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The value of the participation in Solidarity Purchasing Groups (SPGs): an empirical analysis in Piedmont

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Paper prepared for presentation at the 5th AIEAA Conference
“The changing role of regulation in the bio-based economy”

16-17 June, 2016
Bologna, Italy

Summary

Solidarity purchasing groups (SPGs) are common Alternative Food Networks in many towns in Italy. They are set up by groups of citizens who cooperate in order to buy food and other commonly used goods collectively and directly from producers, at a price that is fair to both parties. Within the group, the choice of the products and the farmers usually follow some guidelines related to the respect for the environment and the solidarity between the members of the group and the producers. Though still a small niche, SPGs are quite numerous and represent an interesting alternative to traditional setting of the food chain.

The main motivation of members for participating in SPGs is arguably not a monetary one, i.e., it is not lower prices. Ethical motivations and environmental concerns are typically proposed among the goals of the groups. Nevertheless, the budget constraint is always operating, and it is of interest to measure how much the ethical and environmental motivations are able to overcome the budget constraint. This is tantamount to measure the value members attach to their participation to the SPG.

Hence, the aim of this study was to estimate the value the group members attach to their participation. A stated preferences methodology was employed on a first sample of members of SPGs in Torino (Italy) and other neighbouring towns to estimate the value consumers buying in such groups attach to this particular channel, in comparison to the conventional supermarkets. Preliminary results show that SPG members do state a preference for buying with their organization rather than at a supermarket's even when the prospected prices are substantially higher for the purchase through the SPG.

Keywords: ethical purchasing groups, consumers' choices, stated preferences, alternative food networks

JEL Classification codes: D1, D4, Q13

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1. INTRODUCTION

Among the Alternative Food Networks, ethical purchasing groups are common to find in many towns in Italy. Called *Solidarity Purchasing Groups (SPGs)* – in Italian *Gruppi di Acquisto Solidale (GAS)* – they are set up by groups of consumers who cooperate to buy food and other goods collectively and directly from producers, at a price that is fair to both parties. At present there are about one thousand recorded SPGs in Italy. However, since many groups are informal, their number is likely to be higher (about twice as many)¹.

In general, SPGs are run as formal or informal non-profit organisations. For their operations, they rely on occasional or regular volunteers appointed on a rotation basis among their members. Regular volunteers (or co-ordinators), appointed for products or producers, make periodical calls for cycle of orders. Then, they collect and place the orders. Usually producers deliver the orders to a point of collection where the SPGs' members pick up their products. In formal groups, a board of directors is in charge of the management of the participatory process, administration and accounting.

Within the group, the choice of the products and the farmers usually follows some guidelines as to the respect for the environment and the solidarity between the members of the group and small producers. Typically SPGs are aimed to foster short food chains, to promote quality and environmentally friendly food consumption, and to support farmers' right to fair prices (Saroldi, 2001). Hence, the main motivation of members for participating in SPGs is arguably not utilitarian, i.e., it is not lower prices or convenience, but it is rather related with ethical and solidarity issues, including to raise consciousness about food consumption, to establish trust relationships between consumers and producers (especially local ones) and to get fresh, seasonal and healthy food (Schifani and Migliore, 2011; Brunori et al., 2012; Hankins and Grasseni, 2014).

¹ The estimated number of SPGs in Italy is reported on the web site of the National Thematic Group on the communication for the solidarity economy (www.economiasolidale.net).

Although the members' main motivation is not a monetary one, the budget constraint is always operating, and strictly economic motivations are anyway possible. Therefore, it is of interest to measure how much the ethical and environmental motivations are able to overcome the budget constraint and the economic motivations. This is tantamount to measure the value members attach to their participation to the SPG. The aim of this study is to analyse the characteristics of consumers choosing to participate in those groups to estimate the value they attach to their participation. This estimate can provide an indicator of how strong the motivation is and, hence, of the solidity of the organisation itself, which is of interest to evaluate the perspectives for these alternative food networks.

2. THEORETICAL AND METHODOLOGICAL APPROACH

The theoretical setting is the same used by Corsi and Novelli (2015) to estimate the value of the relational good in the direct purchase from farmers. The participation to the SPG has a value for the consumer if the utility he/she obtains from the transaction is greater when performed within the SPG. 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 and α_0 indicate the participation or not, respectively, to the SPG.

Assume the consumer has chosen his/her optimal bundle of goods X for a price vector p_1 when participating to the SPG. Call C the consumer's characteristics that can affect his/her utility. The problem is measuring the value of the change to α_0 . Under the assumption that the consumer does not change the optimal bundle changing the purchasing channel, there will exist a price vector p_2 such that:

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

If the consumer is given the alternative of buying the same quantities at price p_1 but at a supermarket ($\alpha = \alpha_0$), or still at the SPG, but at a higher price p_{bid} , he/she will still buy at the SPG if:

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

In terms of the indirect utility function, the consumer will stay with the SPG if:

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

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:

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

Hence, the probability that a consumer is willing to pay a higher price p_{bid} for staying with the SPG is:

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

Assuming a functional form for the utility function and a distribution for $\mu = \varepsilon_2 - \varepsilon_1$, the probability of a positive difference can be estimated by maximum likelihood techniques.

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

$$v_1(p_1, \alpha_0, C, Y) = v_1(p_2, \alpha_1, C, Y) \quad (7)$$

Call v_0 the indirect utility that can be reached with prices p_1 and the SPG, $v_0 = v_0(p_1, \alpha_1, C, Y)$. The value of the utility due to the participation to the SPG can then be assessed by comparing the indirect utility with the higher price and the participation to the SPG (v_1) to the indirect utility with the original price and without the participation to the SPG (v_0):

$$v_0(p_1, \alpha_1, C, Y) - v_1(p_1, \alpha_0, C, Y) = v_0(p_1, \alpha_1, C, Y) - v_1(p_2, \alpha_1, C, Y) \quad (8)$$

The value of this difference in utility can be measured as the maximum amount of money the consumer is willing to pay to remain with the SPG even with an increase in expenditure because of the higher price. It is equal to the difference between the values of the relevant expenditure functions:

$$\begin{aligned} \text{WTP} &= e(p_2, \alpha_1, C, v_1) - e(p_1, \alpha_1, C, v_0) \\ &= \text{WTP}(p_1, p_2, \alpha_1, C, v) \end{aligned} \quad (9)$$

This implies that when no value is attached to the participation, 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:

$$WTP = [e(p_2, \alpha_1, C, v_1) + \varepsilon_1] - [e(p_1, \alpha_1, C, v_0) + \varepsilon_0] \quad (10)$$

The probability that a consumer is willing to remain with the SPG even with a higher price p_{bid} is:

$$\begin{aligned} \text{Prob}(\text{remain with SPG}) &= \text{Prob} [e(p_{bid}, \alpha_1, C, v_1) - e(p_1, \alpha_0, C, v_0) + \varepsilon_1 - \varepsilon_0 > 0] = \\ &= \text{Prob}[WTP(p_1, p_2, \alpha, C, v) + \mu > 0] \end{aligned} \quad (11)$$

Assuming a functional form for the deterministic part and a distribution for $\mu = \varepsilon_1 - \varepsilon_0$, 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-pay function is:

$$WTP = Xb + \mu \quad (12)$$

where X is a vector of personal characteristics of consumers, including income, and ε a random term. The probability that a consumer accepts to remain with the SPG even with a prospected price leading to an income decrease d is:

$$\begin{aligned} \text{Prob}(\text{remain with SPG}) &= \text{Prob}[d - Xb - \mu > 0] = \text{Prob}[d - Xb > \mu] = \\ &= 1 - F_\mu[d - Xb] \end{aligned} \quad (13)$$

where F is a cumulative density function.

3. DATA

The data for the analysis come from an in-person survey among group members of several SPGs in the city of Torino (Italy) and other neighbouring towns. Data collection is currently underway and in this paper we present the early results from four SPGs surveyed so far. The four groups – “Salvagas”, “Gas di Avigliana”, “La Cavagnetta” and “Roccafranca” - have different sizes, as they have 25, 156, 96 and 136 member families or persons respectively.

A questionnaire was submitted to 151 group members during the meetings for the distribution of the ordered food. The questionnaire included a first part in which respondents were asked about their participation in the SPG, about the tasks they are performing in the SPG, and on their motivations. Then, a stated preferences methodology was employed to estimate the value consumers buying in such groups attach to this particular channel. In the specific instance, to estimate their willingness-to-pay (WTP) for the participation to the SPG, an elicitation question was asked with a dichotomous format. The respondents were asked whether they would still buy at the SPG if their

prices were to increase by a certain percentage higher than those currently paid, and the only alternative was to buy at a supermarket's. The percentages were randomly assigned to each questionnaire among 20, 30, 40 and 50%. Those who responded they would still buy with the SPG were further asked for the reasons.

This information allows, through maximum likelihood techniques, to estimate a willingness-to-pay function, giving WTP as a function of explanatory variables. The WTP function can then be used to calculate the average WTP for the sample and the relevant variation.

The last part of the usual questionnaire included information on the socio-economic characteristics and on the characteristics of the households.

4. RESULTS

Table 1 shows the descriptive statistics of the explanatory variables included in the model. They are calculated on the valid observations (106) after dropping incomplete questionnaires.

Table 2 reports the answers to the elicitation question. As predicted, the share of those remaining with the SPG even with a price increase is decreasing with the amount of the price increase itself. Nevertheless, the shares remain very high even with substantial price increases: when a price increase by 50% is prospected, still four out of five respondents would remain with the SPG.

Table 1. Descriptive statistics of the variables (calculated on the 106 nonmissing observations used for estimation).

Variables	Mean	Std.Dev.
Lower prices in SPG	0.547	0.500
Gender (F)	0.642	0.482
Age	48.330	10.446
Education (years)	16.066	2.634
Main buyer	0.887	0.318
N. family members	3.255	1.033
Children < 14 year old	0.802	0.920
Professional	0.142	0.350
Self-employed	0.094	0.294
Clerk	0.689	0.465
Manual work	0.038	0.191
Income < 1200	2.564	1.289
Income 1200-2000	0.075	0.265
Income 2000-3000	0.321	0.469
Income > 3000	0.340	0.476

Source: own elaboration

Table 2. Answers to the elicitation question.

Price increase (%)	N. "I would stay"	N. of answers	% Stay
20	25	28	89.3
30	22	26	84.6
40	18	27	66.7
50	20	25	80.0
	85	106	80.2

Source: own elaboration

Table 3 (estimated model) reports the results of the estimates of the probit model of the probability to stay with the SPG. The table also reports the marginal effects, evaluated, as usual, at the mean values of the explanatory variables, or at the median value, in the case of dummy variables. The results are very preliminary and are estimated on the observations surveyed so far.

Table 3. Results of the probit model of the willingness to remain with the SPG.

	Estimated model						WTP function	
	Coeff.	t-ratio	P-value	Marginal effects	t-ratio	P-value	Coeff.	St. Err.
Bid	-0.030	-1.851	0.064	-0.007	-1.9	0.058		
Constant	2.717	1.328	0.184	-	-	-	-91.2403	80.595
Lower prices in SPG	0.580	1.776	0.076	0.139	1.759	0.079	-19.483	15.539
Gender (F)	0.012	0.029	0.977	0.003	0.029	0.977	-0.410	14.046
Age	-0.030	-1.495	0.135	-0.007	-1.537	0.124	1.014	0.797
Education (years)	0.050	0.650	0.516	0.012	0.653	0.514	-1.671	2.429
N. family memb.	-0.210	-1.073	0.283	-0.049	-1.08	0.280	7.068	7.682
Children < 14	-0.330	-1.444	0.149	-0.077	-1.47	0.141	11.068	8.784
Main buyer	-0.314	-1.009	0.313	-0.073	-1.023	0.307	10.559	10.956
Profess.	1.085	1.136	0.256	0.165	1.943	0.052	-36.440	31.976
Self-empl.	0.950	0.943	0.346	0.143	1.686	0.092	-31.912	33.156
Clerk	1.207	1.430	0.153	0.340	1.313	0.189	-40.541	30.137
Manual work.	1.432	1.246	0.213	0.156	3.371	0.001	-48.106	40.816
Income 1200-2000	-0.120	-0.157	0.876	-0.029	-0.153	0.878	4.045	25.984
Income 2000-3000	0.068	0.090	0.928	0.016	0.091	0.927	-2.268	25.145
Income > 3000	0.180	0.222	0.825	0.040	0.232	0.816	-6.034	27.176
N. Obs.	106							
Log-likelihood	-44.120							
Chi-squared (15 d.f.)	17.288							

The model is not overall statistically significant, which implies that the willingness of SPG members to stay with the SPG is not systematically influenced by their observable characteristics. Nevertheless, apart from the price increase (whose effect is negative as predicted), also the dummy variable indicating whether the member states that the SPG prices are lower than elsewhere is (weakly) significant. These members are those who have also a monetary incentive in the participation to the SPG, so it is consistent that they are more willing to remain with it. The marginal effect suggests that they are 14 percent more likely to stay with the SPG than the other members. The usual characteristics that typically make consumers more willing to use alternative food networks, higher income and education, are not significant in our estimates. One should nevertheless consider that the survey is among SPG members only, not on the overall population. Hence, it tries to ascertain which variables are influencing their preference for the SPG and it is not surprising that they are roughly the same for all members. Also the marginal effect for manual workers is significant, and the marginal effect implies that they are 16 percent more likely to stay with the SPG relative to the reference group (non-labour forces).

Given these results, we re-estimated the model only including the bid and the variable indicating lower prices, and the model turned out to be significant. The results are reported in Table 4.

Table 4. Results of the probit model of the willingness to remain with the SPG.

	Estimated model						WTP function	
	Coeff.	t-ratio	P-value	Marginal effects	t-ratio	P-value	Coeff.	St. Err.
Bid	-0.015	-1.110	0.267	-0.004	-1.118	0.264		
Constant	1.088	2.068	0.039	-	-	-	-74.690	36.151
Lower prices in SPG	0.585	2.016	0.044	0.158	2.017	0.044	-40.146	43.128
N. Obs.	106.000							
Log-likelihood	-49.714							
Chi-squared (2 d.f.)	0.047							

The result imply that those who find lower prices in the SPG than elsewhere are 16 percent more likely to remain with the SPG relative to the other members, when prospected the same price increase. The marginal effect of the bid variable means that every 10 percent increase in the price would reduce the probability to remain with the SPG by 4 percent, which means a very low reaction to relative price changes.

With the estimated parameters, it is possible to recover a WTP function that yields the WTP based on explanatory variables. The parameters of the WTP function are calculated dividing the

relevant parameters of the estimated model by the coefficient of the prospected price increase, and the standard errors are corrected as suggested by Cameron and James (1987) and Cameron (1988). The parameters of the WTP function and the relevant standard deviations are reported (section WTP function) in Table 3 and in Table 4, for the model including all variables and the one with two variables, respectively.

Using this WTP equation, the individual WTP of the respondents has been calculated, by multiplying the matrix of the individual variables by the relevant estimated parameter vector. The mean WTP and standard deviation for the sample can then be calculated.

The average WTP is 96.7% (if calculated with the last model; 77.7% with the model including all variables), with a standard deviation of 20.1% (21.3%) and the median is 114.84% (78.4%). In other words, a typical SPG member would still buy at the SPG even with prices up to double higher than at a supermarket.

The results strongly suggest that non-monetary motivations for participation to the SPGs are undoubtedly very strong. Even allowing for some hypothetical bias, the size of the stated preferences measure is such that it points to a predominance of ethical and personal motivations rather than to a strictly economic profitability. Nevertheless, the greater willingness to participate among those that pay lower prices with the SPGs than elsewhere suggests that strictly economic motivations are not necessarily to be excluded. In this respect, it should be noted that lower prices, or even the balance between revenues and costs in the SPGs, are strictly linked to voluntary work provided by their members (Novelli and Corsi, 2016). Hence, lower prices for the SPGs actually stem from not considering own work as a cost. This is another way of looking at the importance of non-monetary motivations, since some utility for collective interactions and for contributing to a good cause comes from voluntary work, if it is not considered as a cost.

Our results also suggest that SPG members are rather homogeneous in the characteristics motivating their participation. No significant difference can be detected in terms of income brackets, nor in terms of education or gender. This is quite consistent with the prevailing nature of SPGs, that were mainly born as an alternative to the prevailing food chain models, on the basis of ethical and ideological statements, and often starting from informal groups of friends or neighbours (even though they sometimes grew to larger sizes). Hence, the ideological and ethical motivations of SPG members prevail over the strictly economic ones, so that the observable socio-economic characteristics do not significantly affect their willingness to pay.

5. CONCLUSIONS

We have conducted a survey among SPG members to evaluate the motivations of their participation and for measuring the strength of their commitment. The survey is ongoing and we present here some preliminary results on the interviews available so far. From these, we estimated in money terms the value for solidarity purchasing group members of the participation in the groups. The results show that group members state their willingness to continue to purchase with the group even when facing very substantial increases in the prices. This suggests that the individual ethical and ideological motivations are extremely strong, and that participation to the SPGs has not a prevailing monetary reason. However, there is some evidence that SPG members also find some economic benefit from the participation, since a large share considers that the prices they are paying in the SPG are lower than what they would pay elsewhere. One should nevertheless consider that the lower prices of the SPGs stem from unpaid voluntary work of their members, which can derive either from a very low opportunity cost of their labour or from positive utility of labour provided to the SPGs. Hence, this consideration too strengthens the conclusion of the prevalence of non-monetary motivations of the participation. This is relevant for the future of the SPGs themselves, since they should take into account the issue of how to maintain the commitment of their members if they intend to render sustainable on the long term their activity.

ACKNOWLEDGMENTS

This study is part of the research project “Alternative Food Networks: An Interdisciplinary Assessment” (AFNIA) funded by the University of Torino and Compagnia San Paolo - Progetti d’Ateneo. We gratefully acknowledge their financial support.

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