feedback among multiple rounds was reported (Corrigan et al. 2012).

The experiment was divided into several stages, as described later. When the subjects arrived, they were informed that they would receive €7 for taking part in the auction and would use this money if they won the auction to purchase the tuna fish product they had won. In addition, each participant was identified with a unique ID number to guarantee his or her anonymity. The experimenters then provided the participants with the instruction sheet mechanism and the information sheet on the products. In order to avoid any communication among the participants during the auction, each consumer was positioned separately from the other participants and it was stressed that they must not communicate during the auction. The subjects were then fully briefed on the procedure of the auction method using a blackboard and scripts, and they were informed about the dominant strategy to reveal their true values for the products offered. In order to allow the subjects to understand the bidding behavior and mechanism, three training rounds were conducted using three different candy bars. The tuna fish auction was then undertaken. During the auction, each participant was asked to submit simultaneously a bid for each of the three tuna fish products. The bids were collected and this step was repeated for six additional rounds. With regard to the third treatment, in order to compare better the results from the two treatments on information conditions, this step was repeated for three additional rounds, with information being given after the third round.

When all six rounds had been conducted, a random draw determined which of the six rounds was chosen. A random draw then determined which of the three tuna fish products was selected. The top four bidders on the bidding product in the bidding round purchased the tuna fish product package and paid a price equivalent to the fifth-highest bid for the product. After the auctions, the participants were asked to complete a questionnaire about their demographic information and consumption habits and attitudes.

FIGURE 1
Bids Across Treatments and Rounds



RESULTS

As shown in Figure 1, across the three treatments and six rounds, the average bids for tuna fish products without any certification were generally lower than the average bids for tuna fish with CSR certification. Moreover, the average bids were stable across rounds and treatments. These results indicate that the average bids for "Friend of the Sea" and "SA8000" tuna fish certification were higher than the average bids for tuna fish without any certification. In addition (Figure 1), there was little difference in the bids between the latter two types of CSR certification in both the "Info" and the "Noinfo" treatment, whereas a slight difference existed in the "Infoshock" treatment. Finally, the average bid for tuna fish with "Friend of the Sea" certification in the "Info" treatment was higher (€2.71) than that in "Noinfo" (€2.59). On the other hand, the average bids for tuna fish with "Friend of the Sea" certification before (€2.53) and after (€2.70) the information shock were very similar to the corresponding average bids in the "Noinfo" and "Info" treatments. By the same token, the average bid for tuna fish with "SA8000" certification in the "Info" treatment was higher (€2.81) than that in "Noinfo" (€2.60). On the other hand, the average bids for tuna fish with "SA8000" certification before (€2.75) and after (€2.84) "Infoshock" were very similar to the corresponding average bids in the "Noinfo" and "Info" treatments.

TABLE 2
Effect of Information on the Average WTP Across Treatments and Rounds

					Infoshock	
	Noinfo		Info		Noinfo	Info
Tuna Fish Products	Round 3	Round 4	Round 3	Round 4	Round 3	Round 4
Mean WTP for tuna fish products						
Certified as "Friend of the Sea"	1.04	1.05	1.07	1.12	1.11	1.24
Certified as "SA8000"	0.95	1.06	1.20	1.18	1.41	1.33
t-Test of equality (*p*-value):						
H0: WTP (Friend of the Sea)^{Info} = WTP (Friend of the Sea)^{Noinfo}	0.196 (0.42)					
H0: WTP (SA8000)^{Info} = WTP (SA8000)^{Noinfo}	0.841 (0.0.20)					
H0: WTP (Friend of the Sea)$^{Info(Infoshock)}$ = WTP (Friend of the Sea)$^{Noinfo(Infoshock)}$	1.324 (0.907)					
H0: WTP (SA8000)$^{Info(Infoshock)}$ = WTP (SA8000)$^{Noinfo(Infoshock)}$	−0.582 (0.28)					

Table 2 shows the effect of information supplied to the participants regarding CSR certification on the marginal WTP across treatments and rounds.[2] We excluded the first two rounds from the analysis to allow the participants to learn and gain experience with the mechanism. The last two rounds (the fifth and sixth) were excluded to eliminate "end-period" effects. This procedure of comparing bids immediately before and after the information shock in the "Infoshock" treatment is also consistent with Lusk et al. (2004). In order to test whether providing consumers with information about CSR certification increases their marginal WTP, we conducted a parametric *t*-test across the three treatments.

First, we notice that in all the treatments, the WTP values for "Friend of the Sea" tuna fish certification were lower (€1.04, €1.11) than the WTP values revealed after having provided information to the consumers (€1.10, €1.24). However, the WTP values for "SA8000" tuna fish certification were higher (€1.33) than the WTP values revealed after having provided information to the consumers (€1.41) in the "Infoshock" treatment. Moreover, the initial findings indicate that we were unable to reject the null hypothesis of equality at the 5% significance level in the marginal WTP across

2. Following Alfnes and Rickertsen (2011), we used the marginal WTP instead of the total WTP (bids) since relative prices matter more.

the three treatments, suggesting that information about both types of CSR certification did not significantly influence the consumer WTP.

Although no statistically significant differences were found between the socio-demographic profiles of the participants in the "Info" and "Noinfo" treatments, we controlled for the small differences in socio-demographic variables to determine whether our previous results held. As mentioned earlier, an additional treatment (Infoshock treatment) was undertaken in order to check whether the marginal WTP within subjects who participated in the same auction might be changed by an information shock. We then modeled the marginal WTP elicited for the two canned tuna products as a function of socio-demographic variables.[3]

We also considered the dummy variable *Info* with a value of 1 if the subjects were informed about CSR certification and 0 otherwise. Moreover, as explanatory socio-demographic variables, we introduced *female*, a dummy variable equal to 1 if the subject was female, *years* as a continuous variable defined as the number of years, *univer* as a dummy variable equal to 1 if the participants possessed a degree, and *lowinc* as a dummy variable equal to 1 if the participants had a monthly income less than €1,500.

The random-effect Tobit model is specified as follows:

$$WTP_{it} = Max(0; b_0 + b_1 (dFriend)_{it} + b_2 (dSA8000)_{it} + b_3 (Info)_{it} + b_4 female + b_5 univer + b_6 years + b_7 lowinc + u_i + e_{it}) \quad (1)$$

where WTP_{it} is the average WTP for the *i*th consumer in the *t*th bidding round.

We estimated the model defined by equation 1 using a random-effects Tobit model to take individual heterogeneity into account using STATA 11 software.

In terms of the results, the first and the third columns in Table 3 present the estimated model with the average WTP of the first (Noinfo) and second (Info) treatments for the Friend of the Sea and SA8000 certification. The second and the last columns present the estimated model of the average WTP of the third treatment (Infoshock).

The estimated coefficients show that there are no statistically significant differences between the Info and the Noinfo treatments. On the same line, we note that the information shock did not significantly change the average WTP of the participants in the "Infoshock" treatment. The findings

3. The difference between the bid for the tuna "Friend of the SEA" and "SA8000" and the bid for tuna without any CRS certification, respectively.

TABLE 3
Effect of the Information Estimating Tobit Random Effect for CSR Certification "Friend of the Sea" and "SA8000"

CSR Certification Variables	Friend of the Sea				SA8000			
	Noinfo and Info Treatments		Infoshock Treatment		Noinfo and Info Treatments		Infoshock Treatment	
	Coef.	*p*-Value	Coef.	*p*-Value	Coef.	*p*-Value	Coef.	*p*-Value
Constant	1.399	0.002	0.183	0.741	0.663	0.085	0.192	0.714
Info	0.142	0.629	0.130	0.178	0.051	0.834	−0.081	0.554
~~Female~~	−0.342	0.221	0.718	0.082	−0.590	0.800	0.669	0.084
~~Univer~~	−0.079	0.790	−0.435	0.319	−0.015	0.951	−0.321	0.428
~~Years~~	−0.003	0.690	0.019	0.178	0.012	0.126	0.022	0.040
~~Lowin~~	−0.102	0.784	0.800	0.231	−0.098	0.800	0.497	0.428
N	120		56		120		56	
Likelihood	−105.146		−62.027		−90.001		−70.173	

suggest that information supplied to consumers about two types of CSR certification, "Friends of the Sea" and "SA8000," did not influence consumers' WTP in both the within-subject and the between-subject design. However, it is quite striking to observe that in the "Infoshock" treatments, the female and years coefficients are statistically significant at the 5% level, contrary to the Noinfo and Info treatments, implying the existence of a possible "demand effect" when considering the within-subject design.

CONCLUSION

Environmental and social sustainability are two new indicators of intangible attributes of quality that are increasingly used in more affluent developed countries. CSR provides an appropriate theoretical framework to analyze the scenarios described. However, in order to make CSR consistent with the neoclassical model, it is required that the use of social responsibility as a corporate strategy contribute to profit maximization. The main monetary goal of the CSR strategy is to enhance the reputation of the firm and the perceived value of the products, which are key factors in the creation of a premium price. Finally, the process of value creation requires an information flow targeting increasing levels of knowledge and awareness among consumers.

In light of these considerations, the analysis carried out in this article aimed to assess the role of information in consumers' WTP for food products with CSR certification. The product chosen for the case study

was canned tuna, the sales strategies of which have long been guided by environmental sustainability and more recently by social sustainability.

On the basis of our initial descriptive findings, three important considerations may be made. The first concerns the capacity of certification to contribute to value creation: in all the treatments, it seems that the WTP for certified products appears to be significantly greater than that for products without certification. However, there is no appreciable difference in WTP between the two types of certification (Friend of the Sea and SA8000). Therefore, we can conclude that CSR certification could be successfully implemented by firms as a differentiation strategy, especially among more sophisticated Western consumers, who demand more environmentally and socially friendly products.

Second, our results also highlight the role that information can play in product differentiation and value creation. The analysis showed that the provision of neutral information in all three treatments did not produce any statistically significant changes in WTP. These results have some policy implications: the massive use of a wide range of different types of CSR certification in the food industry and in the tuna industry, in particular, acts as a guarantee of firm and product reliability. In this sense, the price variation would be the insurance premium that individuals are willing to pay for the guarantee provided. However, the value of information and assurance does not appear to be linked to the intrinsic meaning of the various kinds of certification: on the one hand, the scenario gives this form of product differentiation a high value in targeting consumer choice, but, on the other, it reduces the possibility of using more informative certification in order to achieve specific goals. Thus, an information strategy cannot be considered a competitive tool for product differentiation.

Finally, from a methodological point of view, the results confirmed that the within-subject treatment led to a possible "demand effect" because of the influence of some socio-demographic variables (such as gender and age) on the WTP values. On the other hand, we can conclude that experimental auctions appear to represent an efficient response to the search for theoretical and methodological approaches able to analyze the actual consumer WTP in respect of new credence attributes. However, a possible limitation of this study is due to the small sample size. This is the reason why future research developments should move to lend robustness to our results and compare experimental auctions with other incentive compatibility methods, such as real-choice experiments, in order to test the differences between WTP in our study auctions and WTP in field experiments.

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