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ALTERNATIVE FOOD NETWORKS AND LOCAL MARKETS: DETERMINANTS OF CONSUMERS' CHOICES BETWEEN CONVENTIONAL AND FARMERS' STANDS

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Alternative food networks and local markets: determinants of consumers' choices between conventional and farmers' stands*

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Summary

Direct purchases are a widespread and important typology of the so-called Alternative Food Networks. Within this channel, farmers' markets represent a popular and deeply investigated farmer-to-consumer market segment. While farmers' markets are a quite recent initiatives, it is traditional to find in many towns in Italy both conventional stands and farmers' stands selling fruit and vegetables in the same district market. We therefore analyse the behavioural characteristics of local market consumers choosing to purchase from farmers in order to point out the determinants of their choice.

The consumers' preferences were assessed through an in-person survey. Data were collected interviewing consumers in open-air markets in Torino, Cuneo, Alessandria and Asti, four cities in Piedmont Region (Italy) where farmers sell their products. The determinants of the choice to buy from farm stands were analysed with a probit model using a final sample of 1,138 respondents. Explanatory variables comprise the consumers' general attitudes towards the purchase of food (importance given to convenience, price, quality and trust) and their personal characteristics. Also, other variables were added in order to highlight the possible role of markets and areas with distinctive characteristics.

The most important factor affecting consumers' choice for farm stand is the quest for quality. Consumers with a strong interest in quality are significantly more likely to buy from farmers. Among the personal characteristics, being the household member in charge of buying fruits and vegetables, and education, are the main determinants of the choice of farmers' stands. On the contrary, the effects of variables such as income and job skill level are not clear enough,and seem to be open to different interpretations.

Keywords: Alternative Food Networks, direct purchase, consumers' choices

JEL Classification codes: (Times New Roman 10): D4, Q13

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1. INTRODUCTION

Direct purchases on-farm and at farmers' markets are important typologies of the so-called Alternative Food Networks. These practices are an alternative to traditional organisations of the agro-food chains that typically involve several operators between producers and consumers.

In the economic literature, the concept of Alternative Food Network is linked to the issue of the farmers' choice of the marketing channel 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 least issue.

The economic literature dealing with consumers' preferences generally focuses on the factors influencing the choice of purchasing from farmers' markets (FMs). Many studies provide insight into significant motivations and behavioural characteristics of 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, 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).

FMs are a widespread market facility in Italy. Supported by farmers' organisations, they are quite recent initiatives. Though, in many towns traditionally one could find both conventional stands and farmers' stands selling fruits and vegetables in the same district markets. Thus, local market consumers often face the choice of purchasing through farmer-to-consumer channels or conventional channels in the same market. It is therefore interesting to analyse the behavioural characteristics of local market consumers choosing to purchase from farm stands in order to point out the determinants of their choice. We therefore analyse the determinants of the choice to purchase from farmers in urban markets.

2. THEORETICAL AND METHODOLOGICAL APPROACH

Most of the research on consumers' behaviour is directed to understanding which characteristics of the relevant items that are purchased are of interest to consumers. Hence, along with the intrinsic characteristics of the goods, extrinsic characteristics have also been considered. The relevant literature on consumers' choice of purchasing goods at the farmers' markets is to a large extent linked to the analysis of the intrinsic (freshness, taste, healthiness) and extrinsic (interest for local food, direct contact with farmers, environmental sustainability, support for rural development processes etc.) characteristics of food purchased at the FMs. FMs are specialised places, where consumers can find exactly those goods possessing the specific extrinsic characteristics listed above. By contrast, it is of interest to ascertain which are the motivations for purchasing from farmers in places where consumers have the choice to buy either from farmers or from conventional vendors. In practise, consumers that go to FMs already decided to buy directly from farmers, while those who go to district markets did not necessarily decide so. In this sense, we are interested in the choice of the kind of vendor rather

than of a specific product. We hypothesize that this choice is influenced, along with socio-economic characteristics of consumers (such as gender, income, education, etc.) by some general attitudes towards the purchase of food. Some consumers might be more interested in the quality of food and, if they buy directly from farmers, it is presumably because they think their products are of a better quality. Others may be more concerned by what they spend, so that the choice between conventional and farmers vendors might be rather dictated by a comparison between prices. A third reason for choosing a particular vendor might be trust towards him/her concerning quality, taste, healthiness of what they sell, and on the time consistency of these characteristics; from this point of view, the choice of buying from farmers depends on whether consumers consider them more trustworthy than conventional vendors. Finally, for some consumers the main concern when shopping might be the convenience. In this case, the choice of buying from farmers can be influenced by the location of the farmers' stalls within the district market. We represented these different attitudes through the responses to general questions concerning the reasons for choosing the particular market where the interviews took place and for choosing their favourite stalls within the market.

In theoretical terms, this means that the utility the consumer obtains from the purchase of a specific good *g* does not only depend on its intrinsic characteristics C, but also on the frame under which it is sold (Vi, i = 1 for farmer, 2 for conventional vendor) which, in turn, depend on the consumer's attitudes towards the purchase of food (A) and personal characteristics (P).

$$U(g) = U[C, Vi(A,P)] \qquad [1]$$

Hence, the consumer will choose the farmer's stall if the difference between utilities $U[C, V_1(A,P)] - U[C, V_2(A,P)] > 0$.

For the empirical analysis, we assume a linear utility function for good *g*, with a random component. The utility for the purchase of good *g* is then:

$$U_1 = \alpha_0 + \alpha_1 C + \alpha_{21} A + \alpha_{31} P + \varepsilon_1 \quad [2]$$

$$U_2 = \alpha_0 + \alpha_1 C + \alpha_{22} A + \alpha_{32} P + \varepsilon_2 \quad [3]$$

That is, intrinsic characteristics of the good do not influence utility differently for either vendor, while attitudes and personal characteristics do. Calling F the dichotomous indicator of the choice to buy from the farmer (equal to 1 if the consumer buys from him/her, else 0), we have:

$$\text{Prob}(F=1) = \text{prob}(U_1 - U_2 > 0) = \text{prob}(\alpha_0 + \gamma_1 A + \gamma_2 P + \mu > 0) \quad [4]$$

Where $\gamma_1 = \alpha_{21} - \alpha_{22}$, $\gamma_2 = \alpha_{31} - \alpha_{32}$, and $\mu = \varepsilon_1 - \varepsilon_2$.

Under the assumption that μ is distributed normally, the model is:

$$\text{Prob}(F=1) = \Phi(\alpha_0 + \gamma_1 A + \gamma_2 P)$$

where Φ is the normal c.d.f. The statistical model is therefore a probit, that can be estimated by maximum likelihood techniques.

3. DATA

The consumers' preferences for buying from farm stands in local markets were assessed through an in-person survey conducted from March to November 2014[1]. The data were collected interviewing consumers in open-air markets in Torino, Cuneo, Alessandria and Asti, four cities in Piedmont Region (Italy) where farmers sell their products.

[1] The study is part of a wider research aiming at providing a theoretical assessment and empirical tests of Alternative Food Networks from four disciplinary standpoints: economic, social, environmental and territorial. Within the research line concerning the district market distribution channel, a survey of consumers buying in those markets was performed using four questionnaire versions that kept in consideration the different disciplinary standpoints. The different questionnaires shared a common set of questions about consumers' attitudes and purchase habits, as well as personal characteristics. The whole dataset was therefore used as a source of information for the analysis of consumers' choices between conventional and farmers' stands.

In Torino, the regional capital of Piedmont, the sample was drawn with a two-stage random sampling methodology. The primary sampling units were the district markets in town where farmers sell their products, and markets were chosen randomly in strata defined on the basis of market size. In each market, consumers to be interviewed were also chosen at random. In total, 1,194 consumers sampled in 13 district markets in Torino were interviewed. 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, collecting 174 interviews.

The local markets' customers were asked whether they bought fruits and vegetables from farm stands or not. Their purchase habits and attitudes towards the purchase of food were investigated with reference to the choice criteria used to select the local market and the market stand for purchasing fruits and vegetables. Finally, the questionnaire asked some socio-demographic information on the respondent.

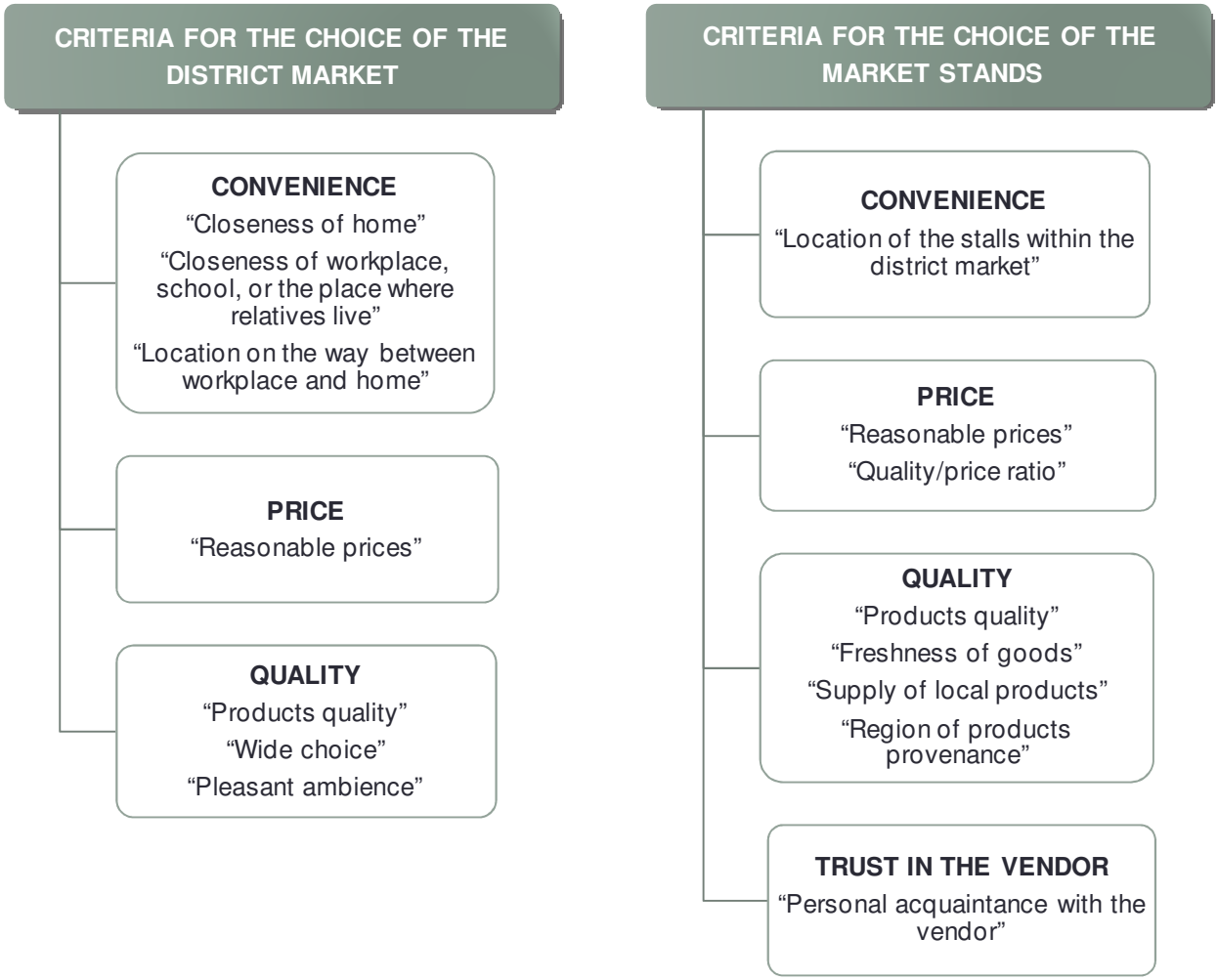
After dropping questionnaires with missing information, a final sub-sample of 1,138 questionnaires were employed to run the model.

The determinants of the choice to buy from farm stands were analysed with a probit model. As a dependent variable, a dummy variable equal to 1 for consumers buying fruits and vegetables from farmers' stands (0 otherwise) was created. The personal characteristics of the respondents and their attitudes entered into the model as explanatory variables.

The consumers' attitudes were assessed using the responses to questions about the criteria for the choice of the district market and for the choice of the market stands. The criteria were surveyed by using multiple answer questions that entered the model after being recoded into broader categories. To that end, the criteria for the choice of the district market were grouped into three main motivations: convenience, price and quality. Likewise, the

criteria for the choice of the market stands were clustered into four categories: convenience, price, quality and trust in the vendor (figure 1).

Figure 1. Coding of consumers' attitudes.



The socio-demographic characteristics included gender, age, education, household size, number of children under fourteen, years of residence, 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 was created transforming the

education level attained into 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 they were classified into high-, middle- and low-pensioners, in order 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 was represented by dummy variables of the different income brackets, using the lower income bracket asthe reference category.

Besides, two explanatory variables were added in order 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 products in a specific area of the market, and that therefore particularly attracts consumers interested in purchasing from farmers. The second was the market location in a provincial town (Cuneo, Alessandria or Asti). Consumers living outside the metropolitan area of Torino could have developed different attitudes and preferences towards the type of vendor, due to their better knowledge of rural areas and their familiarity with agricultural activities.

4. RESULTS

Table 1 shows the descriptive statistics of the variables included in the probit model.

Table 2 shows the results of the probit model for the choice of purchasing fruits and vegetables at the farmers' stands, as well as the marginal effects, which indicate the change in probability in the outcome due to a unit change of the explanatory variables. As usual, marginal effects are calculated at the mean values of the variables, or at their median, when they are dummies.

Starting with the consumer's attitudes, quality seems to play a central role in the preference for farmers' stands. Not surprisingly, the quest for quality is statistically highly significant, both when it was stated as a determinant of the choice for the local market and for the market stands. In terms of

marginal effects, if the choice of the local market is based on quality, the probability of buying from farmers is 9.5 percent higher. If the quest for quality drives the choice for the market stand, consumers are even 21.5 percent more likely to buy from farmers. This implies that consumers in general consider farmers' products as higher quality. The trust in the vendor is also important, even though at a lower significance level. In this case, if the trust in the vendor plays a role in consumers' choice for the market stand, the probability of buying from farmers increases by almost 8 percent. Unlike consumers influenced by quality and trust, consumers influenced by prices or convenience do not have a specific preference for farmers' stands (these variables are not statistically significant). Hence, prices do not seem to be relevant drivers of the choice of farmers' stands. The negative sign nevertheless suggests that consumers consider prices of farmers' stands as higher. Prices cannot be considered here as quality cues, since in the questionnaire wording, the interest for prices stated by the interviewees is referred to the quest of reasonable prices. Hence, consumers looking for cheap food are more likely to buy from conventional vendors where they can get lower prices.

Among the 13 surveyed district markets, Porta Palazzo is statistically highly significant. Probably due to the large number of farm stands and the diversified supply, people shopping in Porta Palazzo are 20.6 percent more likely to purchase from farmers. This market probably attracts a larger share of consumers who deliberately intend to buy from farmers. On the contrary, living in a provincial town and the closeness of rural environment have no significant effect on the preference for farmers' stands.

With regard to the respondents' personal characteristics, being the household member regularly in charge of purchasing fruit and vegetable is statistically highly significant. Those consumers are 24.2 percent more likely to buy from farmers' stands, maybe because of their better awareness of quality issues and acquaintance with the vendors. Also, consumers' choice is significantly positively influenced by education. Nevertheless, the marginal effect of the variable is weak, as every additional schooling year just increases the probability of buying from farmers' stands by 1 percent. As to gender, though the effect is only weakly significant, males are 5 percent more likely to purchase from farmers. The outcome about job skill level is not much clear. Setting unemployed and non-working people as the reference category, the parameter for low-skill job is significant and negative (about -20

percent). Likewise, the parameters of middle- and high-skill levels are negative (although not statistically significant), suggesting that people with a better job are less likely to buy from farmers. Similar outcomes (negative and not, or weakly, significant parameters) were found for low-, middle- and high-pensioners. The outcome about household income seems open to different interpretations as well. None of the income brackets is statistically significant, showing that income does not seem to influence the consumers' preferences for the farmer-to-consumer channel. The low significance level of the variable might be due to the high variability of the income values within the income brackets[2].

5. CONCLUSIONS

We have analysed the choice to purchase from farmers in urban district markets with a probit model, based on a specific in-person survey.

We hypothesised that the choice depended on personal socio-economic characteristics of the consumers and on their general attitudes towards the purchase of food (convenience, price, quality and trust). These attitudes were assessed through the responses to questions concerning the criteria for choosing the market and the specific stalls.

The results suggest that actually general attitudes do have a strong influence on the choice of farmers' stalls. The most important factors affecting consumers' choice for farm stand are the quest for quality and, secondly, the trust for the vendor. Personal characteristics seem to be less important, except for being the household member in charge of buying fruits and vegetables and education. Quite unexpectedly, and contrary to previous research focussed on farmers' markets, socio-economic characteristics like income and type of occupation do not seem to have relevant impacts on this choice. This issue would deserve a deeper investigation, which is outside the scope of this paper and is left to further research.

[2] We tried to run the model using imputed income values instead of stated ones. We estimated an income regression from data of Banca d'Italia (2015). Family income was regressed on personal and household characteristics for Northern Italy (8,151 observations) and the estimates were used to impute family income to the observations of our survey, including missing values for income, so we could employ 1,304 observations. Though, the imputed incomes matched very poorly the stated income brackets, and the imputed income variable was not significant. We therefore decided to stick to self-reported incomes. These estimates are available from the authors upon request.

REFERENCES

Abelló J.F, Palma M.A., Waller M.L., Anderson D.P. (2014), Evaluating the Factors Influencing the Number of Visits to Farmers' Markets, *Journal of Food Products Marketing*, 20:1, 17-35

Banca d'Italia, *Archivio storico dell'Indagine sui bilanci delle famiglie italiane, 1977-2012*, available at https://www.bancaditalia.it/statistiche/tematiche/indagini-famiglie-imprese/bilanci-famiglie/ accessed at 31/03/2015

Govindasamy R., Nayga R.M. (1997), Determinants of Farmer-to-Consumer Direct Market Visits by Type of Facility: A Logit Analysis, *Agricultural and Resource Economics Review*, 26, 31-38

Gumirakiza J.D., Curtis, K.R., Bosworth, R.C. (2014), Who Attends Farmers' Markets and Why? Understanding Consumers and their Motivations, *International Food and Agribusiness Management Review,* 17:2, 65-82

Jefferson-Moore K.Y., Robbins R.D., Johnson D. (2013), Consumer Choices for Organic and Local Food Products in North Carolina, *Journal of Food Distribution Research*, 44:1, 94-95

Minaker L.M., Raine K.D., Fisher P, Thompson M.E., Van Loon J., Frank L.D. (2014), Food Purchasing From Farmers' Markets and Community-Supported Agriculture Is Associated With Reduced Weight and Better Diets in a Population-Based Sample, *Journal of Hunger & Environmental Nutrition*, 9:4, 485-497

Neill C.L., Mitchell D.M., Williams, R.B. (2014), *A look at the variations in consumer preferences for farmers' markets attributes*, proceedings of the 2014 Annual Meeting of the Southern Agricultural Economics Association, February 1-4, 2014, Dallas, Texas, pp. 14

Onianwa O., Wheelock G., Mojica M. (2005), An Analysis of the Determinants of Farmer-to-Consumer Direct-Market Shoppers, *Journal of Food Distribution Research*,36:1, 130-134

Pascucci S., Cicatiello C., Franco S., Pancino B., Marino D. (2011), Back to the Future? Understanding Change in Food Habits of Farmers' Market Customers, *International Food and Agribusiness Management Review*, 14:4, 105-126

Rocchi B., Cavicchi A., Baldeschi M. (2010), *Consumers' attitude towards farmers' markets in Tuscany*, proceedings of the 116th International EAAE-SYAL Seminar, October 27-30, 2010, Parma, Italy, pp. 13

Thapaliya S., Interis, M.G., Collart, A.J., Walters, L., Morgan, K.L. (2015), *Health Motivation for Purchasing Local Foods in the Southeastern United States*, proceedings of the 2015 Annual Meeting of the Southern Agricultural Economics Association, January 31-February 3, 2015, Atlanta, Georgia, pp. 22

Table 1. Descriptive statistics of the variables.

Variables	Mean	Std.Dev.
District market – convenience (yes = 1)	0.654	0.476
District market – price (yes = 1)	0.214	0.410
District market – quality (yes = 1)	0.415	0.493
Market stand – convenience (yes = 1)	0.013	0.114
Market stand – price (yes = 1)	0.570	0.495
Market stand – quality (yes = 1)	0.703	0.457
Market stand – trust (yes = 1)	0.293	0.456
Porta Palazzo (yes = 1)	0.171	0.377
Provincial town (yes = 1)	0.121	0.327
Gender (male = 1)	0.399	0.490
Age (years)	51.744	17.899
Education (years of study)	14.367	4.044
Household size (number of other family members)	1.417	1.128
Children under fourteen (number)	1.421	0.630
Residence (years of residence)	35.183	23.011
Household member in charge of buying fruits/vegetables (yes = 1)	0.925	0.263
High-skill job (yes = 1)	0.074	0.262
Middle-skill job (yes = 1)	0.297	0.457
Low-skill job (yes = 1)	0.069	0.253
High-pensioner (yes = 1)	0.013	0.114
Middle-pensioner (yes = 1)	0.192	0.394
Low-pensioner (yes = 1)	0.120	0.326
Net household income 1,200-2,000 euro/month (yes = 1)	0.361	0.481
Net household income 2,000-3,000 euro/month (yes = 1)	0.216	0.412
Net household income > 3,000 euro/month (yes = 1)	0.092	0.290

Source: own elaboration

Table 2. Results of the probit models of the determinants of consumers' choicefor farmers' stands.

Variables	Coeff.[1]	Std. Err.	Marginal effect
Constant	-1.498***	0.373	
District market – convenience (yes = 1)	0.104	0.098	0.0336
District market – price (yes = 1)	-0.047	0.111	-0.0152
District market – quality (yes = 1)	0.301***	0.091	0.0945
Market stand – convenience (yes = 1)	0.083	0.390	0.0259
Market stand – price (yes = 1)	-0.035	0.093	-0.0113
Market stand – quality (yes = 1)	0.630***	0.095	0.2154
Market stand – trust (yes = 1)	0.255**	0.101	0.0786
Porta Palazzo (yes = 1)	0.793***	0.153	0.2060
Provincial town (yes = 1)	0.013	0.138	0.0043
Gender (male = 1)	0.154*	0.092	0.0489
Age (years)	0.007	0.004	0.0022
Education (years of study)	0.033**	0.013	0.0106
Household size (number of other family members)	-0.002	0.005	-0.0007
Children under fourteen (number)	0.000	0.000	-0.0000
Residence (years of residence)	-0.002	0.003	-0.0006
Household member in charge of buying fruits/vegetables (yes = 1)	0.662***	0.154	0.2418
High-skill job (yes = 1)	-0.257	0.200	-0.0877
Middle-skill job (yes = 1)	-0.019	0.130	-0.0062
Low-skill job (yes = 1)	-0.549***	0.176	-0.1980
High-pensioner (yes = 1)	-0.632*	0.379	-0.2335
Middle-pensioner (yes = 1)	-0.272*	0.160	-0.0917
Low-pensioner (yes = 1)	-0.180	0.176	-0.0602
Net household income 1,200-2,000 euro/month (yes = 1)	0.109	0.107	0.0347
Net household income 2,000-3,000 euro/month (yes = 1)	-0.162	0.127	-0.0533
Net household income > 3,000 euro/month (yes = 1)	-0.242	0.167	-0.0824
Log-likelihood	-594.727		
Chi-squared	170.107		
(d.f.)	(25)		
N. Observations	1,138		

Source: own elaboration

[1] * P ≤ 0.10, ** P ≤ 0.05, *** P ≤ 0.01