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Relational goods and direct purchase from farmers: estimating the value of the relationship between consumers and producers

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Personal relationships can affect economic life and they may be even more important in Alternative Food Networks. We estimate the value of the relational good produced by the personal relationship in direct sales by farmers. This is relevant for assessing the importance of personal interaction in a typically economic behavior like food purchase. Drawing from theoretical considerations, we employ a stated preferences methodology to estimate the value consumers buying directly from farmers attach to their particular choice of vendor. We estimated a difference-in-utility model and a model based on the valuation function, using data from a consumer survey in open-air markets in four towns in Piedmont Region (Italy). Contingent on the chosen model, the average value is 10-12 percent of the consumers' expenditure for fruits and vegetables, and up to 1.2-1.3 percent of their overall income.

Keywords: relational goods, stated preferences, direct sales, alternative food networks

JEL codes: C5, D1, Q13

1. Introduction

It is a widespread concept, and a one maintened in economics, that personal relationships are out of the scope of economic relationships. Of course, economic transactions are usually between human beings, but the interpersonal relationships involved in economic transactions are inherently something different from personal relationships like friendship, sympathy, love, and the like. These are idiosyncratic, reciprocal, and free, as opposed to fungible, anonymous, and self-interested relationships in economic life. Though personal relationships of the former kind are pervasive in everyday life, and shape most of people's and behavior life in many respects, they remained out of the scope of economic research for a long time. But increasingly, economics has dealt with various facets of human behavior implying interpersonal relationships, leading to a growing recognition that they play a role even in economic life. The role of interpersonal relationships has been theorized as the production of relational goods (Uhlaner, 1989; Gui, 2000; Gui and Stanca, 2010). In particular, Gui (2005) views "interpersonal events as 'encounters': peculiar productive processes that employ various types of resources contributed by interacting parties (human resources, above all), and that deliver not only conventional outputs (…) but also relational outputs" (Gui and Stanca, 2010).

Though a stream of research investigated the relationship between relational goods and happiness, to the best of our knowledge the issue of measuring the value people attach to relational goods has not been explored so far. Measuring the value of relational goods is relevant for understanding how, and how much, basic economic activities can be influenced by personal relationships. In this paper, we intend to estimate the value that consumers attach to personal relationships in a basic economic activity, food purchase.

More specifically, the relational good we analyze is the one created between consumers and farmers in a situation of direct sales. Farmers' direct sales to consumers are considered one among the Alternative Food Networks (AFNs), i.e., those marketing chains that, unlike conventional ones, create a direct relationship between consumers and producers, and/or embed consumers in the territory and in the local productive fabric. Estimating the economic value consumers attach to the particular relationship with specific farmers helps understanding how consumers' actual behavior can deviate from purely rational considerations, meaning by that considerations that only take into account the purchased good in itself, and not the framework in which it is purchased. We would also like to stress that, though the value of relational goods is measured in monetary terms, it does not mean that it can be purchased. By their very nature, relational goods cannot be purchased. The money value of the relational good we estimate is simply a measure of consumers' preferences, where money is the unit of measurement. This is analogous to the valuation of environmental goods, for which estimating a money value does not imply that they are for sale.

The role of relational goods in direct sales can be analysed both from farmers' and consumers' perspective. Indeed, in the economic literature, the concept of Alternative Food Network is linked to the issue of the farmers' choice of the marketing channel (e.g.: Verhaegen and Van Huylenbroeck, 2001; Brown *et al*.; 2006; Corsi *et al.*, 2009; Corsi *et al*., 2014) and, on the other side, on the symbolic value of food products (local, traditional, etc.) for consumers, and on their choice of where to purchase. We intend to investigate the latter issue. The economic literature dealing with consumers' preferences generally focus on the factors influencing the choice of purchasing in farmers' markets (FMs). Many studies provide insights into significant motivations and behavioral characteristics of those consumers who purchase local foods at FMs. Different methodological approaches are used to identify groups of consumers with different characteristics, both in term of socio-economic descriptive variables and in term of attitudes or motivations towards FMs. These include, e.g., quality of products, interest for local food, direct contact with farmers, convenience, environmental sustainability, support for rural development processes etc. (Gumirakiza *et al.*, 2014 ; Jefferson-Moore *et al.*, 2013 ; Neill *et al.*, 2014; Rocchi *et al.*, 2010). Conversely, some research investigates how attending FMs may affect consumers' willingness to change food habits toward high-quality products (Pascucci *et al.*, 2011). In some cases, the analysis is performed for different types of direct marketing facility (e.g. pick-your-own farms, roadside stands, FMs, and direct farm markets) in order to characterise farmer-to-consumer market segments having different needs, wants or demand characteristics (Govindasamy and Nayga, 1997; Onianwa *et al.*, 2005). Other studies analyse the key factors affecting the frequency of consumer visits to FMs (i.e. consumer factors, market factors, and socio-demographic characteristics) or the associations between local food purchasing from FMs and diet-related outcomes (Abelló *et al.*, 2014; Minaker *et al.*, 2014; Thapaliya *et al.*, 2015).

Another stream of research is devoted to estimating willingness-to-pay (WTP) for product characteristics (e.g., organic, local, labeled, etc.). Some papers simply investigate the issue with consumers attending farmers' markets (Chang *et al*., 2013; Curtis *et al*., 2014). Other include being sold at farmers' markets as a characteristic of the good (Carroll *et al*., 2013; Onken *et al*., 2011). However, they do not distinguish among different motivations for purchasing at farmers' markets: they may include the price, actual or presumed quality of the produce, symbolic value from purchasing from farmers or of local product, trust in the vendor, along with the motivation of our interest, the personal relationship with the farmer, i.e., the relational good. The role of relational goods in agricultural production has been recently analyzed by Rocchi (2013), but only in qualitative terms. Our contribution is the attempt to quantify the relevance of this determinant for purchasing choices.

The structure of the paper is as follows. First, we present the theoretical framework of the issue, and the econometric strategy we follow. Next, we give a description of the data employed in the empirical exercise, and we present the results. Some conclusions follow.

2. Theoretical approach and econometric strategy

We are interested in the value of a relational good stemming from a commercial transaction between farmers and consumers. For consumers, we can assert that a relational good connected with the transaction has been produced if the utility the consumer obtains from the transaction is greater when performed with a specific farmer. Therefore, for a consumer optimally choosing his/her bundle of goods X for a price vector p_1:

$$U(X,\alpha_0,Y) < U(X, \alpha_1,Y) \quad (1)$$

where X is a vector of desired quantities of n goods composing the bundle, Y is the consumer's income less the expenditure on X goods, α_1 is the level of the relational good connected with the purchase and α_0 indicates the absence of the relational good, i.e., the utility obtained by the purchase of the goods from another seller with whom he/she has no personal relationship.

Assume the consumer has chosen his/her optimal bundle of goods X for a price vector p_1 when enjoying the relational good. Call C the consumer's characteristics that can affect his/her utility. The problem is measuring the value of the loss of the relational good, i.e., a change to α_0. Under the assumption that the consumer does not change the optimal bundle in absence of a relational good, there will exist a price vector p_2 such that:

$$U_1(X, \alpha_0,C,Y|p_2) = U_1(X, \alpha_1,C,Y|p_1) \quad (2)$$

This implies that when no value is attached to the relational good, $p_2 = p_1$. Assume the consumer is given the alternative of buying the same quantities at lower prices p_{bid}, but not enjoying the relational good ($\alpha = \alpha_0$). He/she will accept this alternative if:

$$U_1(X, \alpha_1, C,Y)< U_2(X, \alpha_0, C,Y+(p_1- p_{bid})X) \quad (3)$$

In terms of the indirect utility function, the alternative will be accepted if:

$$v_1(p_1, \alpha_1,C,Y) < v_2(p_2, \alpha_0, C,Y+(p_1- p_{bid})X) \quad (4)$$

To implement an empirical analysis, following the random utility theory (McFadden 1974 and 1976), it is assumed that the indirect utility functions are composed by systematic component functions of

observable variables, and by random components, known by the consumer but not by the researcher. The above equation can then be written as:

$$v_1(p_1, \alpha_1, C,Y) + \varepsilon_1 < v_2(p_2, \alpha_0, C,Y+(p_1 - p_{bid})X) + \varepsilon_2 \quad (5)$$

Hence, the probability that a consumer is willing to accept a lower price p_{bid} for giving up the relational good is:

$$\text{prob(acceptance)} = \text{prob}\ [v_2(p_2, \alpha_0, C,Y+(p_1 - p_{bid})X) - v_1(p_1, \alpha_1, C,Y) > \varepsilon_1 - \varepsilon_2] \quad (6)$$

Assuming a functional form for the utility function and a distribution for $\mu=\varepsilon_1-\varepsilon_2$, the probability of a positive difference can be estimated by maximum likelihood techniques.
Different functional forms have been used in the related literature of environmental goods evaluation. We used a utility function additive in relational good, personal characteristics and income, and logarithmic in income (thus implying non-negative and decreasing marginal utility of income):

$$U_1= \alpha_1 + \beta \ln Y + \gamma C + \varepsilon_1 \quad (7)$$

$$U_2= \beta \ln[Y+(p_1 - p_{bid})X] + \gamma C + \varepsilon_2 \quad (8)$$

Hence, the change in utility from the present situation to the prospected one is:

$$\Delta U = -\alpha_1 + \beta \ln[1 + (p_1 - p_{bid})X/Y] + \mu \quad (9)$$

where $\mu = \varepsilon_2-\varepsilon_1$. Assuming a distribution for μ, the probability that a consumer accepts the prospected discount is:

$$\text{Prob(acceptance)} = \text{Prob}[-\alpha_1 + \beta \ln[1 + (p_1 - p_{bid})X/Y] + \mu > 0] =$$

$$= F_\mu[-\alpha_1 + \beta \ln[1+(p_1 - p_{bid})X/Y] \quad (10)$$

where F is a cumulative density function. We chose the standard normal cumulative distribution.

From (9) it can be seen that if a price p_2 makes the respondent indifferent to the choice ($\Delta U =0$), this indicates the minimum discount for which he/she is willing to move. Hence, his/her minimum willingness-to-accept (WTA) the change, is:

$$\text{WTA}= (p_1 - p_2)X/Y = \exp[(\alpha_1 - \mu)/\beta] - 1 \quad (11)$$

This approach is similar to the utility difference model used in contingent valuation of environmental goods and emphasized by Hanemann (1984). Alternatively, using the valuation function approach

(this is similar to the approach in environmental valuation proposed first by Cameron, 1988[1]), the value of the relational good can be estimated considering the expenditure function. Call again p_2 the price vector such that the relevant indirect utilities are equal:

$$v_1(p_1, \alpha_1, C, Y) = v_1(p_2, \alpha_0, C, Y) \quad (12)$$

Call v_0 the indirect utility that can be reached with prices p_1 and no relational good, $v_0 = v_0(p_1, \alpha_0, C, Y)$. Since $v_1(p_1, \alpha_1, C, Y) = v_1(p_2, \alpha_0, C, Y)$, the value of the utility due to the existence of the relational good can then be assessed by comparing the indirect utility with the reduced price and no relational good v_1 to the indirect utility with the original price and no relational good $v_0(p_1, \alpha_0, Y)$. It is the willingness-to-accept the prospected change and can be measured by the difference D between the values of the relevant expenditure functions:

$$D = e(p_1, \alpha_1, C, v_1) - e(p_1, \alpha_0, C, v_0)$$

$$= e(p_2, \alpha_0, C, v_1) - e(p_1, \alpha_0, C, v_0)$$

$$= D(p_1, p_2, \alpha_1, C, v) \quad (13)$$

This implies that when no value is attached to the relational good, the difference is nil. Following again the random utility theory (McFadden 1974 and 1976), and attaching a random component to the expenditure functions, the above equation can be written as:

$$D = [e(p_2, \alpha_0, C, v_1) + \varepsilon_2] - [e(p_1, \alpha_0, C, v_0) + \varepsilon_1] \quad (14)$$

Hence, the probability that a consumer is willing to accept a lower price p_{bid} for giving up the relational good is:

$$\text{Prob(acceptance)} = \text{Prob}(D>0) = \text{Prob}\,[e(p_{bid}, \alpha_0, C, v_1) - e(p_1, \alpha_0, C, v_0)] > \varepsilon_1 - \varepsilon_2] =$$

$$= \text{Prob}[D(p_1, p_2, \alpha, C, v) > \mu] \quad (15)$$

Assuming a functional form for the deterministic part and a distribution for $\mu = \varepsilon_1 - \varepsilon_2$, the probability of a positive difference can be estimated by maximum likelihood techniques. More precisely, the functional form that has been assumed for the willingness-to-accept function is:

$$WTA = Xb + \varepsilon \quad (16)$$

[1]The two approaches are theoretically consistent, as to each utility difference function corresponds a valuation function, and vice versa (Hanemann and Kanninen, 2001)

where X is a vector of personal characteristics of consumers, including income, and ε a random term. The probability that a consumer accepts a prospected discount *d* is:

$$\text{Prob(acceptance)} = \text{Prob}[d - Xb + \varepsilon > 0] = \text{Prob}[d - Xb > -\varepsilon] = \\ = F_{\varepsilon}[d - Xb] \quad (17)$$

where F is a cumulative density function.

3. Data

The empirical analysis is based on a survey among consumers in Torino, Cuneo, Asti and Alessandria, all towns in the Italian Region of Piedmont. The sample in Torino (a large city) was drawn with a two-stage random sampling methodology. The primary sampling units were the urban open-air markets in town where farmers sell their products. Farmers selling in city markets are a long tradition, and the law grants to farmers the right to sell directly their products. In Torino, according to city statistics, there are farmers selling directly in 28 open-air markets, in a number ranging from 1 to 13, except for a particular market (Porta Palazzo, the largest in town) where they are 88. Therefore, as a first step, individual markets were divided into 3 strata according to the number of farmers selling at the markets, plus the market with 88 farmers. The strata were 1-4, 5-8, 9-13 farmers. In each stratum, 5, 4 and 3 specific markets were randomly drawn. In each market, consumers to be interviewed were chosen at random. Interviewers were instructed to place themselves at different places of the market and to choose a passer-by every *n* ones, where *n* was a number (usually 5, but lower in small markets). In the smaller towns of Cuneo, Alessandria and Asti, the survey was conducted in the main, or only, market-place in town where both farmers and conventional vendors sell their products. The interviews were distributed in different days of the week and different hours during Spring to Fall 2014.

Since the objective was to estimate the value of the direct relationship between consumers and producers, consumers were interviewed only if they were regular customers in the particular market. Thus, the questionnaire started with a filter question asking if the respondents shopped regularly in that particular market. If so, after some general questions on purchasing habits, they were asked if they bought fruits and vegetables from farmers. Only those who usually bought most or part of these products from farmers were asked the elicitation question. Using a closed-ended format, they were asked whether, given the possibility of finding exactly the same products as those they bought most frequently from a farmer at a lower price from another farmer, they would still buy from their favorite farmer or from the other one. The specification "exactly the same products from another farmer" was intended for getting rid of reasons other than the relational good and the price. In particular, we wanted to avoid a preference based on information provision, on trust, and on the symbolic value or the convenience of buying from farmers rather than in other points of sale. The proposed price

discounts were randomly assigned between 10, 20 and 30 percent. The possible answers were "I would stay with my favorite farmer", "I would move to the other farmer" and "I am indifferent". Both the percentage discount and an example of absolute change in expenditure were provided. To avoid a question order bias, six different versions of the questionnaire were randomly submitted to the respondents, each different in the ordering of the provided answers.

Since we wanted to be sure that what the respondents stated was their WTA for the relational good, those who stated they would rather stay with the previous vendor were asked the reason. In some cases (37), they mentioned trust in the vendor rather than the relational good as the reason for staying. We experimented two different treatments for these cases: either the responses were reclassified as an acceptance of the alternative, or they were simply dropped.

Finally, the questionnaire asked some socio-demographic information on the respondent.

The interviewers made personal contacts with 413 urban market customers. The respondents who were occasional customers didn't enter the survey. Those who bought the larger part of fruits and vegetables from conventional market vendor were not asked the elicitation question. After dropping these observations and the questionnaires with missing information, a final sub-sample of 249 questionnaires was employed to estimate the value of the relational good with the difference-in-utility model (212 if the trust responses were dropped). For the valuation function model, some further missing data on personal characteristics led to a final sample of 241 observations (205 if the trust responses were dropped).

Table 1 shows the descriptive statistics of the explanatory variables. They include respondents' socio-demographic characteristics (gender, age, education, household size, number of children under fourteen, occupation and job skill level, household income) and a dummy variable indicating whether the respondent was the family member usually in charge of buying fruits and vegetables. The education variable has been created transforming the education level attained in years of education, under the assumption of regular schooling. As to employment, employed persons were coded into three categories of job skill level, i.e. high, middle and low. Likewise, retired persons were asked about their former occupation and were classified into "high-mid-pensioners" and "low-pensioners"[2] according to their previous occupation, to increase the information content about their personal characteristics. Unemployed and non-working people (students and housewives) were set as the reference category. The income variable is the mean of stated income bracket, with the highest class arbitrarily truncated at 4,500 euro. Two further explanatory variables were added to highlight the possible role of markets and areas with distinctive characteristics. One is Porta Palazzo, the largest and more traditional open-air market in Torino, where a very large number of farmers sell their

[2] "High-pensioners" were few, and were merged to "mid-pensioners".

products in a specific area of the market. Therefore, it particularly attracts consumers interested in purchasing from farmers, so that those consumers might have specific tastes. The second was the market location in a provincial town (Cuneo, Alessandria or Asti).

As expected, the socio-demographic characteristics of the sub-sample are rather different from those of the town residents as recorded by the Census data (I.Stat, 2011). For instance, the share of males is much lower than the average of Torino (38 percent in the sample, 48 percent according to the Census), because females more frequently take care of buying food. The average age of the market customers (51) is higher than that of the population (45), possibly because elder people have more time for midweek shopping and market shopping during the day. Market customers are also more educated than the general population (14.8 years of education on the average as compared to 9.2 years of the city residents). It is evident that personal characteristics affect the choice of buying in an open-air market; therefore, the estimated values attached to the relational good strictly refers to the sub-sample.

4. Results

Table 2 presents the results of the utility difference model. The goodness of fit depends on the assumptions on the responses stating they would remain with the original vendor, but because of trust. If they are dropped (Dropped trust responses), the model is overall insignificant, though the variable of the relational good is significant. If they are reclassified as acceptance to move to the new vendor (Reclassified trust responses), the model becomes overall significant, but the relational good variable is not.

From the estimated equation, the average WTA can be recovered integrating over the relevant interval. It is important to note that WTA here is measured as $\exp[(\alpha_1 - \mu)/\beta] - 1 = (p_1 - p_2)X/Y$, i.e., as the relative increase in total income resulting from the prospected change. The WTA has a minimum to zero, since respondents had already freely chosen to buy from the farmers, so that a change to another vendor cannot be seen as an improvement. Though in principle WTA is unbounded from above, the maximum discount that can be offered is 100 percent of the expenditure for fruits and vegetables. It is therefore realistic to set, as the upper bound of the distribution of WTA, the share of this expenditure on total income. This is nevertheless not observed and, hence, different bounds have been tested. The resulting values of the WTA are presented in Table 3. They are to be interpreted in the following way: if the share of the expenditure on fruits and vegetables is 1 percent of total income, the average WTA for giving up the relational good is 0.4 percent of total income, and so on. The individual shares of the expenditure for fruits and vegetables are not observed. Nevertheless, official statistical data (I.Stat, 2013) report that the average monthly expenditure for fruits and

vegetables of Italian households in the region (North-West) is 3.2 percent of total expenditure. The corresponding value of the WTA is reported on the last row, and is 1.2-1.3 percent of the overall income, contingent on the treatment of the trust responses. Hence, this could be the most likely upper value of WTA, corresponding to a 100 percent discount on expenditure for fruits and vegetables. More realistic values of average WTA might be well below.

The alternative econometric strategy is using the valuation function approach. Table 4 shows the relevant results. The first columns (Estimated model) report the estimates of function (17) for both treatments of the trust responses. It should be noted that the only highly significant parameter is the proposed discount (the number of kids is weakly significant and negative). This implies that consumers buying from particular farmers are almost not affected in their WTA by individual characteristics. The other columns report the WTA function estimates that can be recovered by the former. The parameters of the WTA function are calculated dividing the relevant parameters of the estimated model by the coefficient of the prospected discount, and the standard errors are corrected as suggested by Cameron and James (1987) and Cameron (1988).

With the estimated WTA function, one can estimate the WTA of all consumers in the sample, by multiplying the matrix of the individual variables by the relevant estimated parameter vector and calculate the resulting mean and standard deviation. Since the parameters of the WTA equation are the results of the division of the parameters of the other variables by the parameter of the bid, the resulting average WTA and variability measures can be found by simulation methods (Krinsky and Robb, 1986). We randomly drew (10,000 draws) from a multivariate normal distribution with mean γ (the vector of the estimates of the estimated equation) and variance-covariance matrix V (the estimated variance-covariance matrix), thus obtaining random γ vectors; from each of them, a new vector of the WTA equation coefficients was calculated, and the WTA for the sample was computed. The final result was an empirical distribution of the average WTA, of which the mean and the standard deviation has been calculated.

It should be noted that in this estimate, WTA is expressed as the percentage discount over the expenditure for fruits and vegetables, not as the percentage over income. The mean WTA in the sample is 12.2 percent and 9.6 percent contingent on the treatments, and the median is respectively 12.5 percent and 10 percent. This implies that a typical consumer in the sample is willing to stay with his/her favorite farmer if the prospected discount is less than 12 or almost 10 percent of his/her expenditure in fruits and vegetables. This suggests that the value of the relational good is not negligible.

The results of the two models are not directly comparable, since the measures of the WTA are different. Nevertheless, one can consider that, since fruits and vegetables represent 3.2 percent of the

monthly expenditure for food of households of the region (I.Stat), the share of WTA over total expenditure would be 38-40 percent according to this estimate, as compared to the ones of the utility difference model. Hence, the estimates of the valuation function are more conservative than those of the utility difference model**.**

5. Conclusions

In this paper, we estimate with different econometric methods the value urban consumers attach to the relational good represented by the personal relationship with a farmer selling directly his/her products. Contingent on the chosen model, the average value is 10-12 percent of the consumers' expenditure for fruits and vegetables, and up to 1.2-1.3 percent of their overall income. Hence, personal relationships do have an impact on consumers' economic behavior. This might not sound as a novelty to marketing practitioners, but to the best of our knowledge its measurement is new.

Some considerations and qualifications are nevertheless needed. First, a word of caution is needed about the very nature of the relational good and about what consumers value in the relationship with a particular vendor. Though we tried to isolate the effect of the relational good in itself, getting rid of trust and symbolic values, some ambiguity may remain. For instance, some answered to the check question "Why did you state you would stay with your favorite vendor?" with "because of habit" which is difficult to interpret in a sense or another. Habit may mean familiarity and, hence, be related to the relational good; but it can also stem from risk averse attitudes. Similarly, trust is not the same as a relational good, but may be strictly connected. If I am familiar and have sympathy towards someone, I usually tend to trust him/her, though the reverse might not hold, since I can trust someone who is indifferent to me.

Second, we estimate the willingness-to-accept. It is well known that in the Contingent Valuation literature measures based on WTA are looked at with suspicion, since they are prone to overvaluation (see, e.g. the NOAA panel advice, Arrow *et al*., 1993). In the case of relational good, though, using WTA measures is an inescapable choice since, by definition, a relational good cannot be purchased and an individual cannot even evaluate it until it is created. Hence, the willingness to pay for a relational good cannot be estimated. Nevertheless, one should be aware that the valuation might be influenced by people's reluctance to leave something already acquired (Kahneman and Tversky, 1979). And, like in all stated preferences exercises, hypothetical bias is a possibility.

Third, the estimates of the WTA concern the sub-sample of those consumers who typically shopped at that market and mainly purchased from a particular farmer. Therefore, the relevance of the relational good for the general population can be obviously less. A quick estimate of the value of the relational good for the general population can be obtained by weighting the estimated values by the

share of respondents who were included in the subsample. This share was 60.3 percent. Assuming that the rest of the population has no preference for the relational good, this would imply that the estimate of 10-12 percent of the expenditure for fruits and vegetables would reduce to 6-7.5 percent if referred to the general population. Nevertheless, this would disregard the fact that consumers at conventional stalls might have preferences for relational goods with those vendors, which cannot be excluded. Rather, it is quite possible that particular characteristics of the consumers purchasing from farmers affect their choice, so that the sub-sample is self-selected.

Tables and Figures

Table 1. Descriptive statistics of the variables.

Variables	Mean	Std.Dev.
Gender (male = 1)	0.382	0.487
Age (years)	50.661	18.196
Education (years of study)	14.798	4.067
Household member in charge of buying fruits/vegetables (yes = 1)	0.964	0.187
Household size (number of other family members)	1.369	1.081
Children under fourteen (number)	0.145	0.425
High-skill job (yes = 1)	0.100	0.301
Middle-skill job (yes = 1)	0.297	0.458
Low-skill job (yes = 1)	0.036	0.187
High-middle-pensioner (yes = 1)	0.161	0.368
Low-pensioner (yes = 1)	0.116	0.321
Net household income 1,200-2,000 euro/month (yes = 1)	0.390	0.489
Net household income 2,000-3,000 euro/month (yes = 1)	0.193	0.395
Net household income > 3,000 euro/month (yes = 1)	0.100	0.301
Provincial town (yes = 1)	0.181	0.386
Porta Palazzo (yes = 1)	0.253	0.436

Table 2. Utility difference model

	Reclassified trust responses		Dropped trust responses	
	Coeff.	Std.Err.	Coeff.	Std.Err.
α	0.152	0.139	0.433**	0.155
β	-1.513**	0.730	-1.171	0.811
Log-likelihood	-158.919		-122.346	
Chisq. (2 d.f.)	4.404		2.132	
N. obs.	249		212	
Prob	0.036		0.144	

Table 3. Mean WTA from the utility difference model

	Mean WTA	
Trucation at:	Reclassified trust responses	Dropped trust responses
0.01	0.004	0.004
0.02	0.008	0.008
0.05	0.020	0.019
0.10	0.040	0.038
0.20	0.080	0.077
0.032*	0.013	0.012

Note: WTA and truncation are expressed as shares of total income
* Regional average

Table 4. Valuation function model

	Reclassified trust responses				Dropped trust responses			
	Estimated model		*WTA function*		*Estimated model*		*WTA function*	
	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.	Coeff.	St. Err.
Prospected discount***	-5.926	1.171			-7.169	1.385		
Constant	-1.498	1.004	0.253	0.118	-0.034	1.104	0.005	0.153
Gender (1 = male)	-0.199	0.210	0.034	0.037	-0.406	0.252	0.057	0.037
Age (years)	0.011	0.008	-0.002	0.001	0.004	0.009	-0.001	0.001
Education (years)	0.046	0.032	-0.008	0.005	0.044	0.037	-0.006	0.005
Main purchaser	1.271	0.650	-0.214	0.081	0.703	0.651	-0.098	0.081
# household members	0.029	0.101	-0.005	0.017	-0.091	0.128	0.013	0.018
# children*	-0.583	0.300	0.098	0.052	-0.789	0.406	0.110	0.057
High-level occupation	0.013	0.352	-0.002	0.059	0.009	0.393	-0.001	0.055
Mid-level occupation	0.226	0.260	-0.038	0.044	-0.197	0.313	0.028	0.044
Low-level occupation	-0.716	0.531	0.121	0.090	-0.759	0.560	0.106	0.079
High-middle-pensioner	-0.401	0.364	0.068	0.058	-0.319	0.409	0.044	0.055
Low-pensioner	0.531	0.375	-0.090	0.065	0.543	0.427	-0.076	0.061
Income level 2	-0.318	0.229	0.054	0.039	-0.499	0.265	0.070	0.038
Income level 3	-0.115	0.296	0.076	0.206	0.066	0.334	-1.939	63.594
Income level 4	-0.149	0.376	0.099	0.259	-0.248	0.448	7.271	236.097
Province	-0.001	0.263	0.000	0.175	-0.157	0.325	4.602	149.644
Porta Palazzo	0.024	0.241	-0.016	0.161	-0.229	0.291	6.735	219.233
Log- likelihood	-132.495				-96.846			
Chisq. (17 d.f.)	46.645				46.726			
N. observations	241				205			
Mean WTA	0.122	0.023			0.096	0.026		
Median WTA	0.125				0.100			

Note: the parameters of the WTA function are calculated dividing the relevant parameters of the estimated model by the coefficient of the prospected discount; standard errors are corrected as suggested by Cameron and James, 1987 and Cameron, 1988

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