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Can Social Capital Affect Subjective Poverty in Europe? An Empirical Analysis Based on a Generalized Ordered Logit Model

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Abstract In a previous exploratory analysis of the 2009 EU-SILC survey and the Eurostat statistics database, the authors tried to reveal to what extent self-perceived poverty in Europe is associated with specific household socioeconomic characteristics and particular aspects of household/community social capital endowment, by means of a multiple correspondence analysis. Such an analysis has appeared to be a useful tool to disclose the primary risk factors of family poverty status and, in particular, it showed that self-perceived poverty (measured by the proxy variable "ability to make ends meet") is strongly associated not only with household socioeconomic characteristics, but also with the indicators commonly recognized as elementary proxies of household/community social capital endowment. The aim of the present paper is to capture the effect of social capital on household subjective poverty. More precisely, a generalized ordered logit model is estimated, in order to highlight to what extent: (a) self-perception of poverty in Europe is affected by the respondent/household socioeconomic characteristics and by household/community social capital endowment; (b) probabilities corresponding to response categories vary according to different levels of predictors; (c) differences among European countries in terms of self-perception of poverty may be related to different levels of social capital endowment. The results are very encouraging and confirm that social capital could be used by local and central governments as a further key function, in addition to the traditional socioeconomic ones for planning poverty reduction policies.

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1 Introduction

According to the most widely accepted definition suggested by the World Bank Social Capital Initiative Program research group, *social capital includes the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development* (Grootaert and van Bastelaer 2002). This definition synthesizes the different points of view expressed by Putnam et al. (1993), Coleman (1990), Olson (1982) and North (1990) and implies that living in a society characterized by model and cooperative behavior, and where trust replaces suspicion and fear, can have a systematic positive effect on individuals' perception of poverty as their socioeconomic vulnerability is reduced as well as the resources they need to deal with risk and to avert major losses (Helliwell 2001).

There is a growing empirical evidence that social capital contributes significantly to development outcomes (that is growth, equity and poverty alleviation). In particular, for researchers interested in economic development, social capital has great intuitive appeal as a resource available to poor people who are often described as *deficient* along other vectors such as, for example, human, physical, and financial capital (Grootaert and van Bastelaer 2001; Woolcock 2002). Since the seminal work of Putnam et al. (1993) on the role of social capital in explaining Italian regions economic success, interest in the relationships between social capital and poverty has been growing rapidly (Collier 1998; Grootaert 1999; Grootaert et al. 1999; Narayan 1999; Narayan and Pritchett 1999; Rose 1999; Maluccio et al. 2000; Woolcock and Narayan 2000; Tiepoh and Reimer 2004; Levesque 2005; Yusuf 2008; Roslan et al. 2010; Hassan and Birungi 2011; Christoforou and Davis 2014).

The mechanism through which social capital is said to reduce poverty can be summarized as follows:

1. at the micro level social ties and interpersonal trust facilitate the flow of technical information and knowledge that help to reduce economic transactions costs (Barr 2000) and ameliorate conventional resource constraint such as labour and credit market access (Coleman et al. 1966; Granovetter 1995; Fernandez et al. 2000), thus reducing the vulnerability of households to poverty (Knack 1999);
2. at the macro level social engagement and civic responsibility can also strengthen democratic governance (Almond and Verba 1963), a mix of norms and sanctions can control defection and dishonesty (Bebbington and Perreault 1999) and improve the efficiency and honesty of public administration (Putnam et al. 1993; Fukuyama 1995) as well as the quality of economic policies (Easterly and Levine 1997).

Moreover, social capital can be viewed as a form of asset embedded in social structures and relationships with a productive capacity that can be extended beyond generating economic returns to providing (but not always) useful benefits for attaining many other different goals (Knack and Keefer 1997); these goals may be, for example, human capital accumulation (Galor and Zeira 1993; Coleman 1988), social efficient outcomes such as

social cohesion (Reimer 2002; Green et al. 2003) and social capability (Abramovitz 1986; Abramovitz and David 1996).

The growing importance of social capital as a major determinant of economic well-being at micro and macro level has increased its implications in social policy as a tool to achieve better outcomes of traditional public policies aimed at poverty reduction. Indeed, since many years, both researchers and policy-makers have shown an increasing interest towards the subjective and multidimensional aspects of poverty (Goedhart et al. 1977; Van Praag et al. 1980; Sen 1982; Massoumi 1986; Case and Deaton 2002; Deutsch and Silber 2005; Van Praag and Ferrer-i-Carbonell 2006), arguing that poverty is not an objective status based exclusively on the level of income necessary to satisfy household needs but also depends on people's perceptions and feelings, on the resources that are essential for full participation/inclusion in society and on environmental aspects of people's lives (Van Praag et al. 2005; Tomlinson et al. 2007). Several empirical studies have shown how and to what extent in Europe self-perceived poverty[1] is associated with household size and type, individual and household socioeconomic characteristics (i.e. gender, age, employment status, education, tenure status, the area of residence), available household resources (Van Praag and Van der Sar 1988; Ravaillon and Lokshin 2002; Hayo and Seifert 2003; Stanovnik and Verbic 2004; Castilla 2010; Cracolici et al. 2011; Cracolici et al. 2012; Buttler 2013).

Limited attention has been, instead, devoted to the analysis of the relationships with household and community social capital endowment.

In a previous study (Guagnano et al. 2013), using Multiple Correspondence Analysis, the authors identified some significant patterns of relationships among a set of active variables describing, respectively, the respondent/household socio-economic characteristics and different forms of household/community social capital endowment. In particular, the analysis showed a relevant association in European countries between self-perceived poverty and the majority of the household/community social capital endowment proxy variables.

The subsequent objective, the aim of this paper, is to qualify this association and to assess how and to what extent the overall household/community social capital endowment and its most relevant components contribute to improve household perceived poverty. Such evidence has important policy implications as would help central and local governments to define those economic and social goals which should receive more attention by poverty reduction policies. In order to pursue this aim, a generalized ordered logit model (Mc Cullogh and Nelder 1989; Peterson and Harrel 1990; Fu 1998; Williams 2006) is carried out on data from the 2009 EU-SILC survey and Eurostat statistics database.

The paper is organized as follows: Sect. 2 describes the data and the methodology used, Sect. 3 presents the results and Sect. 4 provides some concluding remarks and future research lines.

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[1] Here the focus is on subjective poverty rather than on the wider concept of *happiness*, which extends beyond pure economic factors and which according to Diener et al. (1999) is *a broad category of phenomena that includes people's emotional responses, domain satisfactions and global judgments of life satisfaction*. The term "economics of happiness" is used to refer to studies on aspects of life satisfaction and on their links with different domains of life, including social capital (Diener et al. 1985; Pradhan and Ravaillon 2000; Mc Bride 2001; Frey and Stutzer 2002; Van Praag et al. 2003; Yip et al. 2007; Dolan et al. 2008; Pedersen and Schmidt 2011; Rodriguez-Pose and von Berlepsh 2014).

2 Data and Methodology

2.1 Data

Data used in this study come from the 2009 cross-sectional EU-SILC survey[2] and Eurostat statistics database. As a matter of fact, EU-SILC is the reference source for comparative studies on income distribution, poverty and social exclusion at European level (Eurostat 2009, 2010; Santini and De Pascale 2012a, b); its purpose is to monitor household economic and social conditions for aware planning of economic and social policies (Clemenceau et al. 2006). The 2009 survey provides, for all the 27 EU member states, a wide range of variables which will be used in the present study.

2.1.1 The Dependent Variable

The EU-SILC survey provides information on household subjective poverty consistent with the aim of this study. In particular, the variable *Ability to make ends meet*, corresponding to the question *A household may have different sources of income and more than one household member may contribute to it. Thinking of your household's total income, is your household able to make ends meet, namely, to pay for its usual necessary expenses?*, can be employed as a measure of the perceived income adequacy (Whelan and Maître 2009; Goedemé and Rottiers 2011; Cracolici et al. 2012); its levels are the following six ordered categories: with great difficulty; with difficulty; with some difficulty; fairly easily; easily; very easily.

2.1.2 Explanatory Variables

The possible determinants of subjective poverty considered in the analysis are:

(a) The respondent/household socioeconomic characteristics suggested by empirical literature already mentioned in Sect. 1 (Van Praag and Van der Sar 1988; Ravaillon and Lokshin 2002; Hayo and Seifert 2003; Stanovnik and Verbic 2004; Castilla 2010; Cracolici et al. 2011, 2012; Buttler 2013). They are listed in Table 2 of the Appendix and are: age, gender, marital status, education, employment status, low work intensity status, branch of activity, risk of poverty and social exclusion, general health, house/flat size, tenure status, dwelling type, reasons for changing dwelling, household type, equivalized disposable income, poverty indicator, material deprivation, financial burden of housing cost, debts, work intensity status, family/children allowances, social exclusion, housing allowances, indicators of cash received, alimonies received and income received by people aged under 16.[3]
The respondent's socioeconomic characteristics are included to take into account the features of the person who answers, on behalf of the whole family, to the household questionnaire and, in particular, to the question on *ability to make ends meet*.

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[2] EU-SILC is the Eurostat project on Income and Living Conditions which involves all the European Union state members. It provides two types of data, cross-sectional and longitudinal over a four- year period (EU-SILC uses a 4-years rotational design).

[3] Some of these variables are not statistically significant and/or have too many missing values and thus they have not been included in the generalized ordered logit models discussed in Sect. 3. They are: low work intensity status, branch of activity, risk of poverty, health, reasons for changing dwelling, work intensity status, alimonies received.

(b) The household/community social capital endowment.[4] The proxy variables, listed in Table 3 of the Appendix, have been selected so as to be consistent with the most widely accepted definition of social capital mentioned in Sect. 1 (see for discussion Santini and De Pascale 2012a, b). They are indicators of the level of:

1. social behavior (SB);
2. social relationships (SR);
3. those specific territorial and environmental characteristics (TC) which are significant determinants of social capital formation.

In particular:

1. *Social behaviour* includes all indicators that directly and indirectly measure the degree of moral behavior. Social capital involves networks and relationships but only those characterized by trust; however, the mechanism linking interpersonal trust with economic and social outcomes refers implicitly to honesty and civic morality (Fukuyama 1995; Knack and Keefer 1997; Putnam et al. 1993). As emphasized by Letki (2006), *civic morality is an ethical habit […]. It refers to the sense of civic responsibility for the common good, […] it is rooted in community membership and implies accepting duties as given by society and owed to all of its members or society in general. […] It also deters citizens from engaging in crime, corruption and illegal activities of any other sort, therefore diminishing the amount of resources that need to be employed to provide order and rule of law.*
Perceived crime, violence and vandalism as well as rate of crime and degree of environmental deprivation (questions on "litter lying around" and "damaged public amenities") are proxy indicators of the level of civic morality and honest and responsible behavior.

2. *Social relationships* includes all indicators that directly and indirectly measure the degree of informal socializing which refers to *the actual or potential resources linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition [….] directly usable in the short or long term* (Bourdieu 1986), thus reducing people social exclusion which represents a significant nonmaterial dimension of poverty (Sen 2000).
As far as social relationships indicators are concerned, a distinction between real and virtual relationships has been made. Real relationships are those based on face-to-face formal or informal socializing; they can be transformed in durable networks that provide access to resources, information or assistance and from them one can derive market and non-market benefits (i.e. better social status, better educational and professional achievement). Virtual relationships provide the same benefits of real relationships but are based on networks of heterogeneous contacts generated via-computer over the internet.
The following variables from EU-SILC seem relevant to virtual and real relationships: the questions *Do you have a computer?* and *Do you have an internet connection?* detect the availability of the technological instrument which facilitates the creation of

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[4] Despite some shortcomings mainly due to the impossibility of measuring all components of social capital, EU-SILC cross-sectional survey and the Eurostat statistic database represent together an important reference source for comparative studies aiming at measuring the effect of social capital on household economic well-being, especially because they provide comparable and high quality cross-sectional indicators for all EU member states. Therefore the EU-SILC survey and the Eurostat statistic database represent an irreplaceable decision-making tool to assess suitable policies aiming at poverty reduction in Europe.

virtual networks, while the variable *Do you have a phone? (including mobile phone)* detects the availability of a device which helps to keep alive both real and virtual relationships. The variable *Do you have a colour tv?* measures a negative feature of social relationships. Some authors (as, for example, Olken 2006) have empirically verified that more time spent watching television is associated with substantially lower levels of participation in social activities and with lower self-reported measures of trust. Even Putnam, in a series of books and articles, famously argued that social capital in the United States has been declining over the past 40 years—and that the rise of television is a major factor behind this decline (Putnam 1995, 2000).

As regards real relationships, EU-SILC provides the following proxy variables: *Number of hours of child care by grandparents, others household members (outside parents), other relatives, friends or neighbors*, and *Are there "family workers"[5] in your family business?* They capture the existence of support relationships which an individual can use to cope with child care, management of family firms, financial needs. Furthermore, the set of questions about leisure and social activities of household members helps to measure the degree of informal socializing.

3. *Territorial and environmental context*, includes those context characteristics which are significant determinants of social capital formation (Loopmans 2001; Glaeser et al. 2002). A high rate of overcrowding and shortage of space in dwelling should be a symptom of poor living conditions which could have a negative effect on the quality of family relationships. This aspect is further emphasized by the introduction of additional variables on housing and environmental conditions such as features of the house or the dwelling and of its surroundings, exposure to air pollution, greenhouse gas emission (in CO_2 equivalent).

Bearing in mind that our aim is to measure the effect on subjective poverty of social capital endowment, both on the whole and with regard to each of its components, we combined the proxy variables within each of the three categories into complex indexes: a simple arithmetic mean has been used hypothesizing that they are perfectly and mutually replaceable as they measure different aspects of the same phenomenon.

Furthermore, an overall social capital index has been obtained pulling together the three complex indexes through a simple geometric mean, as it implies a lower interchangeability of categories.

2.1.3 Methodology

Given the ordinal nature of the dependent variable, an ordered response model should be used. In our analysis the proportional odds assumption is violated[6]; therefore the most general specification of such a model has been used: the *partial proportional odds* or *generalized ordered logit model* (Mc Cullogh and Nelder 1989; Peterson and Harrel 1990; Fu 1998; Williams 2006), that is an ordered logit model which allows estimates (not necessarily all) to vary across categories.

Formally, for an ordinal dependent variable Y with J categories, the generalized ordered logit model can be written as:

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[5] *Family workers* are persons who help another member of the family to run an agricultural holding or other business, provided they are not considered as employees.

[6] In order to verify this assumption the *autofit* option of the *gologit2* procedure of Stata software has been employed (Williams 2006). This procedure does a series of Wald tests on each variable to see whether its coefficients differ across equations.

$$P(Y_i > j) = g(X_i\boldsymbol{\beta}_j) = \frac{\exp(\alpha_j + X_i\boldsymbol{\beta}_j)}{1 + \exp(\alpha_j + X_i\boldsymbol{\beta}_j)}, \quad j = 1, \ldots, J-1, \ i = 1, \ldots, n$$

with

$$P(Y_i = 1) = 1 - g(X_i\boldsymbol{\beta}_j), \quad P(Y_i = j) = g(X_i\boldsymbol{\beta}_{j-1}) - g(X_i\boldsymbol{\beta}_j), \quad P(Y_i = J) = g(X_i\boldsymbol{\beta}_{J-1})$$

and where i refers to the household, X_i is the vector of predictors for the i-th household and $\boldsymbol{\beta}_j$ is the vector of parameters to be estimated.[7]

Furthermore, since some researchers prefer to continue using the ordinal logit model even when the assumption is violated, especially because the generalized model can produce negative predicted probabilities (see Mc Cullogh and Nelder 1989, p. 155), for comparative purposes and for better evaluating the implication of the violation, we also estimated a standard ordered logit model.

In order to assess how and to what extent social capital contributes to improve self-perception of poverty, three different models have been estimated:

- the first model (M1) includes as explanatory variables only the respondent/household socioeconomic characteristics and represents the benchmark model;
- the second model (M2) includes as explanatory variables both the respondent/household socioeconomic characteristics and the overall social capital index;
- finally the third model (M3), includes as explanatory variables, in addition to the respondent/household socioeconomic characteristics, the three complex indexes defined in Sect. 2.1.2, to take into account the three different aspects of social capital.

Therefore, model M1 only evaluates the effect on perceived poverty of the respondent/household socioeconomic characteristics; model M2 evaluates the effect of both the respondent/household socioeconomic characteristics and social capital endowment on the whole; finally, model M3 evaluates the effect of both the respondent/household socioeconomic characteristics and the three components of social capital.

3 Results

Estimates obtained for the more general specification (M3), considering the category '*very easily*' as the base category, are listed in the Appendix (Table 4).

All the estimated regression parameters are significant for at least one equation[8]; this is generally true also for models M1 and M2.

The global performance of the model can be judged satisfactory, especially if we consider that the response categories are six and the percentage of *very easily* responses is very low (4.7 %), making it more difficult to correctly predict this category.[9]

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[7] The model reduces to the ordinal logit one when the beta coefficients are the same for each j category and the so called proportional odds assumption is satisfied.

[8] The only exception occurs for the class 65–79 of the variable *Age*; nevertheless we decided to hold this class distinct from the last one, the unique with a positive effect on the odds.

[9] As a matter of fact, it is worth noting that if the dependent variable had only three response categories (with great difficulty or with difficulty; with some difficulty or fairly easily; easily or very easily), the overall percentage of correctly predicted values increases of almost 45–50 % compared to the model with six responses. However, as in such a reduced scale important details are lost, we decided to keep the original six-point scale.

Table 1 Percent correctly predicted, by response category and type of estimated model

Response category	Estimated model[a]		
	M1 Without any social capital index	M2 With overall social capital index	M3 With three sectorial social capital indexes
With great difficulty	47.26 (44.26)	47.60 (44.73)	47.85 (45.08)
With difficulty	33.02 (34.07)	33.45 (34.19)	33.60 (34.38)
With some difficulty	64.37 (63.4)	64.33 (63.39)	64.14 (63.27)
Fairly easily	46.53 (41.46)	46.96 (42.04)	47.19 (42.23)
Easily	37.50 (39.88)	37.52 (39.81)	37.57 (40.06)
Very easily	14.44 (4.56)	14.34 (5.13)	14.23 (4.89)
Total	46.86 (45.14)	47.06 (45.34)	47.11 (45.45)

[a] Values in brackets refer to standard ordinal logit model
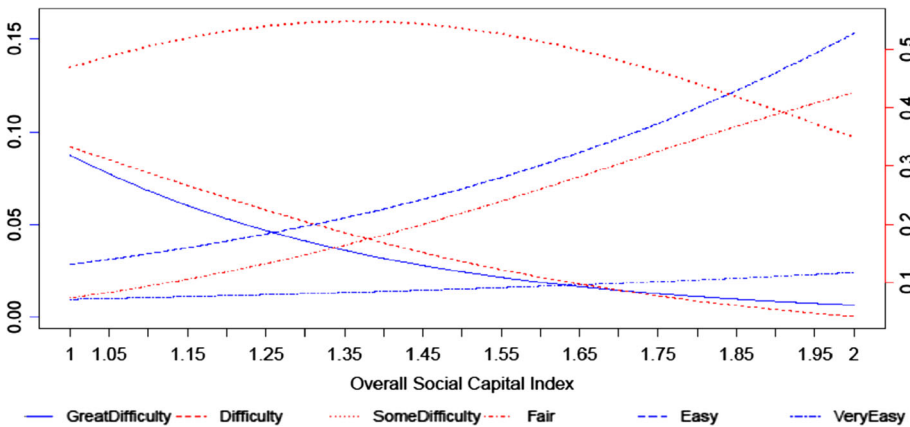
Fig. 1 Estimated probabilities by overall social capital index

Percentages of correctly predicted responses, obtained for each model, are listed in Table 1; in brackets we also report the corresponding percentages obtained from standard ordered logit models (without generalization), estimated for comparative purposes.

A general improvement can be noted in the performance of the estimated generalized models compared to the standard ones and this result strengthens the choice made with regard to the model specification: as a matter of fact, not only does the percentages of correctly predicted responses increase for each response category (except for the second
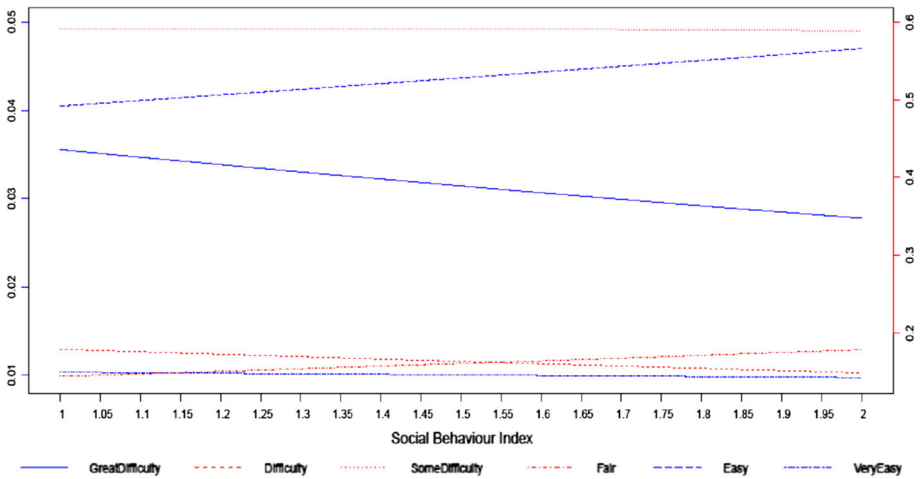
Fig. 2 Estimated probabilities by social behaviour index
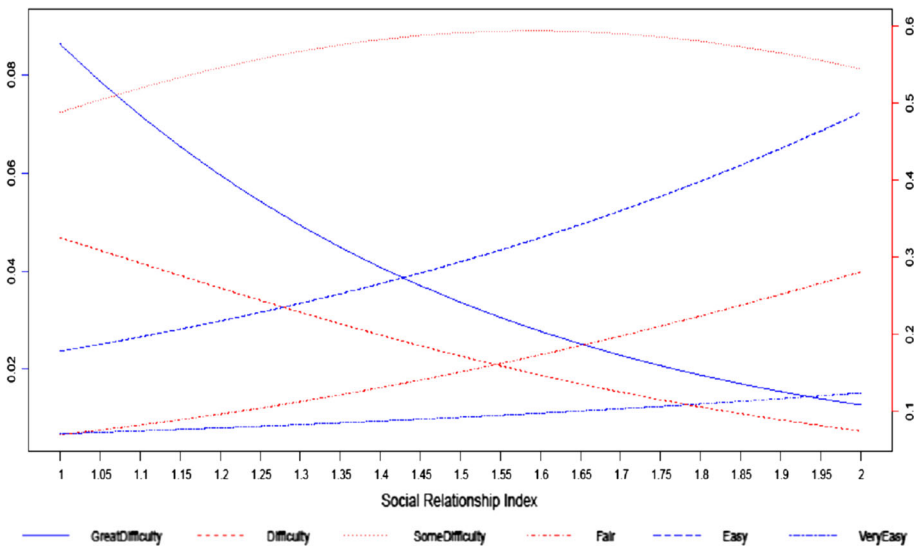
Fig. 3 Estimated probabilities by social relationship index

and the fifth), but such percentages become nearly three times greater with reference to the 'very easy' category, which is the most difficult to estimate.

We can also note the overall improvement going from the simpler generalized model M1 to the more general M3. This improvement is not simply due to the inclusion of additional predictors, but implies that information supplied by social capital indexes effectively helps to explain subjective perception of poverty.

An improvement also occurs for each response category, except for *with some difficulty* and *very easily*; in both cases, in effect, information on social capital seems to produce

even slightly worse predictions. On the contrary, the greatest improvement occurs for the first two categories.

From Table 4 of the Appendix, it can be noted that among the socioeconomic characteristics the most relevant influence factors in all equations are the equivalized disposable income (HDI), the presence of a financial burden of the total housing cost (HCO) and the household deprivation status (SMD), as expected. This evidence is coherent with one of the most robust results found in all the empirical literature on the determinants of poverty: a high correlation with income (Easterlin 2001), which always has the strongest explanatory power in econometric analyses (Selnik 2003; Herrera et al. 2006).

It is worth noting that the other most relevant predictors are the social capital indexes referring to territorial context characteristics and social relationships, both of them with a positive effect on the odds. The social behavior index, instead, exerts a less appreciable effect, although positive and significant. It is also interesting to note that in model M2 the global social capital index is the main determinant of subjective poverty.

Fig. 4 Estimated probabilities by territorial context index

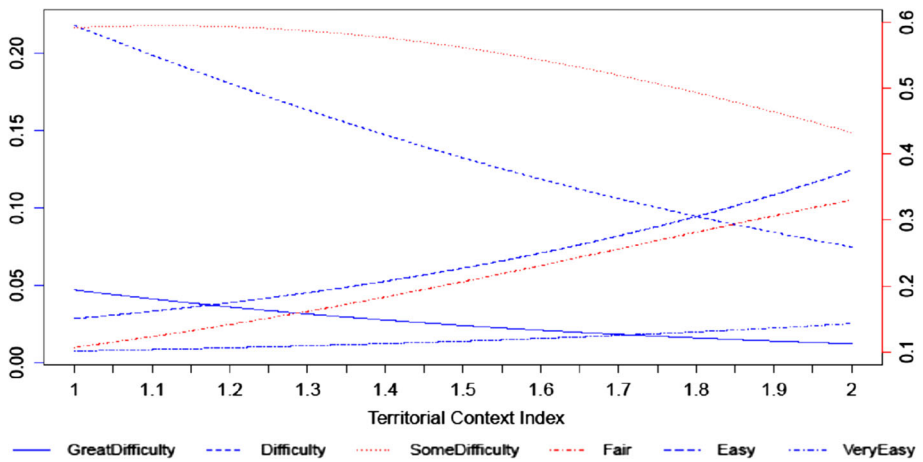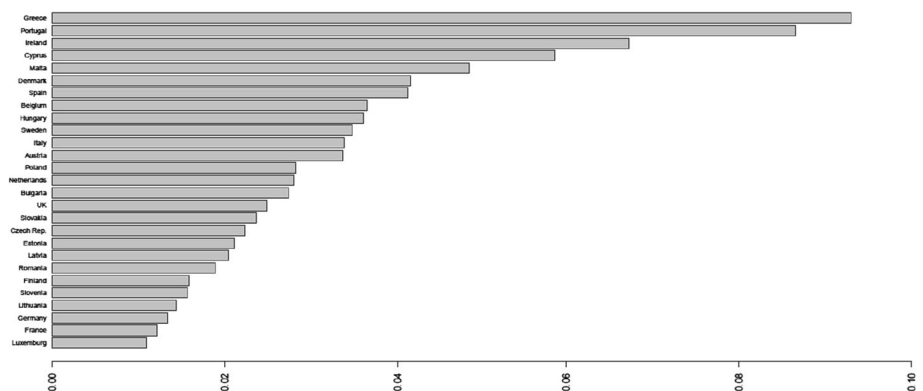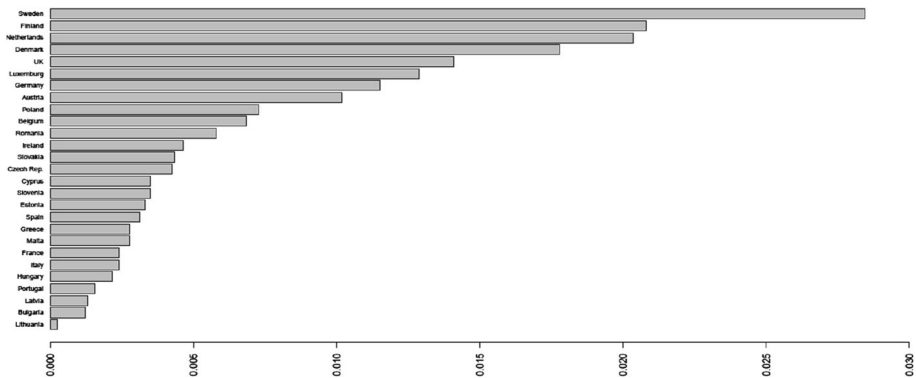Fig. 5 Probabilty of category "with great difficulty", by country

Fig. 6 Probabilty of category "very easily", by country

Marginal effects of each independent variable on probabilities, controlling for the remaining ones, are coherent with expectations and robust across the three models. As a matter of fact, probabilities of *with difficulty* and *with great difficulty* in *ability to make ends meet* increase with age, if the respondent is unemployed, separated/divorced or widowed, if the household is at risk of poverty, severely materially deprived, with debts and financial burden of housing cost, has more than two children, receives income by people aged under 16 and allowances; conversely, these probabilities decrease if the age and the educational level of respondent as well as the dwelling size (in number of rooms) increase.

On the other hand, probabilities of the categories *easily* and *very easily* increase if the respondent is working, has a high level of education and the household accommodation is provided free.

Regarding social capital, both the effect of the overall index in model M2 (see Fig. 1) and the effects of the three sectorial indexes used in model M3 (see Figs. 2, 3, 4) are positive on the probabilities of the categories *easily* and *very easily* and negative on the others[10]; in other words, when social capital endowment grows, European households ability to make ends meet improves. Moreover, in model M3, while Social Relationships (SR) and Territorial Characteristics (TC) indexes show effects rather similar to those of the global index in M2, the Social Behavior (SB) index exerts less evident effects. Indeed, this result is quite coherent with earlier considerations about estimated values and could suggest that the components TC and SR show more support for the dependent variable than SB.[11]

A further proof of the appropriate choice of the generalized specification stems from the fact that the majority of predictors show asymmetric effects on the odds,[12] that is their

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[10] Note that the scale of the vertical axis is showed on the left for the blue lines and on the right for the red ones.

[11] A possible explanation is that among the proxies variables used to form the Social Behavior index there are those referred to rate of crime and perceived violence and vandalism, which in a previous analysis (Guagnano et al. 2013) showed opposite associations with subjective poverty.

[12] The only predictors with invariable effects are: classes 25–29, 60–64 and 65–79 of the variable *Age*; the categories *Medium educational qualification*, *Payment of a rent for accommodation* and all the categories of the following variables: *Marital status*; *Employment status* (excepted for inactive); *Household type* (from the fifth categories until the second last).

effect changes markedly across equations. For example, the effect of the category *5th quintile* of HDI (equivalized disposable income) is gradually increasing going from the first equation (referred to *with great difficulty*) to the last one (referred to *very easily*); this evidence shows that the strong positive effect of income high levels on the odds becomes much stronger if the odds refer to the higher categories of the dependent variable.

In order to compare the results across the 27 European state members, in Figs. 5 and 6 the probabilities of the categories *with great difficulty* and, respectively, *very easily* are plotted by country, in descending order. In particular, Fig. 5 shows that the highest probabilities of the category *with great difficulty* are detected in Greece, Portugal, Ireland and Cyprus. It is interesting to note that Greece also has the highest probability as far as the *difficult* category is concerned, the lowest values as to the probabilities of the remaining categories and its social capital index value lies below the European average. On the other hand, the countries with the highest probabilities of the category *very easily* are Sweden, Finland, Netherlands and Denmark (significantly, the corresponding estimated parameters are always positive); we can note that Finland ranks first as to the probabilities of the categories *fairly easily* and *easily*, in lower positions in the remaining categories and its social capital index value lies above the European average.

Another example of how differences standing out among European countries can also be ascribed to different social capital endowments refers to estimated probabilities of the category *with some difficulty* in all the three models: in model M1, countries with higher probabilities are Lithuania, France, Italy, Slovenia and Ireland; in models M2 and M3, which include social capital indexes, Estonia takes the place of Ireland as Irish households on average have, indeed, higher levels of social capital endowment than Estonian ones, both on the whole and with regard to each of its components. This evidence seems to confirm the crucial role that social capital could have in policies and strategies adopted by central and local governments to reduce poverty, as already outlined in Guagnano et al. (2013). Thus, in countries characterized, on average, by poor economic conditions but also by low social capital endowment, policies aimed at poverty reduction could be more effective if they reconciled traditional income support programs with measures which facilitate and encourage the development of desirable forms of social capital.

4 Conclusions

This paper aims at showing if and to what extent self-perceived poverty in European countries is related to household socioeconomic characteristics and household/community social capital endowment in order to disclose the primary risk factors of family poverty status. The analysis proves the existence of a relationship with both groups of possible determinants. If the strong link between household poverty status and socioeconomic characteristics is one of the most well established results found in the empirical literature (Helliwell 2001), the significant relationship between social capital and self-perception of poverty is less obvious and constitutes the core result of the analysis. Hence, not only do household socioeconomic characteristics play a crucial role in affecting self-perception of poverty, but also household/community social capital endowment does. In particular, when household and community social capital endowment increases, European households' ability to make ends meet improves too. This result has direct and important implications for poverty reduction policies: as a matter of fact, in order to enhance household economic well-being, governments could also facilitate the development of desirable forms of social

capital, in addition to the adoption of traditional income support measures. If the EU-SILC survey provided more social capital indicators with greater territorial detail, relationships between social capital and household poverty could be described and captured in their entirety, thus helping policy-makers considerably to promote suitable poverty reduction strategies.

From the statistical point of view, further research should have to cope with the possible endogeneity of social capital indicators, eventually deriving from the measurement errors inherent the use of proxy variables. In this case the research should investigate the possibility of including instrumental variables to obtain consistent estimates and more reliable results.

Appendix 1

See Table 2.

Table 2 Respondent and household socio-economic characteristics (*Source*: EU-SILC 2009)

Label	Variable name	Categories
AGE	Age	<24 25–29 30–34 35–39 40–44 45–49 50–54 55–59 60–64 65–79 80+
GEN	Gender	Male Female
MST	Marital status	Never married Married Separated or divorced Widowed
EDU	Educational qualification[a]	Low Medium High
EMP	Employment status	Working Unemployed Retired Inactive
LWI	Low work intensity status	No LWI LWI

Table 2 continued

Label	Variable name	Categories
BRA	Branch of activity	Agriculture Industry Construction Wholesale retail Transport and storage Hotels and restaurants Information and communication Financial and insurance activities Real estate, renting and business activities Public administration, defense, social security Education Health and social work Other Not working
RISK	At risk of poverty or social exclusion	Not at risk At risk of poverty LWI Severely materially deprived Other
HTH	General health	Very good Good Fair Bad Very bad
ROO	House/flat: number of rooms	1 room 2 rooms 3 rooms 4 rooms 5 rooms 6+ rooms
TST	Tenure status	Owner Tenant or subtenant paying rent at prevailing/market rate Accommodation is rented at a reduced rate Accommodation is provided free
DTY	Dwelling type	Detached house Semi-detached or terraced house Apartment or flat <10 Apartment or flat with 10 or more
RCA	Reason for changing dwelling	No change Forced to leave on termination of the contract Forced to leave in the absence of a formal contract Forced to leave because of eviction or distraint Forced to leave for financial difficulties Forced to leave for a family-related reason Forced to leave for an employment-related reasons Forced to leave for some other reason

Table 2 continued

Label	Variable name	Categories
TYPE	Household type	One person household 2 adults both adults <65 years 2 adults at least one adult ≥65 years Other without dependent children Single parent and ≥1 dependent children 2 adults and one dependent child 2 adults and two dependent children 2 adults and ≥3 dependent children Other households with dependent children Other type
HDI	Equivalized disposable income	1st quintile 2nd quintile 3rd quintile 4th quintile 5th quintile
POI	Poverty indicator	Not at risk of poverty At risk of poverty
SMD	Severely materially deprived household	Not severely deprived Severely deprived
HCO	Financial burden of the total housing cost	No housing cost A heavy burden Somewhat a burden Not burden at all
DEB	Debts for hire purchases or loans	Non debts Debts
WIS	Work intensity status (WI)	WI = 0 0 < WI < 0.5 0.5 ≤ WI < 1 WI = 1
FAL	Family/children related allowances	No Yes
AAL	Social exclusion not elsewhere classified allowances	No Yes
HAL	Housing allowances	No Yes
ICT	Regular inter-household cash received	No Yes
ALI	Alimonies received (compulsory and/or voluntary)	No Yes
I16	Income received by people aged under 16	No Yes

[a] Low: never in education, pre-primary school, primary school and lower secondary school; medium: secondary school and post-secondary school; high: tertiary education (1st and 2nd stage)

Appendix 2

See Table 3.

Table 3 Social capital indicators

Label	Variable name	Categories	Type of indicator	Source
Social behaviour (*Source*: EU-SILC 2009; Eurostat)				
CRH	In your local area are there any problems of crime, violence or vandalism?	Yes No	Household (respondent)	EU-SILC
CRC	% of total population suffering from problems of crime, violence or vandalism	High Medium Low	Community	Eurostat
CRR	Crime recorded by the police: total crime (Number of crimes per 100 inhabitants)	High Medium Low	Community	Eurostat
LTH	Litter lying around the neighbourhood	Very frequently Frequently Sometimes Rarely or never	Household (respondent)	EU-SILC
DMH	Damaged public amenities in the neighbourhood	Very frequently Frequently Sometimes Rarely or never	Household (respondent)	EU-SILC
Label	Variable name	Categories	Type of indicator	Source
Social relationships (*Source*: EU-SILC 2009)				
PHO	Do you have a phone? (including mobile)	No Yes	Household (respondent)	EU-SILC
TVC	Do you have a colour tv?	No Yes	Household (respondent)	EU-SILC
PC	Do you have a computer?	No Yes	Household (respondent)	EU-SILC
CHI	Number of hours of child care by grandparents, others household members (outside parents), other relatives, friends or neighbors (free of charge) (per household member member and if children are less than 12 years old)	None Low Medium High Not applicable	Household (respondent)	EU-SILC
FAW	Are there "family workers" (FAW) in your family business? (number)	None 1 FAW 2 or more FAW Not applicable	Household (respondent)	EU-SILC
INTC	Do you have an internet connection?	No Yes	Household (respondent)	EU-SILC
MEA	Get-together with friends/ relatives for a drink/a meal at least once a month	No Yes	Household (respondent)	EU-SILC
LES	Regularly participate in a leisure activity such as sport, cinema, concert	No Yes	Household (respondent)	EU-SILC

Table 3 continued

Label	Variable name	Categories	Type of indicator	Source
L16	Do your children under 16 participate in a regular leisure activity (swimming, playing an instrument, youth organizations, etc.)?	No Yes Not applicable	Household (respondent)	EU-SILC
C16	Do your children under 16 have celebrations on special occasions (birthdays, name days, religious events)?	No Yes Not applicable	Household (respondent)	EU-SILC
I16	Do your children under 16 invite friends round to play and eat from time to time?	No Yes Not applicable	Household (respondent)	EU-SILC
E16	Do your children under 16 participate in school trips and school events that cost money?	No Yes Not applicable	Household (respondent)	EU-SILC
O16	Do your children under 16 have an outdoor space in the neighbourhood where they can play safely?	No Yes Not applicable	Household (respondent)	EU-SILC

Label	Variable name	Categories	Type of indicator	Source
Territorial context (*Source*: EU-SILC 2009; Eurostat)				
OCH	Overcrowded household	Yes No	Household (respondent)	EU-SILC
OCC	Overcrowding rate	High Medium Low	Community	Eurostat
H1H	Do you have any of the following problems related to the place where you live? (Leaking roof. Dump walls/floors/foundation, rot in windows frames or floor)	Yes No	Household (respondent)	EU-SILC
H1C	Housing deprivation rate: % of total population living in a dwelling with a leaking roof, damp walls, floors or foundation, or rot in window frames of floor	High Medium Low	Community	Eurostat
H2H	Is your dwelling too dark, meaning is there not enough day-light coming through the windows?	Yes No	Household (respondent)	EU-SILC
H2C	Housing deprivation rate: % of total population considering their dwelling too dark	High Medium Low	Community	Eurostat
H3H	Do you have too much noise in your dwelling from neighbors or from outside (traffic, business, factory)?	Yes No	Household (respondent)	EU-SILC

Table 3 continued

Label	Variable name	Categories	Type of indicator	Source
H3C	Environment of the dwelling: % of total population suffering noise from neighbors or from the street.	High Medium Low	Community	Eurostat
H4H	Pollution, grime or other environmental problems in the local area such as smoke, dust, unpleasant smells or polluted water	Yes No	Household (respondent)	EU-SILC
H4C	Environment of the dwelling: % of total population suffering from pollution, grime or other environmental problems	High Medium Low	Community	Eurostat
HOT	Place to live with hot running water	No Yes	Household (respondent)	EU-SILC
SHO	Shortage of space in the dwelling	Yes No	Household (respondent)	EU-SILC
SQMTS	Size of dwelling in sq metres	≤50 50-|70 70-|90 90-|120 >120	Household (respondent)	EU-SILC
AP1	Greenhouse gas emission (in CO_2 equivalent)	High Medium Low	Community	Eurostat
AP2	Urban population exposure to air pollution by ozone (micrograms per cubic meter)	High Medium Low	Community	Eurostat
AP3	Urban population exposure to air pollution by particulate matter (micrograms per cubic meter)	High Medium Low	Community	Eurostat

Appendix 3

See Table 4.

Table 4 Parameters estimates from partial proportional ordered logit model comparing probabilities for *Ability to make ends meet* to be beyond a given category *j* versus to be at or below category *j*

Predictor_ category	Estimate	SE	z	*p* value	Predictor_ category	Estimate	SE	z	*p* value
Category j = 'With great difficulty'									
Age_25–29	−0.30	0.03	−8.89	0.00	HDI_4	1.01	0.05	20.42	0.00
Age_30–34	−0.29	0.05	−6.12	0.00	HDI_5	1.59	0.06	24.90	0.00
Age_35–39	−0.35	0.05	−7.60	0.00	POI_2	−0.29	0.02	−11.78	0.00

Table 4 continued

Predictor_category	Estimate	SE	z	p value	Predictor_category	Estimate	SE	z	p value
Age_40–44	−0.34	0.04	−7.74	0.00	SMD_2	−1.31	0.02	−59.01	0.00
Age_45–49	−0.39	0.04	−9.21	0.00	HCO_2/3	−2.21	0.02	−104.83	0.00
Age_50–54	−0.27	0.04	−6.50	0.00	DEB_2	−0.42	0.02	−19.71	0.00
Age_55–59	−0.31	0.04	−7.33	0.00	FAL_2	−0.13	0.03	−5.05	0.00
Age_60–64	−0.15	0.03	−4.41	0.00	AAL_2	−0.21	0.03	−6.78	0.00
Age_65–79	−0.01	0.04	−0.39	0.69	HAL_2	−0.17	0.02	−8.70	0.00
Age_80+	0.11	0.05	2.12	0.03	ICT_2	−0.40	0.03	−13.40	0.00
Gender_F	0.00	0.02	0.15	0.88	I16_2	−0.15	0.03	−4.54	0.00
MST_married	0.04	0.02	2.56	0.01	Belgium	−0.08	0.09	−0.90	0.37
MST_sep./div.	−0.26	0.03	−9.03	0.00	Bulgaria	0.21	0.09	2.36	0.02
MST_widowed	−0.17	0.02	−8.78	0.00	Cyprus	−0.58	0.09	−6.16	0.00
EDU_medium	0.18	0.01	16.11	0.00	Czech Rep.	0.42	0.09	4.64	0.00
EDU_high	0.39	0.03	12.44	0.00	Germany	0.94	0.10	9.60	0.00
EMP_unemployed	−0.71	0.02	−33.23	0.00	Denmark	−0.22	0.13	−1.66	0.10
EMP_retired	−0.12	0.02	−6.91	0.00	Estonia	0.48	0.10	4.69	0.00
EMP_inactive	−0.26	0.02	−10.83	0.00	Spain	−0.21	0.08	−2.59	0.01
ROOM_2	0.04	0.04	1.04	0.30	Finland	0.77	0.11	7.05	0.00
ROOM_3	0.12	0.04	2.91	0.00	France	1.04	0.09	10.95	0.00
ROOM_4	0.20	0.04	4.49	0.00	Greece	−1.08	0.08	−12.91	0.00
ROOM_5	0.26	0.05	5.21	0.00	Hungary	−0.07	0.09	−0.83	0.41
ROOM_6+	0.37	0.05	6.85	0.00	Ireland	−0.73	0.10	−7.49	0.00
TST_tenant	−0.24	0.03	−8.13	0.00	Italy	−0.01	0.08	−0.06	0.95
TST_reduced	−0.20	0.02	−9.53	0.00	Lithuania	0.87	0.10	8.84	0.00
TST_free	−0.09	0.03	−2.74	0.01	Luxemburg	1.15	0.13	8.75	0.00
DTY_2	0.04	0.01	3.05	0.00	Latvia	0.52	0.09	5.72	0.00
DTY_3	0.08	0.02	5.52	0.00	Malta	−0.39	0.10	−4.06	0.00
DTY_4	0.01	0.02	0.29	0.77	Netherlands	0.19	0.11	1.76	0.08
TYPE_2	0.01	0.03	0.42	0.68	Poland	0.18	0.09	2.07	0.04
TYPE_3	0.06	0.03	1.85	0.07	Portugal	−1.00	0.09	−11.40	0.00
TYPE_4	−0.19	0.03	−5.65	0.00	Romania	0.59	0.09	6.42	0.00
TYPE_5	−0.46	0.03	−15.77	0.00	Sweden	−0.03	0.12	−0.28	0.78
TYPE_6	−0.34	0.02	−14.63	0.00	Slovenia	0.78	0.09	8.86	0.00
TYPE_7	−0.43	0.03	−16.62	0.00	Slovakia	0.36	0.10	3.73	0.00
TYPE_8	−0.60	0.03	−18.71	0.00	UK	0.31	0.09	3.34	0.00
TYPE_9	−0.56	0.03	−21.31	0.00	tcm	1.39	0.11	12.80	0.00
TYPE_10	−0.04	0.16	−0.24	0.81	srm	1.99	0.06	33.33	0.00
HDI_2	0.37	0.03	12.78	0.00	sbmedia	0.26	0.05	5.62	0.00
HDI_3	0.64	0.04	15.64	0.00	constant	−2.02	0.21	−9.69	0.00
Category j = 'With difficulty'									
Age_25–29	−0.30	0.03	−8.89	0.00	HDI_4	1.25	0.04	35.51	0.00
Age_30–34	−0.32	0.04	−8.19	0.00	HDI_5	1.89	0.04	45.32	0.00
Age_35–39	−0.37	0.04	−9.75	0.00	POI_2	−0.18	0.02	−8.99	0.00
Age_40–44	−0.37	0.04	−10.04	0.00	SMD_2	−1.49	0.02	−61.19	0.00

Table 4 continued

Predictor_category	Estimate	SE	z	p value	Predictor_category	Estimate	SE	z	p value
Age_45–49	−0.40	0.04	−11.11	0.00	HCO_2/3	−1.99	0.01	−144.32	0.00
Age_50–54	−0.36	0.04	−9.94	0.00	DEB_2	−0.38	0.02	−24.83	0.00
Age_55–59	−0.30	0.04	−8.10	0.00	FAL_2	−0.21	0.02	−11.01	0.00
Age_60–64	−0.15	0.03	−4.41	0.00	AAL_2	−0.24	0.03	−8.81	0.00
Age_65–79	−0.01	0.04	−0.39	0.69	HAL_2	−0.17	0.02	−8.70	0.00
Age_80+	0.10	0.04	2.26	0.02	ICT_2	−0.28	0.03	−10.93	0.00
Gender_F	−0.02	0.01	−1.58	0.12	I16_2	−0.15	0.03	−4.54	0.00
MST_married	0.04	0.02	2.56	0.01	Belgium	−0.16	0.06	−2.63	0.01
MST_sep./div.	−0.23	0.02	−9.59	0.00	Bulgaria	−0.39	0.07	−5.92	0.00
MST_widowed	−0.17	0.02	−8.78	0.00	Cyprus	−0.95	0.07	−14.21	0.00
EDU_medium	0.18	0.01	16.11	0.00	Czech Rep.	−0.17	0.06	−2.94	0.00
EDU_high	0.50	0.02	24.41	0.00	Germany	1.01	0.06	16.12	0.00
EMP_unemployed	−0.71	0.02	−33.23	0.00	Denmark	−0.04	0.08	−0.56	0.57
EMP_retired	−0.12	0.02	−6.91	0.00	Estonia	0.56	0.07	8.34	0.00
EMP_inactive	−0.21	0.02	−11.00	0.00	Spain	−0.05	0.05	−0.95	0.34
ROOM_2	0.06	0.03	1.88	0.06	Finland	0.92	0.07	13.12	0.00
ROOM_3	0.14	0.03	4.11	0.00	France	0.18	0.06	3.25	0.00
ROOM_4	0.21	0.04	5.93	0.00	Greece	−1.67	0.06	−29.65	0.00
ROOM_5	0.30	0.04	7.86	0.00	Hungary	−0.59	0.06	−9.82	0.00
ROOM_6+	0.42	0.04	10.10	0.00	Ireland	−0.72	0.07	−10.96	0.00
TST_tenant	−0.24	0.02	−10.72	0.00	Italy	0.02	0.05	0.48	0.63
TST_reduced	−0.20	0.02	−9.53	0.00	Lithuania	0.16	0.07	2.45	0.01
TST_free	−0.04	0.03	−1.56	0.12	Luxemburg	1.08	0.08	13.44	0.00
DTY_2	0.04	0.01	3.05	0.00	Latvia	−0.21	0.06	−3.35	0.00
DTY_3	0.08	0.02	5.52	0.00	Malta	−0.69	0.07	−10.26	0.00
DTY_4	0.09	0.02	5.14	0.00	Netherlands	0.05	0.06	0.80	0.42
TYPE_2	−0.01	0.02	−0.57	0.57	Poland	0.20	0.06	3.41	0.00
TYPE_3	0.02	0.02	0.68	0.49	Portugal	−0.89	0.06	−14.79	0.00
TYPE_4	−0.27	0.03	−10.58	0.00	Romania	0.41	0.06	6.44	0.00
TYPE_5	−0.46	0.03	−15.77	0.00	Sweden	0.44	0.08	5.70	0.00
TYPE_6	−0.34	0.02	−14.63	0.00	Slovenia	0.30	0.06	5.30	0.00
TYPE_7	−0.43	0.03	−16.62	0.00	Slovakia	0.02	0.06	0.33	0.74
TYPE_8	−0.60	0.03	−18.71	0.00	UK	0.45	0.06	7.37	0.00
TYPE_9	−0.56	0.03	−21.31	0.00	tcm	1.33	0.09	15.24	0.00
TYPE_10	−0.27	0.12	−2.16	0.03	srm	1.99	0.05	44.04	0.00
HDI_2	0.47	0.02	21.94	0.00	sbmedia	0.24	0.04	6.87	0.00
HDI_3	0.85	0.03	28.43	0.00	constant	−3.92	0.16	−23.90	0.00
Category j = 'With some difficulty'									
Age_25–29	−0.30	0.03	−8.89	0.00	HDI_4	1.68	0.03	48.37	0.00
Age_30–34	−0.37	0.04	−10.16	0.00	HDI_5	2.47	0.04	65.42	0.00
Age_35–39	−0.36	0.04	−9.91	0.00	POI_2	0.01	0.02	0.59	0.56
Age_40–44	−0.41	0.04	−11.51	0.00	SMD_2	−1.97	0.06	−33.62	0.00
Age_45–49	−0.36	0.04	−10.15	0.00	HCO_2/3	−1.95	0.02	−119.87	0.00

Table 4 continued

Predictor_category	Estimate	SE	z	p value	Predictor_category	Estimate	SE	z	p value
Age_50–54	−0.38	0.04	−10.84	0.00	DEB_2	−0.52	0.01	−36.44	0.00
Age_55–59	−0.28	0.04	−7.86	0.00	FAL_2	−0.27	0.02	−14.06	0.00
Age_60–64	−0.15	0.03	−4.41	0.00	AAL_2	−0.34	0.03	−11.24	0.00
Age_65–79	−0.01	0.04	−0.39	0.69	HAL_2	−0.17	0.02	−8.70	0.00
Age_80+	0.24	0.04	5.70	0.00	ICT_2	−0.24	0.03	−8.84	0.00
Gender_F	−0.11	0.01	−8.70	0.00	I16_2	−0.15	0.03	−4.54	0.00
MST_married	0.04	0.02	2.56	0.01	Belgium	0.25	0.05	5.58	0.00
MST_sep./div.	−0.25	0.02	−10.74	0.00	Bulgaria	−0.62	0.07	−8.63	0.00
MST_widowed	−0.17	0.02	−8.78	0.00	Cyprus	−0.75	0.06	−12.24	0.00
EDU_medium	0.18	0.01	16.11	0.00	Czech Rep.	0.01	0.04	0.28	0.78
EDU_high	0.57	0.02	33.59	0.00	Germany	1.68	0.04	37.72	0.00
EMP_unemployed	−0.71	0.02	−33.23	0.00	Denmark	0.54	0.05	10.05	0.00
EMP_retired	−0.12	0.02	−6.91	0.00	Estonia	0.09	0.05	1.70	0.09
EMP_inactive	−0.15	0.02	−7.48	0.00	Spain	0.28	0.04	6.84	0.00
ROOM_2	−0.17	0.04	−4.69	0.00	Finland	0.96	0.05	19.92	0.00
ROOM_3	−0.09	0.04	−2.45	0.01	France	−0.70	0.04	−17.99	0.00
ROOM_4	−0.02	0.04	−0.52	0.60	Greece	−1.11	0.05	−22.76	0.00
ROOM_5	0.08	0.04	2.14	0.03	Hungary	−0.84	0.05	−15.49	0.00
ROOM_6+	0.19	0.04	4.75	0.00	Ireland	−1.00	0.05	−20.12	0.00
TST_tenant	−0.29	0.02	−13.81	0.00	Italy	−0.35	0.04	−9.02	0.00
TST_reduced	−0.20	0.02	−9.53	0.00	Lithuania	−0.99	0.06	−16.06	0.00
TST_free	0.03	0.03	1.31	0.19	Luxemburg	1.35	0.06	23.63	0.00
DTY_2	0.04	0.01	3.05	0.00	Latvia	−0.12	0.05	−2.15	0.03
DTY_3	0.08	0.02	5.52	0.00	Malta	−0.44	0.06	−7.27	0.00
DTY_4	0.14	0.02	8.68	0.00	Netherlands	0.98	0.05	21.50	0.00
TYPE_2	−0.03	0.02	−1.49	0.14	Poland	0.30	0.05	6.26	0.00
TYPE_3	−0.03	0.02	−1.52	0.13	Portugal	−0.75	0.05	−14.24	0.00
TYPE_4	−0.36	0.02	−14.36	0.00	Romania	0.25	0.06	4.15	0.00
TYPE_5	−0.46	0.03	−15.77	0.00	Sweden	1.17	0.05	21.39	0.00
TYPE_6	−0.34	0.02	−14.63	0.00	Slovenia	−0.10	0.04	−2.21	0.03
TYPE_7	−0.43	0.03	−16.62	0.00	Slovakia	−0.15	0.05	−2.76	0.01
TYPE_8	−0.60	0.03	−18.71	0.00	UK	0.69	0.04	15.33	0.00
TYPE_9	−0.56	0.03	−21.31	0.00	tcm	1.72	0.09	18.75	0.00
TYPE_10	−0.44	0.12	−3.74	0.00	srm	1.65	0.04	37.84	0.00
HDI_2	0.65	0.02	26.57	0.00	sbmedia	0.24	0.04	6.83	0.00
HDI_3	1.18	0.03	38.93	0.00	constant	−6.30	0.17	−37.81	0.00
Category j = 'Fairly easily'									
Age_25–29	−0.30	0.03	−8.89	0.00	HDI_4	1.62	0.05	30.97	0.00
Age_30–34	−0.40	0.04	−9.91	0.00	HDI_5	2.38	0.05	44.19	0.00
Age_35–39	−0.35	0.04	−8.82	0.00	POI_2	0.20	0.03	5.83	0.00
Age_40–44	−0.40	0.04	−10.12	0.00	SMD_2	−1.95	0.12	−15.66	0.00
Age_45–49	−0.36	0.04	−9.49	0.00	HCO_2/3	−1.84	0.03	−67.02	0.00
Age_50–54	−0.31	0.04	−8.22	0.00	DEB_2	−0.52	0.02	−30.12	0.00

Table 4 continued

Predictor_category	Estimate	SE	z	p value	Predictor_category	Estimate	SE	z	p value
Age_55–59	−0.22	0.04	−5.85	0.00	FAL_2	−0.26	0.02	−10.68	0.00
Age_60–64	−0.15	0.03	−4.41	0.00	AAL_2	−0.14	0.04	−3.54	0.00
Age_65–79	−0.01	0.04	−0.39	0.69	HAL_2	−0.17	0.02	−8.70	0.00
Age_80+	0.25	0.05	5.33	0.00	ICT_2	−0.19	0.04	−5.25	0.00
Gender_F	−0.12	0.01	−8.68	0.00	I16_2	−0.15	0.03	−4.54	0.00
MST_married	0.04	0.02	2.56	0.01	Belgium	0.31	0.05	6.64	0.00
MST_sep./div.	−0.19	0.03	−7.23	0.00	Bulgaria	−0.80	0.13	−6.42	0.00
MST_widowed	−0.17	0.02	−8.78	0.00	Cyprus	−0.81	0.08	−9.75	0.00
EDU_medium	0.18	0.01	16.11	0.00	Czech Rep.	−0.08	0.06	−1.39	0.16
EDU_high	0.54	0.02	30.31	0.00	Germany	0.56	0.04	13.20	0.00
EMP_unemployed	−0.71	0.02	−33.23	0.00	Denmark	0.68	0.05	13.28	0.00
EMP_retired	−0.12	0.02	−6.91	0.00	Estonia	−0.49	0.08	−6.51	0.00
EMP_inactive	−0.11	0.02	−4.65	0.00	Spain	−0.12	0.05	−2.60	0.01
ROOM_2	−0.10	0.05	−2.09	0.04	Finland	0.55	0.05	11.12	0.00
ROOM_3	−0.07	0.05	−1.37	0.17	France	−0.93	0.05	−20.42	0.00
ROOM_4	0.01	0.05	0.12	0.90	Greece	−0.90	0.06	−13.99	0.00
ROOM_5	0.14	0.05	2.63	0.01	Hungary	−1.36	0.09	−14.41	0.00
ROOM_6+	0.28	0.05	5.25	0.00	Ireland	−1.05	0.06	−17.87	0.00
TST_tenant	−0.20	0.02	−8.49	0.00	Italy	−0.78	0.05	−16.58	0.00
TST_reduced	−0.20	0.02	−9.53	0.00	Lithuania	−1.48	0.11	−13.20	0.00
TST_free	0.08	0.04	2.29	0.02	Luxemburg	0.89	0.05	16.93	0.00
DTY_2	0.04	0.01	3.05	0.00	Latvia	−0.97	0.10	−10.01	0.00
DTY_3	0.08	0.02	5.52	0.00	Malta	−0.83	0.09	−9.36	0.00
DTY_4	0.20	0.02	9.80	0.00	Netherlands	1.59	0.04	35.74	0.00
TYPE_2	−0.10	0.02	−4.28	0.00	Poland	0.05	0.06	0.84	0.40
TYPE_3	−0.12	0.03	−4.43	0.00	Portugal	−1.06	0.08	−13.44	0.00
TYPE_4	−0.42	0.03	−13.59	0.00	Romania	0.28	0.08	3.32	0.00
TYPE_5	−0.46	0.03	−15.77	0.00	Sweden	0.45	0.05	9.03	0.00
TYPE_6	−0.34	0.02	−14.63	0.00	Slovenia	−0.07	0.05	−1.31	0.19
TYPE_7	−0.43	0.03	−16.62	0.00	Slovakia	−0.70	0.09	−8.16	0.00
TYPE_8	−0.60	0.03	−18.71	0.00	UK	0.13	0.05	2.71	0.01
TYPE_9	−0.56	0.03	−21.31	0.00	tcm	1.55	0.12	12.89	0.00
TYPE_10	−0.08	0.14	−0.59	0.55	srm	1.11	0.05	20.47	0.00
HDI_2	0.57	0.04	13.12	0.00	sbmedia	0.12	0.04	2.70	0.01
HDI_3	1.13	0.05	23.80	0.00	constant	−6.67	0.22	−30.83	0.00
Category j = 'Easily'									
Age_25–29	−0.30	0.03	−8.89	0.00	HDI_4	1.59	0.12	13.22	0.00
Age_30–34	−0.21	0.06	−3.71	0.00	HDI_5	2.54	0.12	21.03	0.00
Age_35–39	−0.18	0.06	−3.29	0.00	POI_2	0.45	0.07	6.36	0.00
Age_40–44	−0.23	0.05	−4.29	0.00	SMD_2	−1.44	0.23	−6.17	0.00
Age_45–49	−0.23	0.05	−4.36	0.00	HCO_2/3	−1.88	0.07	−26.97	0.00
Age_50–54	−0.23	0.05	−4.57	0.00	DEB_2	−0.51	0.03	−17.88	0.00
Age_55–59	−0.18	0.05	−3.58	0.00	FAL_2	−0.29	0.04	−6.74	0.00

Table 4 continued

Predictor_category	Estimate	SE	z	p value	Predictor_category	Estimate	SE	z	p value
Age_60–64	−0.15	0.03	−4.41	0.00	AAL_2	−0.08	0.07	−1.15	0.25
Age_65–79	−0.01	0.04	−0.39	0.69	HAL_2	−0.17	0.02	−8.70	0.00
Age_80+	0.18	0.07	2.66	0.01	ICT_2	−0.24	0.07	−3.56	0.00
Gender_F	−0.22	0.02	−9.35	0.00	I16_2	−0.15	0.03	−4.54	0.00
MST_married	0.04	0.02	2.56	0.01	Belgium	−0.40	0.08	−4.88	0.00
MST_sep./div.	−0.09	0.04	−2.17	0.03	Bulgaria	−2.12	0.51	−4.17	0.00
MST_widowed	−0.17	0.02	−8.78	0.00	Cyprus	−1.07	0.18	−6.12	0.00
EDU_medium	0.18	0.01	16.11	0.00	Czech Rep.	−0.88	0.13	−6.67	0.00
EDU_high	0.60	0.03	23.01	0.00	Germany	0.12	0.07	1.84	0.07
EMP_unemployed	−0.71	0.02	−33.23	0.00	Denmark	0.57	0.08	7.28	0.00
EMP_retired	−0.12	0.02	−6.91	0.00	Estonia	−1.13	0.20	−5.59	0.00
EMP_inactive	−0.19	0.04	−4.28	0.00	Spain	−1.18	0.10	−12.21	0.00
ROOM_2	−0.14	0.09	−1.62	0.11	Finland	0.73	0.08	9.18	0.00
ROOM_3	−0.17	0.09	−2.00	0.05	France	−1.45	0.09	−16.04	0.00
ROOM_4	−0.16	0.09	−1.80	0.07	Greece	−1.31	0.14	−9.22	0.00
ROOM_5	−0.06	0.09	−0.69	0.49	Hungary	−1.55	0.23	−6.65	0.00
ROOM_6+	0.09	0.09	0.97	0.33	Ireland	−0.79	0.10	−7.96	0.00
TST_tenant	−0.23	0.04	−6.30	0.00	Italy	−1.45	0.10	−14.99	0.00
TST_reduced	−0.20	0.02	−9.53	0.00	Lithuania	−3.66	0.71	−5.14	0.00
TST_free	0.15	0.08	1.99	0.05	Luxemburg	0.24	0.08	2.96	0.00
DTY_2	0.04	0.01	3.05	0.00	Latvia	−2.05	0.32	−6.30	0.00
DTY_3	0.08	0.02	5.52	0.00	Malta	−1.31	0.23	−5.75	0.00
DTY_4	0.19	0.03	5.57	0.00	Netherlands	0.70	0.07	10.63	0.00
TYPE_2	−0.08	0.03	−2.43	0.02	Poland	−0.34	0.12	−2.83	0.01
TYPE_3	−0.10	0.04	−2.42	0.02	Portugal	−1.89	0.23	−8.30	0.00
TYPE_4	−0.49	0.06	−8.68	0.00	Romania	−0.57	0.23	−2.52	0.01
TYPE_5	−0.46	0.03	−15.77	0.00	Sweden	1.05	0.08	13.80	0.00
TYPE_6	−0.34	0.02	−14.63	0.00	Slovenia	−1.08	0.13	−8.36	0.00
TYPE_7	−0.43	0.03	−16.62	0.00	Slovakia	−0.86	0.20	−4.29	0.00
TYPE_8	−0.60	0.03	−18.71	0.00	UK	0.33	0.08	4.37	0.00
TYPE_9	−0.56	0.03	−21.31	0.00	tcm	1.23	0.21	5.79	0.00
TYPE_10	0.03	0.21	0.13	0.90	srm	0.80	0.10	8.37	0.00
HDI_2	0.42	0.11	3.71	0.00	sbmedia	−0.06	0.07	−0.85	0.39
HDI_3	1.10	0.11	9.95	0.00	constant	−7.06	0.39	−18.21	0.00

Number of obs = 204,739; Log Likelihhod = −248,338.72

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