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The Beauty of the Commons? Consumers' participation in Food Community Networks

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1. Introduction

Local varieties, biodiversity, traditional landscapes and eno-gastronomies are good examples of common-pool resources (CPRs) in the agricultural and food domain. The exclusion of their (potential) beneficiaries is difficult and costly, while misuse from one beneficiary can affect the availability for others (Ostrom *et al.*, 1999). Conventional food production, distribution, and consumption, so called mainstream food chain (MFC), often create social dilemmas for CPR management, because MFCs are based on individual and short-term incentive mechanisms. For example, a farmer dealing with a partner in an MFC environment is often focalized on fulfilling the requirements imposed by a private, short-term contract; which does not cover the costs of growing local varieties, reducing pesticides or preserving traditional landscape. However, MFCs have guaranteed, at least in industrialized countries, affordable and relatively safe food products, therefore reducing issues of food insecurity. As an alternative to MFCs, a number of systems called alternative food chains (AFCs) have been implemented worldwide to better manage the CPRs. Probably the most known example is represented by the organic agricultural movements. Despite its success, organic foods are still a small component of worldwide consumers' diets (Badgley and Perfecto, 2007). In industrialized countries AFCs are still niches, and their implementation at a large scale is still far from being reality.

Nevertheless, the number of consumers who are joining farmers to implement AFCs is smoothly increasing worldwide. Consumers, as individuals or households, often engage farmers in co-producing and distributing foods. They set up community-farming practices, clubs, cooperatives, or associations. They share information, knowledge and experience. In this way they aim to manage the CPRs by acting locally and contributing to the maintenance of local varieties of crops, organic products, endangered types of agro-ecosystems and landscapes. In other cases they act globally. For example, consumers support AFCs by buying fair-trade products and supporting local productions through NGOs. Previous studies have highlighted that consumers participating in AFCs often increase social awareness for more fair habits (Lusk and Briggeman, 2009). They act as first-movers, and contribute to the spread of sustainable habits through their social networks, therefore increasing attraction to alternative distribution channels as opposed to mainstream ones.

However, the motivations that lead to participation and different levels of participation in AFCs remain puzzling. (i) For example in New Institutional Economics (NIE) literature, motivations for participation in AFCs are explained as a farmers' and consumers' strategy to reduce transaction costs related to credence food attributes (Pascucci, 2010). (ii) In other approaches, motivations for participation in AFCs are linked to ethical values, lifestyles and social preferences, such as fairness,

trust and altruism (Toler *et al.*, 2009). Still, the link between transaction costs, values, lifestyles, and the choice contexts describing consumers' participation in AFCs is not clear, nor completely understood.

In this paper we use New Institutional Economics, behavioural economics and consumer sociology to analyse consumers' participation in AFCs, which we have defined as food community networks (FCNs) (Pascucci, 2010). More specifically we have investigated a fast-spreading Italian type of FCN named Solidarity Purchase Groups (GASs)¹. A GAS is a network of food producers and consumers characterized by values related to local economic and social ties, where CPR management and food quality are the key elements.

The GAS phenomenon started developing in Italy at the end of the nineties. A GAS is a community based network that is informally regulated like a club. Consumers who decide to participate share their knowledge and time in the organization. One of the common activities among GASs is the purchase of food products from local producers. GAS members select and contact local farmers that become members of a GAS if, and only if, they agree to lower the environmental impact of their production activities, respect worker rights, and are willing to collaborate in building a reciprocal, though informal, trust (Schifani and Migliore, 2011). To this extent GAS participants deem quality as not only an intrinsic attribute of a good, but as the ability to create relations, emotions and significant experience. For participants, the choice to participate in a GAS network is seen as an act of social sharing and represents their political activism where cultural identity is affirmed and where own ideals have the opportunity to influence the real world.

In the present study we analyse the motivations for participating in a one of the GASs operating in Sicily, in Southern Italy, where some 32 other GASs are operating roughly representing some 1,200 households (Cembalo *et al.*, 2011).

Our empirical strategy was to interview a target group of GAS participants (GASp) and a counterfactual group of non-GAS participants (NGASp). The overall sample included 303 individuals. In our approach we analyse the impact of transaction costs, values, and food related lifestyles on participation and consumer features. Those variables were implemented in a simultaneous system of equations model. The rationale behind our modelling approach comes from theoretical based relations among values, attitude, and behaviour (Inglehart, 1997; Rokeach, 1973; Schwartz, 1992; Brunso and Grunert, 1995; Maio and Olson, 1994, 1995; Gold and Robbins, 1979). There seems to be a wide consensus in the literature that individual values do not affect consumer behavior directly (in this study it would be FCN participation), but they do throughout their influence on attitude or FRL (Food Related Lifestyle) (Maio *et al.*, 2003; Rokeach, 1973; Schwartz, 1992; Brunso and Grunert, 1995). Six food related lifestyles were selected by means of a Principal Component Analysis (PCA). Each of them was implemented in the model as a dependent variable of a structural equation. The seventh equation served to directly model FCN (GAS) participation.

Compared with the most recent advances in this field our paper is innovative in three features: i) values and attitudes were so far related to consumer behaviour concerning collect purchase-related products, or a specific good category, such as organic, or a class of products (such as environmentally friendly products, natural products, functional products, etc.) (Hwang *et al.*, 2005; Baker, 1999; Dreezena *et al.*, 2005). In this paper we attempted to relate personal values and food-related lifestyles to analyse motivation of participation to a FCN; ii) we also tested for how and to what extent consumers' transaction costs affect the choice of joining an FCN; iii) from an empirical point of view we implemented a simultaneous system of equation modelling procedure which is consistent with the data generating process and the theory of value-attitude-behaviour.

Our results indicate various factors affect the participation and profiles of GAS participants. GAS (or FCN) participation seems to be enhanced by a mixture of motivations. The probability of

¹ From here on referred to as GAS from its Italian name: Gruppi di Acquisto Solidale

joining a GAS increases with those individuals that look at the convenience (price/quality ratio) and at the quality of the products. Nevertheless, open mindedness and interest in searching for new ways of consumption seem to be the main consumer profiles that increase the probability of joining an FCN.

Based on these results, policy implications have been drawn to promote public support of GAS and food community networks both in Italian and European contexts. More specifically we discuss how to increase the capacity of FCNs, and AFCs in general, to include more participants, thus up-scaling their activities. We think that AFCs can be effectively used to promote CPR management and to foster sustainable habits if only a larger number of participants would be engaged and involved. As once stated by Sandler (2010): *“longitudinal collective action for solving environmental problems are likely to be effectively addressed only by an enormous number of individuals each making a nearly insignificant contribution to resolving them”*. We believe this study contributes to highlighting that FCNs may serve this scope.

2. Values and attitudes in consumers' choices

Consumption of food products has profoundly changed in the last decades. As a consequence, variables typically used for market segmentation (demographics) and theoretical approaches used in consumer studies (neoclassical model) seem no longer suitable. Since the sixties, marketing studies' results have found differences in consumer behavior of consumers belonging to the same demographic class (Hustad and Pessemier, 1972). At the same time, demand system and other consumer studies based on neoclassical model are not able to capture the recent changes in consumer behavior. The instability of consumption preferences essentially shows a lack of orientation that is reflected in the consumers' free choice in every area of daily life. It has already been mentioned that these elements make it difficult to explain consumption habits according to a neoclassical approach, therefore suggesting the need to redefine an analytical structure capable of interpreting the dynamism of preferences and also considering that people's welfare is related to both expense possibilities as well as quality of life, in which environmental, social and freedom aspects are involved (Nussbaum and Sen, 1993; Cembalo *et al.*, 2011). Stated and revealed preferences are no longer trustworthy in explaining a wider range of consumer behaviour. To this extent scholars and scientists are trying to overcome this issue by invoking more stable characteristic elements of consumers such as values and attitudes.

Since the sixties, values became central in many social disciplines (Hether, 1993), and many measuring scales were suggested (Allport, Vernon & Lindzey, 1960).

One of the first authors who defined values was Inglehart (1971), who began from psychological and sociological perspectives. The Inglehart model is derived from Maslow's (1970) theory which states that people's needs are of two types: basic (i.e. safety, sustenance) and of higher order (i.e. self-fulfillment, belongingness). Another author worthy of citation is Rokeach (1973) who theorized the central role of values in cognitive networks of attitude and beliefs. He defined values as *“...enduring beliefs that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence”* Rokeach (1973 p. 5). The main difference between the two is that while Inglehart's theory is centered on people's perception of values that are relevant for society, Rokeach believes that values are referred to oneself or the others (Beatty *et al.*, 1985). Moreover, Rokeach first defined values as “enduring beliefs”, or stable, because learned in absolute terms by individuals. Rokeach also designed a Value Survey (RVS) that was implemented in several research projects aimed at accomplishing different objectives (Vinson and Munson, 1976; Becker and Conner, 1981). RVS showed a substantial arbitrariness in the value asset collected that made the Rokeach empirical procedure little seductive (Kerlinger, 1973).

While other authors defined values in slightly different fashion (Becker, 1976; Hetcher, 1993; Kahle, 1983; Veroff *et al.*, 1981), they were immediately criticized (Beatty *et al.*, 1985). However, at the beginning of the nineties Shalom H. Schwartz (1992) made a breakthrough. He defined ten values, namely: self-direction, stimulation, hedonism, achievement, power, security, conformity, tradition, universalism and benevolence. In Schwartz theory, values are seen as abstract ideals that guide personal life principles. As a consequence, Schwartz's definition of values is congruent with the concept of stability and durability. The ten values derive from three fundamental needs: i) those of individuals as a biological organism; ii) requisites of social interaction; iii) and the survival and welfare needs of the group. Schwartz suggested two alternative approaches to measure individual values: the Schwartz Value Survey (SVS), and the Portrait Values Questionnaire (PVQ) (Schwartz *et al.*, 2001). Choosing one methodology over the other is a matter of research objective and the sample being studied. However, the PVQ approach is known for being easier to implement and more reliable in the results obtained (Schwartz *et al.*, 2001).

More recently Lusk and Briggeman (2009) and Hauser *et al.* (2011) made food-value related studies. Lusk and Briggeman defined food values as a comprehensive mix of food values and attitudes directly affecting consumer choice. Hauser *et al.*, measured salient food attitudes and food related values. Despite the differences in methodology involved and theoretical approaches, both works underline the paramount relevance of going into consumers' choice behavior. One of the reasons is related to policy needs to recover market failure (Lusk *et al.*, 2006).

While values explain most of the individual abstract motivations, the relationship between actual behavior and values can be very indirect. Value attainment finally achieved depends on the good itself but also on mediator variables (Steenkamp and van Trijp, 1989). Between values and behavior there seems to be an intermediate level which refers, as a synthesis of mediator variables, to attitudes or lifestyles related to food consumption and experience (Maio *et al.*, 2003; Vinson *et al.*, 1977; Brunsø and Grunert, 1995).

The inter-relationships between values and attitudes have also been tested empirically in studies regarding cigarette consumption (Grube *et al.*, 1984), political attitudes and behaviors (Baum, 1968; Levine, 1960), choice of friends (Williams, 1959); and mass media usage (Becker and Connor, 1981). Kahle *et al.*'s research findings (1986) on consumer choice of natural food show the existence of a relationship between values and attitudes, and from the latter between actual behavior.

Direct relationships between values and behavior have been demonstrated to be weak (Kristiansen and Hotte, 1996), making it important to look at "moderator variables" between values and behavior.

As a tool able to synthesize a wide set of moderator variables (such as personality traits, situational factors, and value quality), the Food Related Lifestyles proposed by Brunsø and Grunert (1995) were implemented. Lifestyles are defined as "...*the system of cognitive categories, scripts and their associations which relate a set of products to a set of values*" (Brunso and Grunert, 1995). Food Related Lifestyle (also called internalized food-specific values) balances between personal abstract values and situation-specific food behaviors (Brunso *et al.*, 2004). Internalized food-specific values serve to explain actual food behavior reducing the theoretical and empirical complexity of food choice modeling (Brunso *et al.*, 1996, 2004).

3. Questionnaire description and data management

Data collection was performed in Palermo, one of the largest cities in Southern Italy (the capital of both region of Sicily and province of Palermo). 303 interviews were collected by means of an *ad hoc* questionnaire: 103 submitted to GAS participants, and 200 to consumers that had not joined any alternative food chain organization (counterfactual sample of consumers). The latter

interviewees were recruited in two malls located within the city of Palermo. The choice of interviewing FCN (GAS) and non-FCN participants in the same city was taken in order to have two subsamples of consumers not affected by differences in social, economic, and cultural environments (see Table 1 for characteristics of study participants).

Tab. 1 – Characteristics of study participants

Variables	GAS <i>no.</i>	Non-GAS <i>no.</i>	Variables	GAS <i>no.</i>	Non-GAS <i>no.</i>
Sex			Occupation		
Women	57	120	Unemployed	1	25
Men	46	80	Homemaker	3	34
Household size			Student	2	10
1 persons	88	167	Retired	9	12
2 persons	11	28	Conceptual worker	51	71
3 persons	3	5	Manual worker	0	19
4 persons	1		Teacher	15	5
Education			Retailer	0	5
Elementary school	0	12	Businessman	16	18
Middle school	4	59	Entrepreneur	6	1
High school	40	102	Age (years)		
BS	42	21	18-29	3	71
MS or PhD	17	6	30-39	17	50
Net monthly household income (in euro)			40-49	41	40
Below 1,499	16	105	50-59	31	23
1,500 - 2,499	28	62	> 60	11	16
2,500 - 3,499	36	22			
3,500 - 4,999	18	7			
5,000 or more	5	4			

The questionnaire was respondent self-completed taking about 20-25 minutes. GAS participants were asked to complete the questionnaire while they were waiting at the meeting place to pick-up a weekly food order. Non-GAS participants voluntarily stopped by a desk where questionnaires were available. Nearby the desk a poster was posted inviting people to take part in a (generic) University research project regarding consumers' behavior. At the end of the interview, people were rewarded for their participation with a lottery ticket with jackpot ranging from 5 to 500,000 euro. Data collection was done from the 15th of January to the 10th of February 2012.

The questionnaire was divided in four sections. The first one was about socio-demographic and economic characteristics of the interviewee and his/her household.

The second section served to collect values replicating the Portrait Value Questionnaire (PVQ) proposed by Schwartz (1992, 1994). PVQ is constituted of 21 questions (differentiated by gender) presented as a description of an individual, for example: *“Thinking up new ideas and being creative is important to him/her. He/she likes to do things in his/her own original way”*. The interviewee was asked to respond through a scale ranging from 1 to 6, where 1 means “very similar to me”, and 6 “very different from me”. From the 21 answers, Schwartz portraits are built by calculating the mean values of the scores collected by pairs of questions (except for one value which is a result of three questions answered). The resulting ten values are those listed in section 2. Schwartz organizes the ten values in a circular spatial way divided in two pairs of opposite main dimensions: Openness to change (stimulation, self-direction, and universalism) versus Conservation (security, conformity and tradition); Self-transcendence (benevolence and universalism) versus Self-enhancement (hedonism,

achievement and power). Proximity of values are considered similar in meaning, so that similarity is inversely proportional to the distance that values occupy in the circle.

The third questionnaire section collected Food Related Lifestyles (FRL) first proposed by Brunso and Grunert (1995). FRL is made of 69 statements like the following: “*To me product information is of high importance. I need to know what the product contains*”.

The interviewee was asked to declare the degree of agreement for each statement using a Likert scale ranging from 1 (totally disagree) to 7 (fully agree). Following Brunso and Grunert’s (1995) empirical framework, the 69 scores are composed of 23 variables with each of them combining three predetermined questions. The scores were collected for each question and the mean was calculated per group of three questions. Resulting variables name are: health, price-quality ratio, novelty, organic, taste, freshness, self-fulfillment, security, social relationships, involvement in cooking, new way of consumption, convenience, family, planning, women tasks, product information, attention to advertisements, enjoyment, specialty shops, price criterion, shopping list, and social event². In order to decrease the number of variables to be implemented in the econometric model (presented in the next section), a Principal Component Analysis was performed on the 23 variables (Tab. 2). Six latent variables were selected after a varimax rotation.

Tab. 2 – Pincipal Componet Analysis results on FRL, after varimax rotation

FRL	Desired higher order product attributes	Modern consumer	Open mindeness	Emotional involvement	Rational shopping	Shopping script
Health	0.8048	-0.1293	0.2003	0.1595	0.0759	0.0947
Price quality ratio	0.5817	0.0208	-0.024	0.2587	0.4661	0.159
Novelty	0.1089	-0.0415	0.8081	0.1563	0.004	-0.0273
Organic	0.7138	-0.1238	0.1346	-0.0706	-0.1889	-0.1573
Taste	0.0924	-0.0287	0.0249	-0.0183	0.7561	-0.0291
Freshness	0.7624	-0.1341	0.0598	0.1493	0.2708	0.068
Selffulfillment	0.3347	0.1453	0.1913	0.6552	0.1835	0.0262
Security	0.5025	0.3204	-0.4299	0.0236	0.2942	0.1216
Social relationship	0.5671	0.1938	0.3406	0.0609	0.4404	-0.1319
Involvement in cooking	0.0539	-0.4215	0.2017	0.6276	-0.0235	0.0208
New way	0.2155	0.0684	0.596	0.4952	-0.0068	0.0457
Convinience	-0.2638	0.735	0.1279	-0.0064	0.1177	0.0143
Family	0.3648	0.2971	0.2513	-0.1576	0.0572	0.3348
Planning	0.071	0.108	-0.2013	0.1716	-0.1725	0.6345
Woeman task	-0.1079	0.36	-0.5349	0.3195	-0.0609	-0.1608
Product information	0.6506	0.0994	-0.1318	0.271	0.0637	0.2182
Attention to adv	-0.0254	0.7254	-0.1913	0.1196	0.1153	0.1044
Enjoyment	0.3398	0.1757	-0.0147	0.5689	0.0362	0.1031
Specialty shops	0.5582	0.1338	0.0111	0.2411	-0.2297	0.1573
Price criterion	0.2697	0.208	-0.1393	0.3888	0.5052	0.2048
Shopping list	0.0899	-0.0735	0.0943	-0.0003	0.1056	0.7608
Snack vs meal	0.1317	0.6915	-0.0675	-0.0388	-0.2313	-0.0681
Social event	0.0754	0.4773	0.4625	0.0588	0.3982	-0.1189

First component was named “higher-order product attributes”. Main factor loadings are (reported in bold in the table): health, price-quality ratio, organic, freshness, security, social relationship, family, importance of product information, and specialty shops. They represent an FRL of consumers mainly searching for high quality products, like organic ones, giving priority to family, paying

² For a detailed explanation of the variable meanings please refer to Brunso and Grunert (1995).

attention to product information but not neglecting food price-quality ratio. This component describes a consumer keen on looking for specialty shops where he/she finds high order products.

Second component, named “modern consumer”, is represented by four main factor loadings: convenience (ready to use, pre-cooked, and frozen foods), attitude toward advertising, snack vs meal (snack and fast food vs meal preparation), and social event. It seems to describe an FRL related to a modern and actual consumer that does not spend much time on cooking.

Third component was named “open-mindedness”. Main factor loadings are: novelty, new way of experiencing food, women tasks, and meal as a social event³. It describes an FRL of consumers that do not consider meal preparation as a woman task, and those searching for new foods and new ways of preparing meals.

Fourth component was named “emotional involvement”. Main factor loadings are related to the emotional side of food and its preparation. It describes an FRL of a consumer who enjoys to do grocery shopping and finds personal satisfaction and involvement in meal preparation.

Fifth component was named “rational shopping”. Main factor loadings are taste and price criterion. It describes an FRL of a consumer who pays attention mainly to intrinsic attributes and that is guided, when grocery shopping, by price criteria with not much emotional involvement.

The sixth, and last but not least, component was named “shopping script”. Main factor loadings are family, planning, and shopping list. It describes an FRL of a consumer who gives priority to family⁴ and plans in advance what items they’d like to purchase.

The fourth, and closing, section of the questionnaire concerned Transaction Costs (TC). TC were divided in three categories, namely: information, negotiation, and monitoring costs. Each category was built on six questions. Respondents were asked to answer on the degree of relevance of some aspects concerning the three TC categories. Also in this section a Likert scale was presented ranging from 1 (not at all relevant) to 7 (very relevant)⁵. A variable was derived as a mean of the six scores collected.

4. Empirical model and results

The hypothesis underlying this study is that participation in Food Community Networks (FCN, in our research identified by a GAS) is affected by consumers’ values, food related lifestyles (FRL), transaction costs, and socio-demographic variables. In this framework, individual values are not meant to affect FCN participation directly, but they do throughout their influence on FRL (Maio *et al.*, 2003; Rokeach, 1973; Schwartz, 1992; Brunsø and Grunert, 1995).

To test such hypothesis, a simultaneous estimation of a linear system of seven equations was performed (Cameron and Trivedi, 2005, Hall, 2005; Greene, 2008). The first six equations are each for any of the principal components of the FRL, while the seventh models GAS participation.

$$y_{o,1} = \alpha_1 + \sum_j \beta_{1,j} Socio_dem_{o,j} + \sum_z \gamma_{1,z} TC_{o,z} + \sum_{s1} \tau_{1,s1} PV_{o,s1} + u_{o,1} \quad (1)$$

$$y_{o,2} = \alpha_2 + \sum_j \beta_{2,j} Socio_dem_{o,j} + \sum_z \gamma_{2,z} TC_{o,z} + \sum_{s2} \tau_{2,s2} PV_{o,s2} + u_{o,2} \quad (2)$$

³ Social event factor is also listed among factor loadings of the second component. Loadings values are, respectively, 0.4773 in the second component and 0.4625 in the third. When factor loadings of a variable are so significantly close a conservative approach is to consider it in both components.

⁴ Family factor is also listed among factor loadings of the first component. Loadings values are, respectively, 0.3648 in the first component and 0.3348 in the sixth. When factor loadings of a variable are so significantly close a conservative approach is to consider it in both components.

⁵ Details on how TCs were collected are available upon request.

$$y_{o,3} = \alpha_3 + \sum_j \beta_{3,j} \text{Socio_dem}_{o,j} + \sum_z \gamma_{3,z} \text{TC}_{o,z} + \sum_{s3} \tau_{3,s3} \text{PV}_{o,s3} + u_{o,3} \quad (3)$$

$$y_{o,4} = \alpha_4 + \sum_j \beta_{4,j} \text{Socio_dem}_{o,j} + \sum_z \gamma_{4,z} \text{TC}_{o,z} + \sum_{s4} \tau_{4,s4} \text{PV}_{o,s4} + u_{o,4} \quad (4)$$

$$y_{o,5} = \alpha_5 + \sum_j \beta_{5,j} \text{Socio_dem}_{o,j} + \sum_z \gamma_{5,z} \text{TC}_{o,z} + \sum_{s5} \tau_{5,s5} \text{PV}_{o,s5} + u_{o,5} \quad (5)$$

$$y_{o,6} = \alpha_6 + \sum_j \beta_{6,j} \text{Socio_dem}_{o,j} + \sum_z \gamma_{6,z} \text{TC}_{o,z} + \sum_{s6} \tau_{6,s6} \text{PV}_{o,s6} + u_{o,6} \quad (6)$$

$$y_{o,7} = \alpha_7 + \sum_j \beta_{7,j} \text{Socio_dem}_{o,j} + \sum_z \gamma_{7,z} \text{TC}_{o,z} + \sum_{i-1} \nu_{7,i-1} y_{o,i-1} + u_{o,7} \quad (7)$$

where $y_{o,i}$ is a set of i (seven) dependent variables: $y_{o,1}$ is the factorial score of the first Food Related Lifestyle principal component (f_frl1: higher-order product attributes); $y_{o,2}$ is the second FRL factorial score (f_frl2: modern consumer); $y_{o,3}$ is the third one (f_frl3: open mindedness); $y_{o,4}$ is the fourth (f_frl4: emotional involvement); $y_{o,5}$ is the fifth (f_frl5: rational shopping); $y_{o,6}$ is the sixth FRL factorial score (f_frl6: shopping script); $y_{o,7}$ (GAS) is a binary variable that takes value 1 if the interviewee participates in a GAS, 0 otherwise. The latter represents, in this study, the core equation showing functional relations concerning motivation in joining a GAS. The first six dependent variables ($y_{o,i-1}$) plays an important role since they are all endogenous variables of the system. o is the 303 observations index. j is the set of socio-demographic variables: *age* of respondent; *sex* as respondent gender; *job-type* as a categorical variables that goes from 1 to 10 as job typology increases in “quality”; *education* that goes from 1, elementary school degree, to 5, MS or PhD degree; monthly family net *income*; *nat_food* as percentage of natural food on total food expenditure. z represents the set of transaction costs variables: *TC_inf* as Information costs; *TC_negot* as Negotiation costs; *TC_mon* as Monitoring costs. s represents the set of ten values discussed in the previous section: Benevolence, Universalism, Self-direction, Stimulation, Hedonism, Achievement, Power, Security, Conformity, Tradition. PV variables are indexed also on $i-1$ because the set of PV variables is different in each of the first six equations. Said in other terms, values are not meant to affect each of the FRLs at the same time since values are themselves somehow alternative to each other. To this extent, values in the first equation were: Benevolence, Universalism, Self-direction, Conformity, Security_val, and Tradition; in the second one were: Self-direction, Universalism, and Hedonism; in the third one were: Hedonism and Power; in the fourth one: Hedonism, Achievement, and Stimulation; in the fifth one was: Hedonism; and in the sixth was Self-direction. The choice of considering differentiated values in the FRLs equations is justified by the theoretical considerations expressed in section 2; that make more likely to have some values influencing a certain FRL and not others. In more technical terms, the full set of instrumental variables were not used in each equation but differentiated ones. $u_{o,i}$ are the structural disturbances. An Instrumental Variable (IV) estimator was implemented. IVs are used when the fundamental assumption of consistency of least squares estimators is violated, i.e., $E(u|x) \neq 0$. IV estimators provide, instead, a consistent estimator under the assumption that valid and sound instruments exist. In our case, PVs (represented by the variable s), were used as instruments and are correlated with the regressors x that satisfy $E(u|s) = 0$.

When a model specifies structural equations for all endogenous variables, as we did in this study, there are few possible IV estimation procedures. In this case we compared three-stage least square (3SLS) with robust standard errors, and iterative Generalized Method of Moments (i-GMM) with bootstrap standard error computation. IV are the ten portrait values, resulting in an over identified system of equations.

In table 3 estimation results are reported. Among the two procedures implemented, the 3SLS performed better in terms of coefficient significance and overall model consistency⁶.

Tab. 3 – Estimation results

Variable	Coefficients		Variable	Coefficients			
	3SLS	i-GMM		3SLS	i-GMM		
<i>y_{o,1}: f_frl1 - Desired higher order product attributes</i>			<i>y_{o,2}: f_frl2 - Modern consumer</i>				
Benevolence	0.097 *	0.111 *	Selfdirection	0.121 *	0.091		
Universalism	-0.123 *	-0.135 **	Universalism	0.256 ***	0.285 ***		
Selfdirection	-0.083 *	-0.069	Hedonism	-0.208 ***	-0.207 ***		
Conformity	-0.083 *	-0.083 *	TC_inf	0.087 *	0.089 **		
Security_val	0.097 **	0.078	TC_negot	0.166 **	0.166 **		
Tradition	-0.018	-0.040	TC_mon	0.006	0.004		
TC_inf	0.204 ***	0.201 ***	age	-0.009 **	-0.009 **		
TC_negot	0.104 *	0.102	sex	-0.202 *	-0.200		
TC_mon	0.244 ***	0.243 ***	job_type	0.005	0.005		
age	0.002	0.002	education	-0.123 *	-0.121 **		
sex	-0.079	-0.075	income	0.000	0.000		
job_type	-0.028	-0.027	nat_food	-0.005 **	-0.005 **		
education	-0.028	-0.029	constant	-0.434	-0.462		
income	0.000	0.000 *					
nat_food	0.010 ***	0.011 ***					
constant	-2.702 ***	-2.620 ***					
Variables name		Coefficients		Variables name		Coefficients	
		3SLS	i-GMM			3SLS	i-GMM
<i>y_{o,3}: f_frl3 - Open-mindedness</i>				<i>y_{o,4}: f_frl4 - Emotional involvement</i>			
Hedonism	-0.155 ***	-0.138 ***	Hedonism	0.079	0.085		
Power	0.182 ***	0.152 ***	Achievment	-0.150 ***	-0.158 **		
TC_inf	-0.007	-0.006	Stimulation	0.019	0.014		
TC_negot	0.066	0.060	TC_inf	0.092 *	0.093 *		
TC_mon	0.016	0.023	TC_negot	-0.035	-0.037		
age	-0.004	-0.004	TC_mon	0.189 ***	0.190 ***		
sex	-0.025	-0.030	age	0.003	0.003		
job_type	0.084 ***	0.086 ***	sex	-0.078	-0.079		
education	0.171 ***	0.175 ***	job_type	0.014	0.014		
income	0.000	0.000	education	-0.141 **	-0.141 **		
nat_food	0.006 ***	0.007 ***	income	0.000 ***	0.000 ***		
constant	-1.492 ***	-1.453 ***	nat_food	0.001	0.001		
			constant	-0.438	-0.432		

⁶ Details on estimation procedure and post-estimation testing are available upon request. Models were programmed and ran in STATA ver 11.

Tab. 3 – Estimation results (*cont.*)

Variables name	Coefficients		Variables name	Coefficients	
	3SLS	i-GMM		3SLS	i-GMM
<i>y</i> _{0,5} : f_fr15 - Rational shopping			<i>y</i> _{0,6} : f_fr16 - Shopping script		
Hedonism	-0.067 *	-0.071	Selfdirection	0.109 **	0.105 **
TC_inf	0.198 ***	0.198 ***	TC_inf	0.089	0.089
TC_negot	-0.100	-0.100 *	TC_negot	0.230 ***	0.230 ***
TC_mon	0.243 ***	0.243 ***	TC_mon	-0.182 **	-0.183 ***
age	-0.009 **	-0.009 **	age	0.009 *	0.009 **
sex	0.159	0.159	sex	0.010	0.011
job_type	-0.009	-0.009	job_type	0.001	0.001
education	0.156 **	0.156 ***	education	0.020	0.020
income	0.000	0.000	income	0.000	0.000
nat_food	-0.011 ***	-0.011 ***	nat_food	-0.002	-0.002
constant	-1.514 ***	-1.507 ***	constant	-1.065 ***	-1.054 ***

Variables name	Coefficients	
	3SLS	i-GMM
<i>y</i> _{0,7} : Motivation to participation to GAS		
f_fr11: Desired higher order product attributes	-0.214	-0.232
f_fr12: Modern consumer	-0.235 ***	-0.173 *
f_fr13: Open-mindedness	0.156	0.034
f_fr14: Emotional involvement	-0.376 ***	-0.332 *
f_fr15: Rational shopping	0.564 **	0.427 *
f_fr16: Shopping script	0.415 **	0.181
TC_inf	-0.040	0.004
TC_negot	0.044	0.079
TC_mon	0.029	0.022
age	0.010 **	0.011 ***
sex	-0.205 *	-0.172 **
job_type	0.002	0.011
education	-0.094	-0.027
income	0.000	0.000
nat_food	0.015 ***	0.014 ***
constant	-0.127	-0.757

legend: * $p < .1$; ** $p < .05$; *** $p < .01$

Participation in GAS (FCN) was explicitly modeled in equation 7. Starting from the endogenous variables of the system, results show that 4 of 6 food related lifestyles directly explain motivation for joining a GAS. They are f_fr12 (Modern Consumer: -0.235), f_fr14 (Emotional Involvement: -0.37), f_fr15 (Rational Shopping: 0.564), and f_fr16 (Shopping Script: 0.415).

Taking into account coefficient signs it can be possible to profile individuals' motivations. A Modern Consumer, as previously defined, is one keen on convenience food. The negative sign seems to suggest that participants have a more developed attitude through a reflexive type of food related lifestyle influenced by values enhanced by self-direction and universalism (coefficients in

equation 2 respectively 0.121 and 0.256) with a negative influence of personal hedonism (-0.208 in equation 2). However, the negative sign of Emotional Involvement suggests that decision of participation is not an emotional task, and it is indirectly correlated with Self-enhancement values such as Achievement (-0.150 in equation 3). The rationality of the motivations in joining a GAS is also confirmed by the positive signs of the coefficients of Rational Shopping and Shopping Script FRLs. This result lines up with GASs organization (Cembalo *et al.*, 2011). Participants must choose products among a list of goods available weekly. They are called to do that four days in advance before the pick-up day. Value influencing Rational Shopping attitude is Hedonism (negatively correlated: -0.067 in equation 5), while the Self-direction value influences Shopping Script (0.109 in equation 6). The negative sign of Hedonism coefficient in equation 5 seems to confirm that the Self-enhancement dimension comes into consideration but negatively influences food related lifestyles.

On the other hand, the positive sign of Self-direction in equation 6 confirms the presence of a value dimension related to Openness to Change.

Information, negotiation and monitoring transaction costs do not affect participation directly, but they indirectly affect participation through attitudes. When Transaction costs variables are statistically significant, coefficient signs are positive (the only exception is for monitoring costs in equation 6). Transaction costs seems to have a crucial role in most of the food related lifestyles, namely: information costs in equations 1, 2, 4, and 5; negotiation costs in equations 1, 2, and 6; monitoring costs in equation 1, 4, 5, and 6 (the latter with a negative sign).

The last three exogenous variables affecting participation are socio-demographic. Positive coefficient of Age (0.010) shows that more mature consumers are more likely to take part in a GAS. Negative coefficient related to gender (Sex: -0.205) shows that females are more likely to be motivated to join a FCN (GAS). Finally, the higher the percentage of natural food expense on total food expenditure the higher the probability of being motivated to join a GAS.

Higher-order product and Open mindedness attributes do not affect participation even though they both play a role in the system of equation throughout the error terms.

6. Concluding remarks

The aim of this study was to investigate how, and to what extent, values, food related lifestyles, and transaction costs relate with consumers' participation in a peculiar form of alternative food chain that we defined as a food community network. In order to test the hypothesis of a link between those variables and participation in an FCN, we conducted an investigation of an Italian fast-spreading type of community network: Solidarity Purchase Group (GAS). A GAS shows all the characteristics of an FCN and represents a good example of consumers' participation with strong ethical and environmental motivations. 303 individuals were interviewed in Palermo (Sicily): 103 GAS participants, and 200 non-GAS participants, as a counterfactual sample. Values, food related lifestyles, transaction costs and socio-demographic variables were collected (from Jan to Feb 2012) and implemented in a simultaneous system of equations model solved by means of 3SLS and iGMM.

One of the results of this research was to confirm the existence of a hierarchical system of relations. Such relations constitute the consumer's motivational system. The interpretative key adopted is that of which is proposed by the cognitivist psychology, and widely accepted today: behavior, attitude and values express conceptual dimensions that move toward an increasing degree of abstraction and that are related by a complex net of relations. In the case study of this paper, instead of collecting attitudes through a specific (*ad-hoc*) scale (or questionnaire), food related lifestyles, first proposed by Grunert (Brunsø and Grunert, 1995), were used. Authors define FRL as systems of cognitive structures that relate the perception of concrete attributes to abstract personal values. From this

point of view, FRLs play the role of a “zipper” between the extremes of a motivational system, and synthesize the effects of many of the so called moderator variables that underlie relations between values and consumption behavior. Results confirm that strong relations exist between the set of values proposed by Schwartz and the FRLs. FRL’s factorial scores also show, and determine, final consumers’ behavior represented by the probability of joining a GAS. This result confirms, though indirectly, the chain of relations among values, attitudes, and behavior.

Results show, moreover, that different factors affect participation. The choice to participate in a GAS is not dictated by ideological, emotional or political nature. In fact, FRLs imply statistically significant utilitarian and rational behaviors (Rational Shopping and Shopping List are both showing a positive sign; Emotional involvement with a negative coefficient).

A possible profile of a “traditional” consumer seems to be with respect to the way he/she lives the “food experience” (suggested by the negative sign of Modern consumer FRL). Being traditionalist implies a certain degree of distance from concepts such as convenience and destructed meals (snack vs meal). This is evident with the positive attitude toward the natural that can be read as aversion to technology and “the modern”.

A GAS member seems to be practical, looking at the price criterion and better taste of the products. She/he programs in advance the grocery and, therefore does not mind that the GAS organization imposes GAS members to choose their weekly products at least four days in advance.

Transaction costs do not affect participation directly but they do throughout food related lifestyles. Information, negotiation and monitoring costs, when statistically significant, show always a positive sign, except for monitoring costs in the “shopping script” equation. This result seems to affirm that TCs are relevant, and in the same way, for all kind of food related lifestyles. However, more must be done in this particular field to better understand in which way, and to what extent, TCs influence consumer behavior.

The very last thing to point out concerns the modeling approach. 3SLS and iGMM procedures give the same results in terms of estimated coefficients signs, and almost the same number of significant coefficients. This seems to confirm, though indirectly, that the modeling approach chosen is suitable for this kind of study. However, 3SLS revealed a better overall fit with more reliable results.

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