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# Volunteer work and domain satisfactions: evidence from Italy

Damiano Fiorillo

*Department of Economic Studies, University of Napoli "Parthenope", Napoli, Italy*

## Abstract

**Purpose** – The purpose of this paper is to analyze the determinants of three domain satisfactions, focusing on volunteer work supplied in official non-profit service associations.

**Design/methodology/approach** – This paper uses the data from the Multiscopo Survey of Households (MSH) conducted by the Italian Central Statistical Office for the years 1993-1995-1998-2000 for empirical investigations with ordered probit and ordinary least square estimations. A statistical matching procedure to impute missing values on household income in MSH is also performed.

**Findings** – The paper finds that volunteering is positively correlated with satisfaction with leisure, with relationships and economic well-being. These findings are interpreted as an indication that the benefits gained from volunteering are a combination of intrinsic and extrinsic motivations as well as the production and consumption of relational goods. In addition, results for Italy confirm findings gathered from domain satisfaction studies for other Europe countries with some novel evidence.

**Originality/value** – Studies on domain satisfactions have received much less attention than happiness and life satisfaction. The paper contributes to the literature by carrying out the first assessment of the socio-economic determinants of domain satisfactions in Italy from an economic perspective and the first empirical analysis on the relationship between volunteering and domain satisfactions. Overall, the value-added of the study is two-fold. First, it isolates empirically the reasons by which unpaid labour supply may be associated with individual life satisfaction. Second, it validates the empirical results of the few previous studies on domain satisfactions for some European countries using cross sectional and longitudinal data.

**Keywords** Italy, Individual behaviour, Perception, Motivation (psychology), Volunteering, Domain satisfactions, Correlations, Intrinsic and extrinsic motivations, Relational goods, Statistical matching

**Paper type** Research paper

## 1. Introduction

In the last decade, economists have begun to consider measures of happiness as indicators of individual well-being and to study subjective well-being as a serious subject (Scoppa and Ponzo, 2008). One aspect of this approach is the consideration of what people say rather than what people effectively choose or decide[1]. Another aspect of this advance is that changes in the way that people feel could be captured by subjective responses on a variety of domain satisfactions (DS). DS relate to individual satisfaction

with different domains of life, such as financial, leisure, friendship and others. Satisfaction with life as a whole can be seen as an aggregate concept, which can be unfolded into its domain components[2].

The present paper extends these lines of research to analyse the determinants of DS, focusing on volunteer work supplied in official non-profit service associations. Using Italian data, the paper empirically investigates whether individuals who supply volunteer work are more satisfied with three DS – leisure, friends' relationships and their economic situation – than non-volunteers, i.e. three of the main constituents of general life satisfaction (Van Praag and Ferrer-i-Carbonell, 2008).

The paper contributes to the literature by carrying out the first assessment of the socio-economic determinants of DS in Italy from an economic perspective. Overall, the value-added of the present paper is two-fold. First, it isolates empirically the reasons by which unpaid labour supply may affect individual life satisfaction. Second, it validates the empirical results of previous studies for some European countries using cross-sectional and longitudinal data.

The paper concentrates on volunteer work because it constitutes one of the most important pro-social activities. Indeed, a growing share of unpaid labour supply characterises advanced economies, especially in the sectors related to education, health and social services. In Italy, in the late 1990s, the non-profit sector was 3.1 per cent of the whole economy, accounting for 2.3 per cent of total employment. Three million workers were employed in non-profit activities at zero wages, with about one-third in activities related to education, health and social services (Beraldo and Turati, 2007).

In the literature, empirical analysis about the impact of volunteering on subjective well-being has been carried out by Becchetti *et al.* (2008), Bruni and Stanca (2008) and Meier and Stutzer (2008). These papers use cross-section and panel data to show that unpaid work is positively correlated with subjective life satisfaction as a whole. Meier and Stutzer explain the positive association emphasizing the intrinsic and extrinsic motivations: people's well-being increases because individuals enjoy helping others *per se* and volunteer instrumentally in order to receive a by-product of unpaid work. Both Becchetti and colleagues and Bruni and Stanca lay emphasis on the relational goods theory, according to which individuals who consume more relational goods are more satisfied with their life than those who have fewer human relationships. Indeed, for most people the benefits from volunteering might be a combination of the above reasons:

- intrinsic motivation;
- extrinsic motivation; and
- relational goods.

The main aim of the present paper is to isolate the aspects of volunteering that are rewarding by means of DS. Put differently, if benefits from volunteer work are probably a combination of the aforesaid reasons, I will expect positive correlations among voluntary work and three DS: leisure, friends' relationships and the economic situation. These domains should be thought of as a micro-econometric test of:

- *Intrinsic motivation.* More unpaid labour supply should be positively associated with leisure satisfaction.
- *Production and consumption of relational goods.* More voluntary work should be positively correlated with satisfaction with friends' relationships.

- *Extrinsic motivation.* More voluntary labour should be positively associated with satisfaction with one's economic situation.

The present study uses the Multiscopo Survey of Households (MSH) conducted by the Italian Central Statistical Office (hereafter indicated as ISTAT), for the period 1993-2000. This large dataset is one of the best available for studying DS in a cross-section framework. Individuals are surveyed each year concerning various aspects of their life. In addition to questions regarding their individual characteristics, they are asked about their satisfaction in different areas of life and volunteer work they supplied. Nevertheless, the main drawback of this survey is that it does not collect information on household income. In order to overcome this limit, I merge MSH with the Bank of Italy's (1993-2000) Survey on Household Income and Wealth (hereafter indicated as SHIW) for the period 1993-2000, using a statistical matching method.

In accordance with the findings of previous studies on volunteering and happiness, empirical evidence showed that voluntary work is positively correlated with satisfaction with leisure, with relationships and economic situation. In line with the evidence for other European countries, household income is positively associated with the satisfaction with the economic situation while unemployment has an extremely negative impact upon economic well-being.

Results on some non-pecuniary aspects of life such as marital status, household size, presence of children, health status and frequency of meetings with friends, are remarkably similar to previous empirical investigations on DS using cross-sectional and longitudinal data.

Some findings confirm prior studies on happiness in Italy. Education strongly increases all DS (even when controlling for household income), but only for workers. Residents in southern regions are less satisfied with their leisure, friends' relationships and economic situation.

Other findings are novel or peculiar to Italy. Household income has a different impact on satisfaction with leisure and friends' relationships according to occupational status. Workers display lower leisure and friends' relationship well-being with a higher level of family income. The opposite occurs for non-workers. Moreover, satisfaction with leisure, friends' relationships and economic situation is higher for individuals who read newspapers every day and go to church at least once a week. Finally, the retired are the most satisfied with all domains of life.

The paper is structured as follows. Section 2 presents a short discussion about why people supply voluntary work and why volunteering might influence well-being, as well as the results of previous studies. Section 3 illustrates the hypothesis about the effect of volunteer work on DS. Section 4 discusses the dataset and the methodology used for empirical analysis as well as presenting descriptive statistics, while the results are shown in Section 5. Section 6 discusses the main findings of the analysis and Section 7 concludes.

## 2. Related literature
The literature on volunteering explains unpaid labour by focusing on two groups of motivational reasons (Hackl *et al.*, 2007; Meier and Stutzer, 2008). One group considers internal rewards due to intrinsic motivation[3] originating from helping others *per se*. Volunteers enjoy their work in itself and intrinsically benefit from the act

of volunteering (Deci, 1975; Frey, 1997; Andreoni, 1990). The knowledge of contributing to a good cause is internally self-rewarding. Empirical evidence may be found in Menchik and Weisbrod (1987), Vaillancourt (1994) and Day and Devlin (1996). This view was recently borne out by Cappellari *et al.* (2007), Carpenter and Meyers (2010), Bruno and Fiorillo (2011) and Fiorillo (2011).

The other group of motivations focuses on extrinsic rewards from voluntary work:

- *Volunteering can be undertaken as an investment in human capital.* Individuals engage in volunteer activities to raise future earnings on the labour market. This reason is supported empirically by Menchik and Weisbrod (1987), Vaillancourt (1994), Day and Devlin (1996, 1998), Hackl *et al.* (2007) and Fiorillo (2009a, b).

- *People can volunteer in order to invest in social networks.* Through engagement in unpaid work, social contacts evolve which can be valuable for getting employment. Employees, for example, may volunteer not only because they enjoy helping others, but also because they wish to signal their good traits and at the same time make valuable social contacts useful for their career.

However, individuals can supply unpaid work without the expectation of an extrinsic reward in the future but in order to enjoy social interactions. Hence, interest in personal interactions for gratification *per se* may be another motivation for voluntary labour.

The relational content of interpersonal interactions has recently entered the theoretical debate on social interactions under the label relational goods. The economic analysis of relational goods was first proposed by Gui (1987) in studying the structures of a communitarian economy and by Uhlaner (1989) in explaining participation in political elections. Relational goods are intangible outputs of a communicative and affective nature, produced through interactions (Gui, 2000, p. 153). They cannot be produced, consumed or acquired by a single individual, because they depend on the interaction with others and are enjoyed only if shared with others. Thus, a first key feature of relational goods is that identity matters (Bruni and Stanca, 2008). A second essential characteristic is that they acquire value through sincerity or genuineness – which is impossible to buy, so they can be generated as a product of some instrumental activity, but not by making contracts for their supply (Becchetti *et al.*, 2008). In the words of Nussbaum (2001), "it is the relationship itself that constitutes the good".

Volunteer work in non-profit associations is expected to be particularly propitious to the production and consumption of relational goods because it encourages face-to-face encounters, facilitates meetings between people who share similar values and objectives and that have a relationship of mutual trust. Thus, formal volunteer work increases the stock of social relations, creates new opportunities for meetings between individuals already connected and opens new interpersonal links (Gui, 2003). Prouteau and Wolff (2006, 2008) found empirically that a relational goods motivation explains voluntary work in non-profit associations.

Volunteering may affect individual's well-being through the intrinsic and extrinsic motivations as well as the production and consumption of relational goods:

(1) People's well-being increases because they enjoy helping others *per se*.

(2) People's well-being rises because they receive an extrinsic reward from volunteering.

(3) People's well-being rises because they produce and consume relational goods through unpaid labour.

With regard to (1), Meier and Stutzer (2008, p. 41) observe that the task of volunteering may increase people's self-determination and feelings of competence because "[...] intrinsic motivation involves people freely engaging in activities that they find interesting, that provide novelty and optimal challenge". In turn, self-determination and feelings of competence influence subjective well-being positively. Regarding (2), again Meier and Stutzer (2008, p. 42) underline that if volunteering is undertaken as a result of extrinsic motivations, the correlation between well-being would be due to expectations of higher earnings in the future. The authors use data from the German Socio-economic Panel (hereafter indicated as GSOEP) to show that regular labour supply increase people's utility, and those who put more emphasis on extrinsic than on intrinsic aims are less satisfied with life.

As regards (3), Bruni and Stanca (2008) put their empirical findings on volunteering as relational goods in the debate on the income-happiness paradox[4]. Using data from the World Value Survey, they find, on the one hand, that active participation in activities of a voluntary organization is positively and significantly associated with higher life satisfaction; on the other, active involvement in unions, political parties and professional voluntary associations is not significantly correlated to happiness. For the authors, these results indicate that the relational component of relational goods is particularly relevant to individual happiness, suggesting that the relational treadmill can provide an additional explanation to the income-happiness paradox. As a society becomes more affluent the effect of higher income on individual happiness tends to be offset by lower consumption of relational goods.

If less relationality leads to less happiness, the key question is why people consume ever fewer relational goods. One possible explanation comes from a study of Frey and Stutzer (2005) in which they stress that when people make decisions, they overvalue characteristics relating to consumption satisfying extrinsic desires (income and status) and underestimate the utility relating to consumption satisfying intrinsic needs (time spent with family, friends and on hobbies). Of course, relational goods fall in the second category of consumption. Other studies such as Antoci *et al.* (2005) and Bartolini (2006) point out the public goods nature of relational goods: the level of relationality can be low due to coordination failure in contributing to the supply of public goods.

Based on these theoretical analyses, i.e. the consumption of relational goods can be inefficiently low, Becchetti *et al.* (2008) test empirically the hypothesis that those individuals who consume more relational goods will be on average better off that those who have been less successful in solving the problems related to the production and consumption of relational goods. This hypothesis is close to the "fellow feelings" hypothesis of Adam Smith, rediscovered by Sugden (2002), according to which individuals' mutual awareness of a common sentiment is in itself a source of pleasure for them. Using GSOEP data the authors find that voluntary work is positively related to a higher level of self-declared happiness.

## 3. Voluntary work and DS: hypotheses

If volunteering affects individual's well-being through intrinsic motivation, extrinsic motivation and the production and consumption of relational goods, I would expect positive correlations among volunteer work and three DS: leisure, friends' relationships and economic situation.

Suppose that people use leisure time also for volunteering.

First, assume that unpaid work is an intrinsically motivated activity, that is one for which the reward is in the activity itself. This means that people do voluntary labour naturally and spontaneously because they feel free to follow their inner interests. In this case, I would expect more unpaid labour supply to be positively associated with leisure satisfaction.

Second, think of unpaid work as relational goods: it encourages face-to-face encounters, facilitates meetings among people who share similar values and objectives and opens new interpersonal links. In this case, I would expect more voluntary work to be positively associated with satisfaction with friends' relationships.

Finally, suppose that individuals engage in volunteer activities for getting employment or as prerequisite for certain positions in a private or a public firm or to raise future earnings on the labour market. In this case, I would expect more voluntary labour to be positively associated with satisfaction with one's economic situation.

On the basis of the above hypotheses in the next section I shall present the dataset for empirical analysis.

## 4. The sample description and empirical strategy

The dataset used in the present study is drawn from ISTAT's (1993-2001) *Indagine multiscopo sulle famiglie, aspetti della vita quotidiana* (literally, the Multipurpose Households Survey on Aspects of Everyday Life, hereafter referred to as MSH), a cross-sectional survey administered annually. ISTAT initiated its new series of MSH in 1993. Every year a representative sample of some 20,000 Italian households (60,000 individuals) is surveyed on key aspects of daily life and behaviour. Though MSH is annual, it is not a panel data. Among the mass of information provided, there are data on unpaid activities, on a wide range of DS as well as on socio-demographic characteristics.

However, the main drawback of this survey is that it does not collect information on household income. The Bank of Italy's SHIW contains detailed information on household members regarding income and wealth as well as socio-demographic characteristics. Hence, in order to overcome the lack of household income in MSH, I merge the above datasets using the statistical matching method. Data fusion provides a means of combining information from different sources into a single dataset. The aim of statistical matching is to match an individual of MSH with a similar individual of the SHIW according to some particular criteria, in order to collect relevant information from both surveys. Specifically, I impute household income of an individual from the SHIW to a similar individual from the MSH[5].

The paper draws from the period 1993 to 2000. The final dataset is constituted by pooling the waves conducted in 1993, 1995, 1998 and 2000 of MSH. The unit of analysis is all the individuals older than 14 years. After deleting observations with missing data on any of the variables used in the analysis, I analyse different sub-samples: working and non-working. The working sample consists of 87,803 respondents. The non-working sample includes inactive individuals as well as the unemployed. It comprises 115,928 respondents.

MSH asks respondents whether they have supplied unpaid activity during the past year in non-profit volunteer service associations. On the basis of the answer, I create a dummy for unpaid activity, Volunteering (official volunteer service associations), which takes the value of 1 for a positive response, 0 otherwise.

Table I displays the weighted frequency of volunteering. The distributions show that 9.51 per cent of Italian workers offer to volunteer in voluntary service associations while only 7.08 per cent of Italian non-workers volunteer. In both sub-samples, women tend to spend less time on voluntary work than male. Moreover, in the non-working sample, the older cohort (aged over 30) tends to spend less time on voluntary work than the younger cohort (30 and under). The opposite occurs in the working sample.

The Multiscopo dataset includes a fairly large number of DS measured with a question on a four-point scale: "Consider the last twelve months. Are you satisfied with the following domains of your life?". For the aim of this paper I consider the following areas of life: leisure, friends' relationships and economic situation. The responses are: "Very satisfied", "Quite satisfied", "Not very satisfied", "Not at all satisfied". I recode the answer on a scale from 1 to 4, with 1 being "Not at all satisfied" and 4 being "Very satisfied". In both samples, leisure satisfaction and economic situation satisfaction have a median of 3, while the 25- and 75-percentile are, 2 and 3, respectively. The median of friends' relationships satisfaction is 3 and the 25- and 75-percentile are 3 and 4.

The weighted trend of the three DS is shown in Table II.

Figures 1 and 2 show the relationship between voluntary work and DS for the pooled dataset. The descriptive statistics show that, on average, people who volunteer

|  | All | Men | Women | Age $\leq$ 30 | Age $>$ 30 |
|---|---|---|---|---|---|
| Workers | 9.51 | 9.77 | 9.06 | 8.68 | 9.75 |
| Non-workers | 7.08 | 7.45 | 6.87 | 9.61 | 6.07 |

Table I.
Volunteering: *Multiscopo*, 1993-2000 (average)

|  | 1993 | 1995 | 1998 | 2000 |
|---|---|---|---|---|
| *Workers* |  |  |  |  |
| Leisure | 2.65 | 2.65 | 2.67 | 2.70 |
| Friends' relationships | 3.20 | 3.20 | 3.12 | 3.15 |
| Economic situation | 2.49 | 2.56 | 2.55 | 2.66 |
| *Non-workers* |  |  |  |  |
| Leisure | 2.77 | 2.78 | 2.79 | 2.79 |
| Friends' relationships | 3.10 | 3.08 | 3.03 | 3.05 |
| Economic situation | 2.34 | 2.38 | 2.41 | 2.51 |

Table II.
DS across time (average)
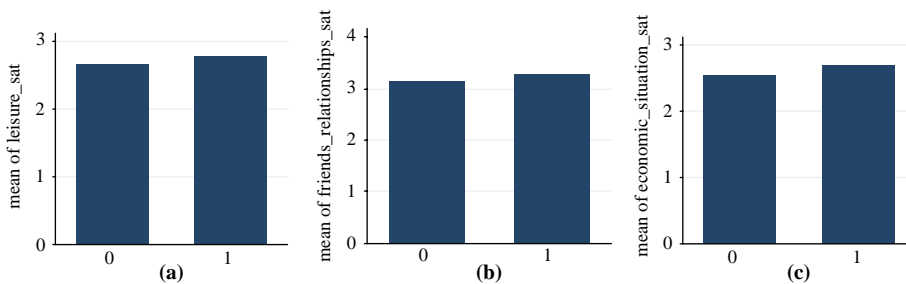


Figure 1.
Volunteering and DS: working sample

report the highest score of DS. For each domain of life, the difference is sizeable and statistically highly significant[6].

Following Demoussis and Giannakopoulos (2008), I investigate whether the three satisfaction measures are based on the same underlying construct by calculating the Cronbach's $\alpha$ value. The across-domain calculated Cronbach' $\alpha$ value is 0.48 for the working sample and 0.49 for the non-working sample, indicating that satisfaction responses are not based on the same latent background. In other words, the nexus that forms the individual's perception of economic satisfaction differs from the nexus that steers their response with regard to leisure satisfaction. These statistics indicate that the three domains need to be examined separately, i.e. independently of one another.

While the paper focuses on the role played by volunteer labour supply, it is by no means the only determinant of DS. Indeed, MSH provides detailed information on the demographic and social characteristics of all the individuals in a household. Many of these features have been found to be associated with life satisfaction as a whole as well as satisfaction in different areas of life[7]. Such determinants include: age, gender, marital status, household size, presence and age of children, educational level, household income, health status, occupational status, hours worked, religious activities, reading newspapers and housekeeping. These variables are used as control variables in the empirical investigation. The description is presented in the Appendix. Because the economic literature shows a link between interpersonal relationships with friends and well-being (Bruni and Stanca, 2008; Demoussis and Giannakopoulos, 2008; Powdthavee, 2008; Becchetti *et al.*, 2009), I also consider frequency of meetings with friends as a key control variable.

According to summary weighted statistics for all the variables used in the analysis (Table III), workers appear to have better quality in terms of human capital characteristics, i.e. more educated, younger and in very good health. Furthermore, they have more children aged up to 12, they live in larger-sized households, they read newspapers everyday and they meet friends once or more a week.

Table IV presents the correlations of some independent variables with the three subjective satisfaction responses. It is interesting to note that the correlation coefficients carry different signs and magnitude in the DS. These findings seem to reinforce the argument in favour of the separate treatment of the three domains of life.

As an empirical strategy, I follow Blanchflower and Oswald (2004) and assume that there exists a reported well-being function associated with a single area of life k:

$$r_k = h_k(u_k(v, y, z, t) + e_k \tag{1}$$
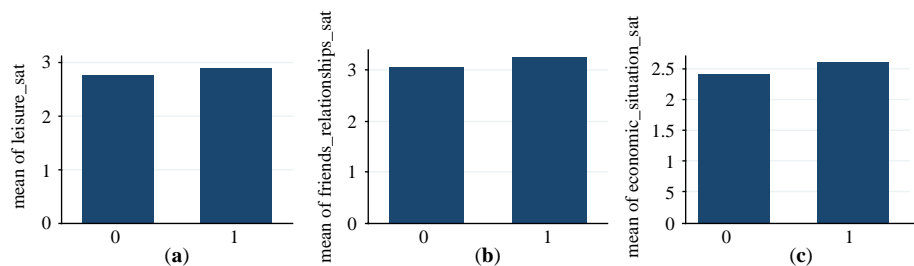
**Figure 2.**
Volunteering and DS: non-working sample

| Variable | Working Mean | SD | Non-working Mean | SD |
|---|---|---|---|---|
| *Domain satisfactions* | | | | |
| Leisure | 2.67 | 0.78 | 2.78 | 0.79 |
| Friends' relationships | 3.17 | 0.66 | 3.07 | 0.74 |
| Economic situation | 2.57 | 0.69 | 2.41 | 0.73 |
| Volunteering | 0.09 | 0.29 | 0.07 | 0.25 |
| *Demographic and socio-economic characteristics* | | | | |
| Female | 0.36 | 0.48 | 0.63 | 0.48 |
| Single, with partner | 0.01 | 0.09 | 0.00 | 0.06 |
| Married | 0.65 | 0.48 | 0.53 | 0.50 |
| Divorced | 0.05 | 0.21 | 0.02 | 0.14 |
| Widowed | 0.02 | 0.12 | 0.14 | 0.35 |
| Age31-40 | 0.30 | 0.46 | 0.08 | 0.27 |
| Age41-50 | 0.27 | 0.44 | 0.08 | 0.27 |
| Age51-65 | 0.17 | 0.37 | 0.24 | 0.42 |
| Age >65 | 0.01 | 0.10 | 0.31 | 0.46 |
| Family size | 3.35 | 1.20 | 3.10 | 1.37 |
| Children0_5 | 0.21 | 0.48 | 0.08 | 0.31 |
| Children6_12 | 0.26 | 0.54 | 0.13 | 0.40 |
| Children13_17 | 0.22 | 0.49 | 0.23 | 0.51 |
| Junior high school | 0.34 | 0.47 | 0.30 | 0.46 |
| High school (diploma) | 0.40 | 0.49 | 0.21 | 0.41 |
| Bachelor's degree | 0.11 | 0.32 | 0.03 | 0.17 |
| Working hours | 40.30 | 12.61 | | |
| Household income (ln) | 10.77 | 0.43 | 10.55 | 0.46 |
| Fair health | 0.13 | 0.34 | 0.22 | 0.42 |
| Good health | 0.30 | 0.46 | 0.27 | 0.44 |
| Very good health | 0.52 | 0.50 | 0.38 | 0.48 |
| Church attendance | 0.21 | 0.41 | 0.31 | 0.46 |
| Newspapers | 0.33 | 0.47 | 0.19 | 0.39 |
| Homeowner | 0.71 | 0.45 | 0.72 | 0.45 |
| Self-employed | 0.26 | 0.44 | | |
| Unemployed | | | 0.10 | 0.31 |
| Student | | | 0.17 | 0.37 |
| Disabled | | | 0.02 | 0.13 |
| Retired | | | 0.37 | 0.48 |
| *Frequency of meetings with friends* | | | | |
| Few times a year | 0.06 | 0.24 | 0.07 | 0.26 |
| Few times a month | 0.17 | 0.37 | 0.13 | 0.34 |
| Once or more a week | 0.55 | 0.50 | 0.41 | 0.49 |
| Everyday | 0.18 | 0.38 | 0.28 | 0.48 |
| Observations | 87,803 | | 115,928 | |

**Table III.**
Descriptive statistics

where $r$ denotes some self-reported number or level collected in the survey associated with a single DS k. The $u(\ldots)$ function is the respondent's true well-being associated with a single area of life k and is observable only to the interviewee; $h(\ldots)$ is a non-differentiable function relating actual to reported well-being for every DS k; $v$ represents voluntary work status; $y$ denotes income; $z$ is a set of socio-demographic and personal characteristics and $e$ is an error that subsumes the inability of human beings to communicate accurately their well-being levels associated with a single area of life k.

| Variable | Workers | | | Non-workers | | |
| --- | --- | --- | --- | --- | --- | --- |
| | Leisure | Friends' relationships | Economic situation | Leisure | Friends' relationships | Economic situation |
| Volunteering | 0.05* | 0.05* | 0.06* | 0.04* | 0.06* | 0.06* |
| Age31-40 | −0.06* | −0.02* | 0.02* | −0.06* | 0.01* | −0.05* |
| Age41-50 | 0.01* | 0.01 | 0.00 | −0.01* | 0.03* | −0.02* |
| Age51-65 | −0.00 | −0.02* | −0.03* | 0.04* | 0.01* | 0.02* |
| Age > 65 | 0.01 | −0.02* | 0.01* | 0.04* | −0.13* | 0.06* |
| Junior high school | −0.01 | −0.01 | −0.07* | −0.02* | 0.06* | −0.02* |
| High school (diploma) | 0.02* | 0.02* | 0.07* | 0.00 | 0.06* | 0.05* |
| Bachelor's degree | 0.01* | 0.01* | 0.10* | 0.02* | 0.02* | 0.05* |
| Household income (ln) | 0.03* | 0.02* | 0.19* | 0.06* | 0.11* | 0.25* |
| Fair health | −0.07* | −0.09* | −0.06* | −0.01* | −0.09* | −0.02* |
| Good health | −0.05* | −0.06* | 0.01* | −0.01 | 0.00 | 0.05* |
| Very good health | 0.11* | 0.14* | 0.06* | 0.07* | 0.19* | 0.02* |
| *Frequency of meetings with friends* | | | | | | |
| Few times a year | −0.05* | −0.08* | −0.02* | −0.04* | −0.10* | −0.01* |
| Few times a month | −0.07* | −0.06* | 0.00 | −0.03* | −0.03* | 0.01 |
| Once or more a week | 0.05* | 0.08* | 0.05* | 0.04* | 0.11* | 0.04* |
| Everyday | 0.06* | 0.07* | −0.02* | 0.07* | 0.15* | −0.00 |

**Note:** Coefficient is statistically significant at the *1 per cent level

**Table IV.**
Pairwise correlations: some independent variables and DS

The empirical counterpart of equation (1) is:

$$DS^*_{kit} = \alpha + \beta V_{kit} + \lambda Y_{kit} + Zk'_{kit}\delta + \varepsilon_{kit} \qquad (2)$$

where DS are the reported well-being associated with a single area of life k for individual *i* at time *t*; *V* is a dummy variable for volunteering; *Y* is the annual household income; the *Z* vector consists of the other variables that are known to influence well-being, including age, gender, marital status, household size, presence and age of children, education level, household income, health status, church attendance, home ownership, reading newspapers, occupational status, frequency of meetings with friends as well as region and year dummies; and $\varepsilon$ is a random-error term.

I do not observe $DS^*$ in the data. Rather, I observe *DS* as an ordinal variable, measured on a scale from 1 to 4. Thus, the structure of equation (2) makes it suitable for estimation as an ordered probit model for each DS k:

$$P(DS_{it} = J - 1) = \Phi(\mu_j - \alpha - \beta V_{it} - \lambda Y_{it} - Z'_{it}\delta) \\ - \Phi(\mu_{j-1} - \alpha - \beta V_{it} - \lambda Y_{it} - Z'_{it}\delta) \qquad (3)$$

where J takes a value from 1 to 4, $\mu_j$ is defined such that $DS = J - 1$ when $\mu_{j-1} < DS^* \leq \mu_j$ and $\Phi(\cdot)$ is the cumulative normal distribution[8].

## 5. Estimation results
Now I shall consider the estimates resulting from the DS equation (3).

### 5.1 Leisure satisfaction
Tables V and VI, columns 1-3, present the ordered probit estimations of equation (3), coefficients and standard errors, using leisure satisfaction as the dependent variable. In column 4, an ordinary least squares (hereafter indicated as OLS) which treats the DS scale as cardinal is estimated.

Prior to discussing the results associated with the measure of volunteering, I first consider the findings regarding socio-economic characteristics as control variables to compare them to those of previous studies using cross-sectional and longitudinal data.

Tables V and VI, column 3, show a gender effect: females enjoy their leisure less than males in the working sample. Family status does not appear to be an important determinant of leisure satisfaction. However, being divorced and widowed indicates worse leisure well-being, respectively, in working and non-working samples. In both samples, the presence of children aged 0-12 years has a negative effect on leisure satisfaction. On the other hand, having children between 13 and 17 has a positive effect. Living in extended families positively affects leisure well-being for workers whereas negatively for non-workers. Interestingly, similar results on female, divorced/widowed, children and family size can be found in previous studies on DS (Demoussis and Giannakopoulos, 2008; Van Praag et al., 2003).

The relationship between age dummies and leisure satisfaction is increasing (significant at the 1 per cent level in every dummy except for *Age31-40* variable). As a result, older people are more satisfied with their leisure. This finding is in agreement with Demoussis and Giannakopoulos (2008) and partially with Van Praag et al. (2003), who identified a U-shaped relationship between age and leisure satisfaction.

High school (diploma) education is positive and significant in the non-working sample while educational qualification displays a highly significant and positive influence on subjective leisure well-being in the working sample[9]. The positive effect emerges when controlling for household income, implying that the effect of education on leisure satisfaction is not simply determined by education being a proxy for earnings. Previous studies found mixed results. Van Praag et al. (2003) show that more education leads to less satisfaction with leisure, while Demoussis and Giannakopoulos (2008) find that this relationship is not statistically significant.

In the working sample, the number of working hours has a negative and highly significant correlation with leisure satisfaction as well as household income. I also use dummies for the quintiles of household income within which individuals lie (not reported). The reference category is composed of individuals who are in the third quintile of household income. Being below (above) the third quintile generates a positive (negative) and significant effect on leisure satisfaction. Thus, these results reflect lower leisure satisfaction associated with higher levels of family income.

Previous empirical evidence seems to be conflicting. Van Praag et al. (2003) and Powdthavee (2008) find household income is not a significant factor of satisfaction with leisure. By contrast, Demoussis and Giannakopoulos (2008) show that leisure

| | I Coefficient | SE | II Coefficient | SE | III Coefficient | SE | IV (OLS) Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| Volunteering | 0.120*** | 0.011 | 0.092*** | 0.011 | 0.082*** | 0.012 | 0.055*** | 0.008 |
| Female | −0.013* | 0.007 | 0.016*** | 0.007 | −0.030*** | 0.010 | −0.022*** | 0.007 |
| Single, with partner | | | | | −0.063 | 0.054 | −0.045 | 0.038 |
| Married | | | | | −0.018 | 0.013 | −0.013 | 0.009 |
| Divorced | | | | | −0.031** | 0.014 | −0.023** | 0.010 |
| Widowed | | | | | 0.011 | 0.029 | 0.007 | 0.020 |
| Age31-40 | −0.166*** | 0.013 | −0.098*** | 0.013 | 0.019 | 0.012 | 0.014 | 0.009 |
| Age41-50 | −0.046** | 0.018 | 0.044** | 0.018 | 0.092*** | 0.017 | 0.065*** | 0.012 |
| Age51-65 | −0.062*** | 0.020 | 0.041** | 0.021 | 0.117*** | 0.020 | 0.083*** | 0.014 |
| Age > 65 | −0.054 | 0.053 | 0.055 | 0.054 | 0.257*** | 0.058 | 0.181*** | 0.040 |
| Family size | | | | | 0.035*** | 0.005 | 0.024*** | 0.003 |
| Children0_5 | | | | | −0.213*** | 0.008 | −0.150*** | 0.006 |
| Children6_12 | | | | | −0.113*** | 0.009 | −0.079*** | 0.006 |
| Children13_17 | | | | | 0.022*** | 0.007 | 0.014** | 0.005 |
| Junior high school | | | | | 0.088*** | 0.011 | 0.061*** | 0.007 |
| High school (diploma) | | | | | 0.156*** | 0.022 | 0.109*** | 0.015 |
| Bachelor's degree | | | | | 0.204*** | 0.020 | 0.143*** | 0.013 |
| Working hours | | | | | −0.005*** | 0.000 | −0.003*** | 0.000 |
| Household income (ln) | | | | | −0.189*** | 0.017 | −0.132*** | 0.012 |
| Fair health | | | | | 0.002 | 0.023 | 0.002 | 0.017 |
| Good health | | | | | 0.135*** | 0.023 | 0.097*** | 0.016 |
| Very good health | | | | | 0.371*** | 0.025 | 0.259*** | 0.017 |
| Church attendance | | | | | 0.044*** | 0.012 | 0.031*** | 0.009 |
| Newspapers | | | | | 0.094*** | 0.007 | 0.065*** | 0.005 |
| Homeowner | | | | | 0.087*** | 0.011 | 0.061*** | 0.007 |
| Self-employed | | | | | −0.097*** | 0.012 | −0.068*** | 0.001 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.112*** | 0.023 | 0.118*** | 0.024 | 0.083*** | 0.017 |
| Few times a month | | | 0.210*** | 0.028 | 0.200*** | 0.025 | 0.141*** | 0.017 |
| Once or more a week | | | 0.428*** | 0.022 | 0.382*** | 0.021 | 0.269*** | 0.014 |
| Everyday | | | 0.550*** | 0.024 | 0.472*** | 0.025 | 0.330*** | 0.016 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 87,803 | | 87,803 | | 87,803 | | 87,803 | |
| Pseudo $R^2$ | 0.011 | | 0.018 | | 0.034 | | 0.077 | |
| Log-likelihood | −101,482.45 | | −100,779.04 | | −99,083.97 | | | |

**Notes:** Coefficient is statistically different from zero at the *10, **5 and ***1 per cent; the dependent variable leisure satisfaction takes discrete values and is based on a recoded self-declared leisure satisfaction (1 – not at all satisfied, 2 – not very satisfied, 3 – quite satisfied, 4 – very satisfied); the model is estimated with an ordered probit; regressors legend: see the Appendix; regional and year dummies are omitted from the table for reasons of space; the standard errors are corrected for heteroskedasticity and clustering of errors at the regional level; the estimated cut points are not reported

**Table V.**
Leisure satisfaction equations (ordered probit estimation: workers)

| | I Coefficient | SE | II Coefficient | SE | III Coefficient | SE | IV (OLS) Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| Volunteering | 0.129*** | 0.011 | 0.085*** | 0.011 | 0.058*** | 0.011 | 0.037*** | 0.007 |
| Female | −0.070*** | 0.008 | −0.015** | 0.007 | 0.010 | 0.008 | 0.007 | 0.005 |
| Single, with partner | | | | | 0.046 | 0.041 | 0.031 | 0.027 |
| Married | | | | | −0.003 | 0.014 | −0.001 | 0.010 |
| Divorced | | | | | −0.032 | 0.021 | −0.024 | 0.014 |
| Widowed | | | | | −0.042** | 0.017 | −0.029** | 0.012 |
| Age31-40 | −0.119*** | 0.012 | −0.026* | 0.014 | 0.026 | 0.022 | 0.019 | 0.016 |
| Age41-50 | 0.012 | 0.010 | 0.133*** | 0.011 | 0.100*** | 0.017 | 0.069*** | 0.012 |
| Age51-65 | 0.107*** | 0.018 | 0.240*** | 0.017 | 0.193*** | 0.019 | 0.134*** | 0.013 |
| Age > 65 | 0.107*** | 0.028 | 0.279*** | 0.025 | 0.265*** | 0.028 | 0.183*** | 0.020 |
| Family size | | | | | −0.065*** | 0.007 | −0.045*** | 0.005 |
| Children0_5 | | | | | −0.169*** | 0.015 | −0.122*** | 0.011 |
| Children6_12 | | | | | −0.077*** | 0.012 | −0.056*** | 0.009 |
| Children13_17 | | | | | 0.044*** | 0.010 | 0.029*** | 0.007 |
| Junior high school | | | | | 0.015* | 0.008 | 0.010 | 0.005 |
| High school (diploma) | | | | | 0.033*** | 0.010 | 0.022*** | 0.007 |
| Bachelor's degree | | | | | 0.029 | 0.021 | 0.019 | 0.014 |
| Household income (ln) | | | | | 0.036* | 0.022 | 0.025 | 0.015 |
| Fair health | | | | | 0.179*** | 0.016 | 0.132*** | 0.011 |
| Good health | | | | | 0.239*** | 0.019 | 0.174*** | 0.014 |
| Very good health | | | | | 0.472*** | 0.020 | 0.332*** | 0.014 |
| Church attendance | | | | | 0.036*** | 0.010 | 0.027*** | 0.006 |
| Newspapers | | | | | 0.100*** | 0.011 | 0.066*** | 0.007 |
| Homeowner | | | | | 0.000 | 0.016 | 0.002 | 0.010 |
| Unemployed | | | | | 0.020* | 0.012 | 0.014 | 0.009 |
| Student | | | | | −0.042*** | 0.015 | −0.028** | 0.011 |
| Disabled | | | | | −0.031 | 0.027 | −0.027 | 0.018 |
| Retired | | | | | 0.058*** | 0.011 | 0.040*** | 0.008 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.117*** | 0.13 | 0.102*** | 0.013 | 0.078*** | 0.010 |
| Few times a month | | | 0.250*** | 0.019 | 0.218*** | 0.017 | 0.160*** | 0.012 |
| Once or more a week | | | 0.426*** | 0.016 | 0.373*** | 0.015 | 0.268*** | 0.010 |
| Everyday | | | 0.579*** | 0.019 | 0.518*** | 0.018 | 0.365*** | 0.012 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 115,928 | | 115,928 | | 115,422 | | 115,422 | |
| Pseudo $R^2$ | 0.013 | | 0.023 | | 0.034 | | 0.077 | |
| Log-likelihood | −132,505.8 | | −131,233.88 | | −129,145.6 | | | |

**Note:** See notes Table V

**Table VI.**
Leisure satisfaction equations (ordered probit estimation: non-workers)

satisfaction is positively affected by permanent and transitory household income. In the non-working sample, household income does not seem a factor for leisure satisfaction, but the sign is positive.

Dummies of health status (good health and very good health) make a significant contribution to satisfaction with leisure in both samples: people who perceive their

subjective health as good and very good have a higher probability of being satisfied with leisure than individuals without such perceived subjective health. This result is in accordance with Demoussis and Giannakopoulos (2008). Moreover, leisure satisfaction is higher for individuals who read newspapers every day and go to church at least once a week, in both samples, and own their home outright, in the working sample.

Dummies for frequency of meetings with friends are highly positively correlated with leisure satisfaction. Columns 2 and 3 of Tables V and VI show a complete monotonicity. This result is in line with the findings of Powdthavee (2008).

Regarding occupational status, the self-employed have much less leisure satisfaction than employed workers, as well as students in the non-working sample. Being retired increases leisure satisfaction such as unemployed. However, this last finding is weakly significant.

The results in Table III (not reported) show that Italy has considerable geographical differences: the north-west regions present a positive and highly significant correlation with leisure satisfaction, whereas life satisfaction dramatically decreases in southern regions. Finally, year dummies (not reported) signal that for workers the perception of leisure well-being increased in 1998 and 2000.

Moving onto the relation between volunteer work and leisure satisfaction, adding dummy variables for gender, age, frequency of meetings with friends as additional controls (Tables V and VI, columns 1 and 2), volunteering in the activities of an official volunteer service association is positively and significantly associated with leisure satisfaction. Controlling for all socio-economic variables (column 3), volunteer work continues to be strongly positively correlated with leisure satisfaction. These results seem consistent with the hypothesis that volunteering is positively correlated with leisure satisfaction for the reason that individuals are intrinsically motivated.

The OLS regression in column 4 gives a very rough idea of the relative importance of covariates. Note that this is not quite correct statistically, as in the ordered probit model coefficients have a different interpretation. The estimates suggest that people who supply volunteer labour tend to report, respectively, in worker and non-worker samples, around 0.05 and 0.04 points more leisure satisfaction than those who do not offer unpaid work, *ceteris paribus*. The highest beta values are obtained for the dummies of frequency of meetings with friends (*everyday* and *once or more a week*) and for the dummy of very good health, in both samples. In the working sample, *bachelor's degree* and *household income* variables also score highly in the comparison of beta values.

### 5.2 Satisfaction with friends' relationships

Tables VII and VIII, columns 1-3, show the ordered probit estimations of equation (3) using satisfaction with friends' relationships as the dependent variable. Assuming cardinality of DS scores, OLS estimates are reported in column 4.

In both samples, gender has a significant impact on friends' relationships: females are more satisfied than males. Moreover, family status appears to be an important determinant. Being married and widowed indicates better relational well-being. As regards the presence of children, people with children aged 0-12 years are less satisfied with their relationships while the presence of children aged 13-17 years has a positive influence.

In the working sample, living in extended families negatively affects relational satisfaction. Furthermore, the age effect is an inverted U while the education impact is positive[10]. The significance of education when controlling for household income

| | I | | II | | III | | IV (OLS) | |
|---|---|---|---|---|---|---|---|---|
| | Coefficient | SE | Coefficient | SE | Coefficient | SE | Coefficient | SE |
| Volunteering | 0.153*** | 0.013 | 0.110*** | 0.014 | 0.102*** | 0.015 | 0.054*** | 0.007 |
| Female | 0.005 | 0.009 | 0.043*** | 0.009 | 0.062*** | 0.009 | 0.033*** | 0.005 |
| Single, with partner | | | | | 0.020 | 0.056 | 0.016 | 0.030 |
| Married | | | | | 0.157*** | 0.017 | 0.089*** | 0.009 |
| Divorced | | | | | 0.032* | 0.019 | 0.017 | 0.011 |
| Widowed | | | | | 0.097*** | 0.029 | 0.056*** | 0.017 |
| Age31-40 | −0.093*** | 0.010 | −0.007 | 0.011 | −0.050*** | 0.014 | −0.026*** | 0.007 |
| Age41-50 | −0.041*** | 0.012 | 0.079*** | 0.012 | −0.029** | 0.013 | −0.015** | 0.007 |
| Age51-65 | −0.096*** | 0.013 | 0.049*** | 0.012 | −0.022 | 0.014 | −0.012 | 0.008 |
| Age > 65 | −0.250*** | 0.062 | −0.089 | 0.060 | −0.095* | 0.054 | −0.058* | 0.032 |
| Family size | | | | | −0.012* | 0.006 | −0.006* | 0.003 |
| Children0_5 | | | | | −0.072*** | 0.012 | −0.041*** | 0.007 |
| Children6_12 | | | | | −0.038*** | 0.011 | −0.021*** | 0.006 |
| Children13_17 | | | | | 0.098*** | 0.009 | 0.052*** | 0.005 |
| Junior high school | | | | | 0.018* | 0.011 | 0.011*** | 0.006 |
| High school (diploma) | | | | | 0.041** | 0.017 | 0.024** | 0.009 |
| Bachelor's degree | | | | | 0.059** | 0.026 | 0.033** | 0.015 |
| Working hours | | | | | 0.001*** | 0.000 | 0.001** | 0.000 |
| Household income (ln) | | | | | −0.076*** | 0.024 | −0.040** | 0.014 |
| Fair health | | | | | 0.098*** | 0.035 | 0.068*** | 0.021 |
| Good health | | | | | 0.241*** | 0.029 | 0.153*** | 0.017 |
| Very good health | | | | | 0.523*** | 0.029 | 0.305*** | 0.016 |
| Church attendance | | | | | 0.071*** | 0.010 | 0.039*** | 0.006 |
| Newspapers | | | | | 0.102*** | 0.011 | 0.055*** | 0.005 |
| Homeowner | | | | | 0.067*** | 0.014 | 0.038*** | 0.008 |
| Self-employed | | | | | 0.004 | 0.012 | 0.002 | 0.006 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.380*** | 0.046 | 0.379*** | 0.045 | 0.262*** | 0.028 |
| Few times a month | | | 0.581*** | 0.041 | 0.575*** | 0.039 | 0.380*** | 0.024 |
| Once or more a week | | | 0.842*** | 0.042 | 0.832*** | 0.041 | 0.522*** | 0.025 |
| Everyday | | | 0.959*** | 0.053 | 0.974*** | 0.054 | 0.597*** | 0.032 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 87,803 | | 87,803 | | 87,803 | | 87,803 | |
| Pseudo $R^2$ | 0.01 | | 0.03 | | 0.043 | | 0.083 | |
| Log-likelihood | −84,326.13 | | −82,889.76 | | −81,415.43 | | | |

**Notes:** Coefficient is statistically different from zero at the *10, **5 and ***1 per cent; the dependent variable satisfaction with friends' relationships takes discrete values and is based on a recoded self-declared satisfaction with friends' relationships (1 – not at all satisfied, 2 – not very satisfied, 3 – quite satisfied, 4 – very satisfied); the model is estimated with an ordered probit; regressors legend: see the Appendix; regional and year dummies are omitted from the table for reasons of space; the standard errors are corrected for heteroskedasticity and clustering of errors at the regional level; the estimated cut points are not reported

| | I Coefficient | SE | II Coefficient | SE | III Coefficient | SE | IV (OLS) Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| Volunteering | 0.207*** | 0.014 | 0.119*** | 0.016 | 0.095*** | 0.014 | 0.051*** | 0.008 |
| Female | −0.036*** | 0.009 | 0.056*** | 0.007 | 0.070*** | 0.009 | 0.042*** | 0.005 |
| Single, with partner | | | | | 0.123 | 0.084 | 0.074 | 0.051 |
| Married | | | | | 0.182*** | 0.023 | 0.113*** | 0.015 |
| Divorced | | | | | 0.031 | 0.026 | 0.017 | 0.016 |
| Widowed | | | | | 0.140*** | 0.025 | 0.086*** | 0.016 |
| Age31-40 | −0.107*** | 0.015 | 0.036* | 0.019 | −0.029 | 0.022 | −0.020 | 0.012 |
| Age41-50 | −0.076*** | 0.016 | 0.123*** | 0.018 | −0.000 | 0.021 | −0.005 | 0.012 |
| Age51-65 | −0.167*** | 0.023 | 0.058*** | 0.018 | 0.009 | 0.018 | 0.001 | 0.011 |
| Age > 65 | −0.394*** | 0.045 | −0.084*** | 0.031 | −0.033 | 0.032 | −0.025 | 0.020 |
| Family size | | | | | −0.001 | 0.005 | 0.002 | 0.003 |
| Children0_5 | | | | | −0.052** | 0.019 | −0.030** | 0.011 |
| Children6_12 | | | | | −0.033*** | 0.012 | −0.019*** | 0.007 |
| Children13_17 | | | | | 0.079*** | 0.010 | 0.043*** | 0.006 |
| Junior high school | | | | | −0.012 | 0.012 | −0.009 | 0.007 |
| High school (diploma) | | | | | 0.019 | 0.016 | 0.009 | 0.010 |
| Bachelor's degree | | | | | 0.048** | 0.023 | 0.024* | 0.014 |
| Household income (ln) | | | | | 0.046** | 0.021 | 0.028** | 0.013 |
| Fair health | | | | | 0.223*** | 0.015 | 0.154*** | 0.010 |
| Good health | | | | | 0.322*** | 0.017 | 0.218*** | 0.012 |
| Very good health | | | | | 0.635*** | 0.021 | 0.394*** | 0.014 |
| Church attendance | | | | | 0.052*** | 0.007 | 0.032*** | 0.004 |
| Newspapers | | | | | 0.132*** | 0.010 | 0.075*** | 0.005 |
| Homeowner | | | | | 0.046*** | 0.016 | 0.031*** | 0.009 |
| Unemployed | | | | | −0.027 | 0.025 | −0.017 | 0.015 |
| Student | | | | | −0.007 | 0.022 | −0.005 | 0.013 |
| Disabled | | | | | −0.014 | 0.026 | −0.018 | 0.016 |
| Retired | | | | | 0.042** | 0.018 | 0.027** | 0.012 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.563*** | 0.029 | 0.540*** | 0.027 | 0.409*** | 0.019 |
| Few times a month | | | 0.868*** | 0.030 | 0.829*** | 0.028 | 0.594*** | 0.019 |
| Once or more a week | | | 1.112*** | 0.038 | 1.065*** | 0.036 | 0.734*** | 0.025 |
| Everyday | | | 1.312*** | 0.045 | 1.272*** | 0.045 | 0.849*** | 0.029 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 115,928 | | 115,928 | | 115,422 | | 115,422 | |
| Pseudo $R^2$ | 0.02 | | 0.06 | | 0.083 | | 0.18 | |
| Log-likelihood | −119,999.95 | | −114,724.22 | | −111,829.58 | | | |

**Table VIII.**
Satisfaction with friends' relationships equations (ordered probit estimation: non-workers)

**Note:** See notes Table VII

suggests that the benefit of education is not just in the contribution of human capital accumulation to income (returns to schooling). In the non-working sample, the age dummies are not statistically significant while only the *bachelor's degree* dummy is significant (5 per cent level). This last result indicates that only higher educated people are more satisfied with their friends' relationships.

The number of hours spent at work has a positive association while household income has a negative correlation, both statistically significant at the 1 per cent level. The former suggests that the workplace has a relational component, represented by social relations with colleagues and other workers; the latter implies that workers with more household income consume less friends' relationships[11]. In the non-working sample, household income is statistically significant (at the 5 per cent level) with positive sign. Thus, for non-workers, relational well-being increases with household income.

Health status is highly significant as well as church attendance, reading newspapers and owning one's home outright, in both samples. As expected, dummies for frequency of meetings with friends are strongly positively correlated with relational satisfaction. Columns 2 and 3 of Tables VII and VIII show complete monotonicity. These results are consistent with the evidence of Powdthavee (2008), and seem to support the "fellow feeling" hypothesis of Smith, tested by Becchetti *et al.* (2008) for general life satisfaction, according to which the intensity of relational ties, or of the experience lived with friends, enhances the value of relational goods.

Regarding occupational status, only being retired is statistically significant (at the 5 per cent level). Thus, people who are retired are more satisfied with their relationships. Findings (not reported) in Tables VII and VIII show that the north-west regions present positive and significant correlations with relational satisfaction, whereas such well-being considerably decreases in Southern regions. Finally, year dummies (not reported) indicate that relational well-being decreased in 1998 and 2000 for workers and non-workers.

Focusing on formal volunteering, Tables VII and VIII, columns 1 and 2, show a positive and statistically significant relationship between volunteer work in an official volunteer service association and relational satisfaction with only exogenous personal characteristics, i.e. gender, age dummies, dummies for frequency of meetings with friends as additional controls. The third column moves on to an ordered probit regression with full specification. With these control variables, dummies for voluntary work continue to be very robustly positively correlated with relational satisfaction. These results appear in line with the hypothesis that volunteering is positively correlated with satisfaction with friend's relationships because the identity and genuineness components of volunteering as a relational good are particularly relevant to such satisfaction.

In column 4, the OLS coefficients show that the highest beta values are obtained for the dummies of frequency of meetings with friends. The volunteer work dummy also scores highly. The estimates indicate that people who supply volunteer labour tend to score around 0.05 more points in relational satisfaction than those who do not offer unpaid work, *ceteris paribus*, in both samples. This is a relatively large coefficient after those on health status, marital status and newspaper dummies.

*5.3 Economic satisfaction*

The results of the ordered probit estimations of equation (3) for satisfaction with the economic situation are shown in Tables IX and X, columns 1-3. In column 4, an OLS which treats the DS scale as cardinal is estimated.

Table IX and X, columns 3, demonstrate that the gender effect does matter: females enjoy their economic situation less than males in the working sample and more than males in the non-working sample. Previous empirical evidence seems to be conflicting. Van Praag *et al.* (2003) find that females are more satisfied than males with their financial situation, contrasting with Hayo and Seifert (2003) who show that females report less economic satisfaction than males.

Family status also appears to be an important determinant of economic satisfaction. For workers, evidence shows a positive impact of the marriage dummy and a negative effect for *divorced*. These findings are in agreement with Demoussis and Giannakopoulos (2008). In the non-workers sample, economic well-being increases with single, with partner, marriage and widowed variables while it decreases with the status of divorced. Family size has a significantly negative effect on economic satisfaction in both samples, roughly in line with Van Praag *et al.* (2003) and Demoussis and Giannakopoulos (2008). Unlike previous studies, data show that the presence of children aged 0-5 (significant at 10 per cent level) and children aged 13-17 raises economic well-being.

In the working sample, age has a negative effect on economic well-being. Among non-workers, age has a negative effect but enters non-linearly. Thus, the effect is U-shaped for non-workers. This last result can be found in previous studies on economic well-being (Hayo and Seifert, 2003; Van Praag *et al.*, 2003; Demoussis and Giannakopoulos, 2008). The evidence on non-workers indicates that older people do not view their economic situation as bad after controlling for other effects.

Education displays a highly significant and positive correlation with economic well-being in the working sample. This is an effect in addition to the objective economic situation as captured by household income. Moreover, satisfaction with one's economic situation rises as working hours and household income (also in the non-working sample) increase[12]. Additionally, the presence of a second earner in the household has a significantly positive effect as well. The results on education and household income are in agreement with previous studies on economic well-being (Hayo and Seifert, 2003; Van Praag *et al.*, 2003; Demoussis and Giannakopoulos, 2008). In the non-working sample, it emerges that economic well-being decreases and then increases with education. People with no more than compulsory schooling (junior high school) are significantly less satisfied with their economic situation than people with low education (reference group), and university graduates are significantly more satisfied as well.

In both samples, health status and frequency of meetings with friends exert a positive highly significant influence on self-reported economic satisfaction. Demoussis and Giannakopoulos (2008) found remarkably similar results. Moreover, church attendance, reading newspapers and owning one's home outright are also strongly positively correlated with economic well-being.

Being self-employed reveals much more economic satisfaction than being an employee. The dummy for *unemployment* shows that the unemployed consider their economic situation as particularly bad. This is the strongest negative effect among the type of employment dummies (column 4). This result is in line with previous empirical

| | I Coefficient | SE | II Coefficient | SE | III Coefficient | SE | IV (OLS) Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| Volunteering | 0.161*** | 0.014 | 0.148*** | 0.014 | 0.066 | 0.013 | 0.032*** | 0.001 |
| Female | 0.042*** | 0.014 | 0.047*** | 0.015 | −0.014* | 0.008 | −0.010* | 0.005 |
| Single, with partner | | | | | 0.035 | 0.060 | 0.020 | 0.034 |
| Married | | | | | 0.201*** | 0.018 | 0.115*** | 0.010 |
| Divorced | | | | | −0.113*** | 0.020 | −0.071*** | 0.012 |
| Widowed | | | | | 0.052 | 0.035 | 0.024 | 0.021 |
| Age31-40 | 0.066*** | 0.013 | 0.077*** | 0.013 | −0.046*** | 0.010 | −0.025*** | 0.006 |
| Age41-50 | 0.035** | 0.014 | 0.055*** | 0.013 | −0.093*** | 0.015 | −0.052*** | 0.009 |
| Age51-65 | −0.035*** | 0.011 | −0.006 | 0.012 | −0.151*** | 0.015 | −0.085*** | 0.009 |
| Age > 65 | 0.163*** | 0.048 | 0.201*** | 0.047 | −0.057 | 0.049 | −0.029 | 0.027 |
| Family size | | | | | −0.107*** | 0.013 | −0.064*** | 0.008 |
| Children0_5 | | | | | 0.020* | 0.012 | 0.012 | 0.007 |
| Children6_12 | | | | | −0.004 | 0.012 | −0.002 | 0.007 |
| Children13_17 | | | | | 0.046*** | 0.012 | 0.025*** | 0.007 |
| Junior high school | | | | | 0.040*** | 0.002 | 0.029*** | 0.007 |
| High school | | | | | 0.160*** | 0.017 | 0.096*** | 0.010 |
| Bachelor's degree | | | | | 0.308*** | 0.023 | 0.171*** | 0.014 |
| Working hours | | | | | 0.002*** | 0.000 | 0.001 | 0.000 |
| Household income (ln) | | | | | 0.285*** | 0.037 | 0.168*** | 0.022 |
| Second earner in house | | | | | 0.089*** | 0.014 | 0.053*** | 0.008 |
| Fair health | | | | | 0.049*** | 0.015 | 0.036*** | 0.009 |
| Good health | | | | | 0.220*** | 0.020 | 0.139*** | 0.012 |
| Very good health | | | | | 0.338*** | 0.021 | 0.203*** | 0.013 |
| Church attendance | | | | | 0.120*** | 0.013 | 0.071*** | 0.007 |
| Newspapers | | | | | 0.134*** | 0.012 | 0.076*** | 0.007 |
| Homeowner | | | | | 0.121*** | 0.021 | 0.075*** | 0.012 |
| Self-employed | | | | | 0.030*** | 0.008 | 0.016*** | 0.005 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.153*** | 0.029 | 0.070*** | 0.028 | 0.045*** | 0.017 |
| Few times a month | | | 0.234*** | 0.027 | 0.131*** | 0.026 | 0.085*** | 0.016 |
| Once or more a week | | | 0.298*** | 0.025 | 0.199*** | 0.026 | 0.125*** | 0.016 |
| Everyday | | | 0.260*** | 0.027 | 0.222*** | 0.029 | 0.138*** | 0.017 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 87,803 | | 87,803 | | 87,297 | | 87,292 | |
| Pseudo $R^2$ | 0.020 | | 0.021 | | 0.049 | | 0.094 | |
| Log-likelihood | −86,828.18 | | −86,694.32 | | −83,727.09 | | | |

**Notes:** Coefficient is statistically different from zero at the *10, **5 and ***1 per cent; the dependent variable economic situation satisfaction takes discrete values and is based on a recoded self-declared economic situation satisfaction (1 – not at all satisfied, 2 – not very satisfied, 3 – quite satisfied, 4 – very satisfied); the model is estimated with an ordered probit; regressors legend: see the Appendix; regional and year dummies are omitted from the table for reasons of space; the standard errors are corrected for heteroskedasticity and clustering of errors at the regional level; the estimated cut points are not reported

**Table IX.**
Economic satisfaction
equations (ordered probit
estimation: workers)

| | I Coefficient | SE | II Coefficient | SE | III Coefficient | SE | IV (OLS) Coefficient | SE |
|---|---|---|---|---|---|---|---|---|
| Volunteering | 0.211*** | 0.024 | 0.186*** | 0.024 | 0.100*** | 0.022 | 0.054*** | 0.012 |
| Female | 0.042*** | 0.012 | 0.063*** | 0.013 | 0.047*** | 0.009 | 0.029*** | 0.005 |
| Single, with partner | | | | | 0.131** | 0.060 | 0.081** | 0.037 |
| Married | | | | | 0.150*** | 0.027 | 0.095*** | 0.017 |
| Divorced | | | | | −0.122*** | 0.038 | −0.077*** | 0.024 |
| Widowed | | | | | 0.079*** | 0.028 | 0.050*** | 0.017 |
| Age31-40 | −0.121*** | 0.015 | −0.092*** | 0.015 | −0.145*** | 0.020 | −0.091*** | 0.013 |
| Age41-50 | −0.062** | 0.016 | −0.019 | 0.014 | −0.184*** | 0.020 | −0.120*** | 0.012 |
| Age51-65 | −0.002 | 0.014 | 0.050*** | 0.014 | −0.183*** | 0.019 | −0.118*** | 0.012 |
| Age > 65 | 0.069*** | 0.026 | 0.149*** | 0.027 | −0.142*** | 0.021 | −0.091*** | 0.013 |
| Family size | | | | | −0.130*** | 0.013 | −0.080*** | 0.008 |
| Children0_5 | | | | | 0.019* | 0.011 | 0.010 | 0.006 |
| Children6_12 | | | | | 0.012 | 0.013 | 0.007 | 0.008 |
| Children13_17 | | | | | 0.050*** | 0.013 | 0.029*** | 0.008 |
| Junior high school | | | | | −0.045*** | 0.013 | −0.029*** | 0.007 |
| High school | | | | | 0.021 | 0.019 | 0.011 | 0.012 |
| Bachelor's degree | | | | | 0.079*** | 0.022 | 0.039** | 0.014 |
| Household income (ln) | | | | | 0.533*** | 0.030 | 0.327*** | 0.020 |
| Fair health | | | | | 0.184*** | 0.019 | 0.117*** | 0.012 |
| Good health | | | | | 0.313*** | 0.023 | 0.195*** | 0.014 |
| Very good health | | | | | 0.365*** | 0.033 | 0.221*** | 0.019 |
| Church attendance | | | | | 0.063*** | 0.008 | 0.040*** | 0.005 |
| Newspapers | | | | | 0.111*** | 0.009 | 0.064*** | 0.005 |
| Homeowner | | | | | 0.114*** | 0.014 | 0.074*** | 0.009 |
| Unemployed | | | | | −0.467*** | 0.030 | −0.299*** | 0.019 |
| Student | | | | | −0.023 | 0.023 | −0.015 | 0.014 |
| Disabled | | | | | −0.016 | 0.031 | −0.012 | 0.020 |
| Retired | | | | | 0.081*** | 0.015 | 0.052*** | 0.010 |
| *Frequency of meetings with friends* | | | | | | | | |
| Few times a year | | | 0.172*** | 0.021 | 0.110*** | 0.019 | 0.070*** | 0.012 |
| Few times a month | | | 0.253*** | 0.022 | 0.156*** | 0.019 | 0.099*** | 0.012 |
| Once or more a week | | | 0.322*** | 0.024 | 0.218*** | 0.019 | 0.139*** | 0.012 |
| Everyday | | | 0.342*** | 0.028 | 0.259*** | 0.023 | 0.162*** | 0.015 |
| Regional dummies | Yes | | Yes | | Yes | | Yes | |
| Year dummies | Yes | | Yes | | Yes | | Yes | |
| No. of observations | 115,928 | | 115,928 | | 115,422 | | 115,422 | |
| Pseudo $R^2$ | 0.032 | | 0.036 | | 0.070 | | 0.014 | |
| Log-likelihood | −120,235.78 | | −119,835.47 | | −115,066.51 | | | |

**Note:** See notes Table IX

Table X.
Economic satisfaction equations (ordered probit estimation: non-workers)

evidence on economic well-being (Hayo and Seifert, 2003; Demoussis and Giannakopoulos, 2008) and with the findings reported by many authors who point to unemployment as one of the main factors for unhappiness (Blanchflower and Oswald, 2004). Being retired indicates higher economic satisfaction.

Results in Tables IX and X (not reported) show that the north-east regions present a positive and significant correlation with economic satisfaction, whereas satisfaction with one's economic situation greatly decreases in the south. Finally, year dummies (not reported) signal that economic well-being increased in 2000 in both samples.

Focusing on the relation between volunteering and economic satisfaction, Tables IX and X, columns 1 and 2, explain a positive and statistically significant relationship between volunteer work in an official volunteer service association and economic satisfaction when we consider only a few exogenous personal characteristics, i.e. gender, age, frequency of meetings with friends dummies as additional controls. The ordered probit regression with full specification is shown in column 3. With all control variables, dummies for voluntary work continue to be robustly positively correlated with economic well-being. These results look consistent with the hypothesis that volunteering is positively associated with economic satisfaction because unpaid work may be extrinsically rewarding.

In column 4, the estimates suggest that people who supply volunteer labour tend to score, in samples of workers and non-workers, respectively, around 0.03 and 0.05 more points for economic satisfaction than those who do not offer unpaid work, *ceteris paribus*. In the working sample, the highest beta value was obtained for the *very good health* dummy (0.203). Other large values were computed for the *bachelor's degree* variable (0.171) and household income (0.168). In the non-working sample, the highest coefficient is shown for household income (0.327), followed by an *unemployment* dummy (−0.299) and a *very good health* variable (0.221).

## 6. Discussion

The paper presented empirical evidence from ISTAT's MSH on the relationship among volunteering and some DS. It found that volunteer labour supplied in official volunteer service associations is positively correlated with satisfaction with leisure, with relationships and economic situation.

It is arguable that the observed relationship between volunteer work and DS may be a spurious one. First, I cannot exclude the influence of omitted factors and it is not possible to control here for person-specific fixed effects. Nevertheless, the data are random cross-sections and the small amount of regression work on the determinants of DS that has been done on panel data finds similar results on individual characteristics to those documented here (Demoussis and Giannakopoulos, 2008; Van Praag *et al.*, 2003). Second, the data describe a correlation rather than cause-and-effect. This is an important problem, and in the generic sense it is common throughout applied economics as well as empirical studies on happiness. With data to hand I am unable to identify clear causal relationships in one direction or the other. It is reasonable to assume that causation goes in both directions, with more satisfied people supplying more volunteer work and with the time spent on unpaid activities fostering human well-being. Nevertheless, if we follow the general consensus according to which general satisfaction with life can be understood as the result of satisfaction in the single domains of life, our results on the relationship between volunteer work and DS are in agreement with previous empirical

analyses on the association between volunteering and happiness using cross-section and panel data (Becchetti *et al.*, 2008; Bruni and Stanca, 2008; Meier and Stutzer, 2008).

The correlation among voluntary labour and DS is explained according to the intrinsic and extrinsic motivations as well as the production and consumption of relational goods. First, volunteer work supply is positively associated with leisure satisfaction because volunteering is an intrinsically motivated activity. Empirical evidence proves that intrinsic motivation seems to be more important for workers than non-workers. Second, voluntary work is positively correlated with relational satisfaction because volunteering is a relational good. Findings show that the production and consumption of relational goods is equally important both for workers and non-workers. Finally, unpaid labour is positively related to economic satisfaction because volunteering is an extrinsically motivated activity. The results demonstrate that extrinsic motivation appears to be more important for non-workers than workers. However, I cannot exclude more explanations, although in the cross-section regressions I control for several individual characteristics such as church attendance and frequency of meetings with friends which are key variables in the literature on the determinants of volunteer work.

Household income also plays a key role but it has different impact on DS according to occupational status. For workers, family income displays negative effects on leisure and relational satisfaction while a positive one on economic satisfaction. For non-workers, household income shows a positive impact on all three domains of life. Indeed, with data to hand I cannot exclude that omitted variables and/or estimation problems in the imputation of household income through the statistical matching method could guide the results. However, the effect of household income on economic situation satisfaction, for both samples, is in line with previous empirical studies using panel data. In addition, an economic explanation suggests that for Italian workers household income does not buy leisure and friends' relationships satisfaction. To make an example, if an individual is forced to work to many hours, due to his professional duties, on one hand, he may have higher income, on the other hand, he may turn into a depressive mood and thus to be unsatisfied with his leisure and friends' relationships.

In both samples, empirical regularities in the determinants of DS are the following possessions in life: health status, frequency of social interaction with friends as well as reading newspapers and church attendance. Health status and frequency of social interaction with friends matter a lot for all DS. Similar results were also found in prior studies on DS and happiness (Borooah, 2006a, b; Bruni and Stanca, 2008; Demoussis and Giannakopoulos, 2008; Powdthavee, 2008; Becchetti *et al.*, 2009). The findings on newspaper reading habits and church attendance, to my knowledge, have no precedent in the literature on DS.

## 7. Conclusion

Determinants of DS have recently been studied for some advanced European countries, such as the UK, Germany and Greece, as well as for some Eastern European countries. This paper extended this line of research by investigating the determinants of three DS – leisure, relationships with friends and the economic situation – focusing on volunteer work supplied in official non-profit service associations. The study estimates micro-econometric DS equations for Italy using ISTAT's MSH for the period 1993-2000. The reported level of satisfaction with single life domains is considered an ordinal measure, with ordered probit estimations being carried out.

In spite of the inevitable methodological problems, empirical evidence shows that volunteer work supplied in official non-profit service associations is positively correlated with individual's DS. Regarding the first hypothesis, we found a positive highly significant correlation between volunteering and leisure satisfaction. Further, the study shows a sizable positive association of volunteer work on relational satisfaction. Finally, the third hypothesis regarding the positive correlation of unpaid labour on economic well-being is also confirmed.

Other econometric estimations for Italy confirm findings gathered from DS studies for other European countries with some novel results. First, household income considerably increases satisfaction with one's economic situation while unemployment is extremely detrimental to economic well-being. Second, family income has a different impact on satisfaction with leisure and relationships according to occupational status. Workers display lower well-being in leisure and friends' relationships with a higher level of family income. The opposite occurs for non-workers. Third, education strongly increases all DS, but only for workers. Fourth, residents in southern Italian regions are less satisfied with their leisure, relationships with friends and economic situation. Fifth, non-pecuniary aspects of life such as health status, frequency of meetings with friends as well as reading newspapers every day and going to church at least once a week have a positive influence on all DS. Further, being retired increases satisfaction with all domains of life, too. For workers, age exerts a positive effect on leisure satisfaction, a negative one on economic well-being and displays a inverted U on satisfaction with relationships. In the non-working sample, age positively influences leisure satisfaction and presents a U-shaped profile in economic well-being. Lastly, married people are more satisfied with their relationships and economic situation.

### Notes

1. For latest reviews of this literature, see Di Tella and MacCulloch (2006), Frey and Stutzer (2002) and Van Praag *et al.* (2003).

2. The literature on domains of life, outside economics, states that life can be approached as a general construct of many specific domains and that general satisfaction can be understood as the result of satisfaction in the domains of life. Consequently, a relationship between life satisfaction and DS is assumed. See Rojas (2006) for a review of this literature. In economics, few studies explore the relation of global happiness in different domains. Van Praag *et al.* (2003), Rojas (2006), Easterlin (2006) and Van Praag and Ferrer-i-Carbonell (2008) find a positive correlation between general satisfaction and DS (job, economic, financial, health, family, friendship, leisure and environment): the greater the satisfaction with each of these life situations, the greater is overall happiness.

3. According to cognitive social psychology "one is said to be intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself" (Deci, 1971, p. 105).

4. Easterlin (1974) opened up this debate with an important empirical finding. In 30 surveys over 25 years, per capita real income rose by more than 60 per cent, but the proportion of people who rated themselves as "very happy", "fairly happy" or "not too happy" remained almost unchanged.

5. For detailed information about how the statistical matching was performed, see Fiorillo (2008).

6. Mean differences are analysed using *t*-tests.

7. For a recent review of the economic literature on the factors associated with subjective well-being, see Dolan *et al.* (2008).

8. Following the existing literature, I interpret the reported level of satisfaction with each area of life as an ordinal measure, that is, higher levels reflect higher utility, but I do not assume that, for example, level 4 represents twice the utility of level 2.

9. I also use dummies for years of education rather than educational qualification. The results are similar (not reported).

10. I also use years of education rather than dummies for educational qualification. The results are similar (not reported).

11. Using dummies for the quintiles of household income within which individuals lie (not reported), the negative association between relational satisfaction and higher levels of family income is borne out.

12. I also use dummies for the quintiles of household income within which individuals lie (not reported). The reference category is composed of individuals who are in the third quintile of household income. Being below (above) the third quintile generates a negative (positive) and significant effect on leisure satisfaction. Thus, these results reflect higher economic satisfaction associated with higher levels of family income.

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| Variable | Description |
| --- | --- |
| Volunteering | Dummy 1, if unpaid activity for a social organization of volunteer service; 0 otherwise |
| *Demographic and socio-economic characteristics* | |
| Female | Dummy, 1 if female; 0 otherwise. Reference group: male |
| Single, with partner | Dummy, 1 if single with partner; 0 otherwise Reference group: single, no partner |
| Married | Dummy, 1 if married; 0 otherwise |
| Divorced | Dummy, 1 if divorced; 0 otherwise |
| Widowed | Dummy, 1 if widowed; 0 otherwise |
| Age31-40 | Dummy, 1 if age is between 31 and 40; 0 otherwise Reference group: age 14-30 |
| Age41-50 | Dummy, 1 if age is between 41 and 50; 0 otherwise |
| Age51-65 | Dummy, 1 if age is between 51 and 65; 0 otherwise |
| Age > 65 | Dummy, 1 if age is above 65; 0 otherwise |
| Family size | Number of people who live in the family |
| Children0_5 | Dummy, 1 if there are children aged between 0 and 5 years; 0 otherwise. Reference group: no children |
| Children6_12 | Dummy, 1 if there are children aged between 6 and 12 years; 0 otherwise |
| Children13_17 | Dummy, 1 if there are children aged between 13 and 17 years; 0 otherwise |
| Junior high school | Dummy, 1 if the respondent has completed junior high school education (8 years); 0 otherwise Reference group: no and low education (elementary school) |
| High school (diploma) | Dummy, 1 if the respondent has completed high school education (13 years); 0 otherwise |
| Bachelor's degree | Dummy, 1 if the respondent is educated to university level (18 years and more); 0 otherwise |
| Working hours | Weekly hours of paid work |
| Household income (ln) | Natural logarithm of imputed household income (sum of labour income, capital income and pensions) |
| Second earner in house | Dummy, 1 if there is more than one earner in the household; 0 otherwise |
| Fair health | Dummy, 1 if the respondent assesses his/her perceived health as fair; 0 otherwise. Reference group: poor health |
| Good health | Dummy, 1 if the respondent assesses his/her perceived health as good; 0 otherwise |
| Very good health | Dummy, 1 if the respondent assesses his/her perceived health as very good; 0 otherwise |
| Church attendance | Dummy, 1 if the respondent goes to church at least once a week; 0 otherwise |
| Newspapers | Dummy, 1 if the respondent reads newspapers every day of the week; 0 otherwise |
| Homeowner | Dummy, 1 if the respondent owns the house where he/she lives; 0 otherwise |
| Unemployed | Dummy, 1 if the respondent is unemployed; 0 otherwise. Reference group: others |
| Student | Dummy, 1 if the respondent is student; 0 otherwise |
| Retired | Dummy, 1 if the respondent is retired; 0 otherwise |
| Disabled | Dummy, 1 if the respondent is disabled; 0 otherwise |

(*continued*)

**Table AI.**
Variable definitions

| Variable | Description |
| --- | --- |
| Self-employed | Dummy, 1 if the respondent is self-employed, 0 otherwise. Reference group: employed |
| *Frequency of meetings with friends* | |
| Everyday | Dummy, 1 if the respondent meets friends everyday; 0 otherwise |
| Once or more a week | Dummy, 1 if the respondent meets friends one or more times a week; 0 otherwise |
| Few times a month | Dummy, 1 if the respondent meets friends a few times a month; 0 otherwise |
| Few times a year | Dummy, 1 if the respondent meets friends a few times a year; 0 otherwise Reference group: never |

**About the author**
Professor Damiano Fiorillo received his Laurea in Economics from the University of Salerno (Italy), MSc of Economics from the University of Roma "Tor Vergata" and his PhD in Public Economics, from the University of Salerno. Since June 2008 he has been Assistant Professor in Economics in the Department of Economics ("Salvatore Vinci") at University of Napoli "Parthenope". Research interests include: social capital, volunteer work, health economics, happiness and domain satisfactions, labour economics, household recycling and applied microeconometrics. His main publications are: "Do monetary rewards crowd out intrinsic motivation to volunteers? Some empirical evidence for Italian volunteers", *Annals of Public and Cooperative Economics*, 82 (forthcoming) (2011). "Volunteer labour supply: micro-econometric evidence from Italy", in Destefanis, S., Musella, M. (Eds), *Paid and Unpaid Labour in Social Utility Services*, ch. 9, pp. 165-181 (Heidelberg Physica Verlag, 2009). "Capitale sociale 'robusto': analisi macro, evidenza micro", *Rivista di Politica Economica*, 1, 149-178 (2009). "Offerta di attività gratuita in Italia: un'analisi micro-econometrica", *Rivista Internazionale di Scienze Sociali*, 117, 23-59 (2009). "Le determinanti del capitale sociale in Italia", *Rivista Italiana degli Economisti*, 13, 81-135 (2008). Damiano Fiorillo can be contacted at: damiano.fiorillo@uniparthenope.it