

Having Children in Europe: The Role of Social Capital

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Abstract

We explore the role of social capital in explaining reproductive behaviour and its differences among the European countries. We adopt a comprehensive concept of social capital that combines several elementary indicators and estimate its impact on the probability of having a first or a further child among reproductive-age women currently in a partnership union. We cluster countries in four groups and discuss the results in terms of different welfare state regimes. Data come from the 2014 EU Statistics on Income and Living Conditions survey (N=15,735) which we analysed through a generalized ordered logit model. Our findings support the hypothesis that women who can count on higher level of social capital show higher chance to give birth to a baby and this holds both for each country group and for Europe as a whole. By showing the importance of operationalize a complex and multivariate definition of social capital we contributed to the debate about its relationship with individual reproductive behaviour.

Keywords: fertility, social capital, European countries, welfare regimes, ordered logit model

1. Introduction

Fertility transition that took place in Europe in the 19th and early 20th century has been accompanied by important differences among and within countries as far as timing and quantum of fertility is concerned (Coale & Watkins, 1986). This variability persisted during the Second Demographic Transition (SDT) that occurred since the end of the II World War (Van de Kaa, 1987; Lesthaeghe, 1995). At the end of the 1990s, almost all the European countries experienced a total fertility rate (TFR) below the replacement level (that is below 2.1 children per woman). In some regions, namely in the Southern European countries and, soon after, in the former state-socialist regions, the lowest low-fertility—that is, a TFR below 1.3—was even reached (Kohler et al., 2002). At the beginning of the new millennium, while in the northern and central European countries the average number of children increased (although remaining below the replacement level), in the southern and eastern countries such increase has been negligible (Goldstein et al., 2009; Myrskylä et al., 2009). This upturn in fertility lasted until the onset of the global economic recession in 2008 that negatively affected the reproductive behaviour of the European population. Still many inter- and intra-countries differences have been observed, suggesting that different groups in different regions reacted differently to the recession (Goldstein et al., 2013; Lanzieri, 2013). Even the recent evolution in fertility levels in the developed countries makes many scholars to support the idea that disparities among low fertility contexts are destined to persist (Billari, 2018; Reher, 2019; Castiglioni et al., 2020; Beaujouan & Toulemon, 2021).

The explanation of the contemporary low levels of fertility and their variability across countries recalls the role of the individual preferences, the socio-economic and cultural characteristics, the contextual conditions, and the direct or indirect policy measures aimed at sustaining families and their childbearing (see Balbo et al., 2013 for a complete review of the theoretical models and empirical results on the topic).

In this paper, we focus on the role played by social capital in influencing reproductive behaviour.

The term *social capital* designates a set of intangible resources available in families and communities that help to promote the social development of an individual and the attainment of his/her goals (Loury, 1977; Bourdieu, 1986; Coleman, 1988; Portes, 1998). It is quite a complex concept since it is multidimensional and multidisciplinary and thus very difficult to define from an operational point of view and thus to measure (Adler & Kwon, 2002). These difficulties contribute to explain why the research on the role of social capital in fertility issues is quite limited and not completely convincing (Balbo et al., 2013: 15).

We provide an empirical study of the possible effect of social capital on fertility in the different European regions. The study is original for several reasons: first of all, we adopt a comprehensive definition of social capital; then, we build

synthetic measures of social capital by merging a huge number of simple indicators; and finally, we measure the effects of the social capital on the probability of having a (further) child by considering all the 27 EU countries.

The paper is organised as follows: in Section 2 we introduce the concept and definition of social capital (SC); in Section 3 we illustrate the quite limited literature with empirical studies on SC as a determinant of fertility and propose our own hypotheses; Section 4 describes data and methods and Section 5 the main results of our study; in Section 6 we discuss the various implications of our approach.

2. What Is Social Capital?

The economist Glenn Loury (1977) introduced the concept of SC to designate a set of intangible resources in families and communities that help to promote the social development of people. Many different disciplines refer to SC (see Adler & Kwon, 2002 for a complete review of concepts and definitions of SC). The sociological literature enlightens its role in social control, family support, and benefits mediated by extrafamilial networks (Portes, 1998). The sociologist Pierre Bourdieu pointed out the relevance of SC in that the connections to others help the individual activate own resources to pursue his/her goals more effectively (Bourdieu, 1986; Coleman, 1988; Portes, 1998).

The most common notion of SC is closely related to that of social networks since family members, friends, neighbours, colleagues and others of significance to the individual are providers of social support (Thoits, 2011). However, SC is a concept which goes beyond interpersonal relationships. According to the World Bank Social Capital Initiative Programme research group, SC includes the institutions, relationships, attitudes, and values that govern interactions among people and contribute to economic and social development (Grootaert & van Bastelaer, 2002). This broader definition implies that living in a society characterised by model and cooperative behaviour, and where trust replaces suspicion and fear, can have a systematically positive effect on individuals since their socio-economic vulnerability is reduced as well as the amount of resources they need to deal with risk and to avert major losses (Putnam, 1993; Helliwell, 2001). Networks of interpersonal relationships characterised by mutual trust represent an important resource, especially for those who are often described as deficient in other dimensions such as human and financial capital (Grootaert & van Bastelaer, 2001; Woolcock, 2002). The quality of the place where the individual lives in terms of trust and security, services and environmental conditions also contributes to SC (Putnam, 1993; Guagnano et al., 2014). Institutions can contribute through actions aimed at improving the quality of the environment in which individuals live and at facilitating meetings and exchanges within the social network, while ensuring the safety and trust of citizens. Therefore, they have an important role in increasing the SC of individuals (Loopmans, 2001; Glaeser et al., 2002).

The distinct features of SC can be summarised as follows: first, SC is prospective. People decide to take a particular action based on the resources they expect to have access to, including SC (Philipov et al., 2006). Second, SC exists in relationships between people and can be viewed as an asset which facilitates actions (Coleman, 1988). Third, SC derives from reciprocal exchange relationships. By transferring goods, services or symbolic gifts to network partners, individuals obtain the right to receive goods, services, or gifts from the same or other network partners (Astone et al., 1999; Coleman, 1990). Fourth, SC, more than being a private good, is a collective and non-exclusive good, in that living in a high SC community or neighbourhood can be beneficial even for individuals with poor social connections (Kawachi & Berkman, 2000). Finally, SC, as another form of 'capital', is convertible into other forms of capital, immediately usable, notably money and services (Harker et al., 1990), or it may function as a tool for activating a higher productivity of other resources (Grootaert, 1998), such as human and physical capital, goods of symbolic content (swapping of gifts), or emotional gratification, such as building a family and having a child.

In this paper, we will adopt this broad definition of SC that encompasses the individual network of kinship and social relationships, the sense of trust and security felt in the community to which one belongs, and the quality of the place people live in.

3. The Relationship Between Social Capital and Fertility: Literature Review and Research Hypotheses

SC is a concept often recalled when dealing with the search for determinants of reproductive behaviour (Balbo et al., 2013). The main rationale is that SC provides a good deal of resources that might lower the costs of having children, thus positively influencing the decision to plan for a (further) child (Philipov et al., 2006). The resources a potential parent needs are of a different nature: monetary support to reduce the general costs of rearing a child; informal childcare and help in household duties; or even only emotional support (Bühler & Philipov, 2005; Bernardi & Klaerner, 2014). The characteristics of the immediate living environment, that is the contextual dimensions closest to individuals, should be also considered (Bongaarts & Watkins, 1996; Lee et al., 1994; De Rose & Testa, 2016). In fact, the structural factors, such as the availability and affordability of housing, family-oriented services and infrastructure, or economic opportunities and constraints relate to the direct and indirect costs of children (Kulu & Vikat, 2007; Kulu, 2011; Kulu & Washbrook, 2014; Fiori et al., 2014). Another aspect to be considered is the social climate and the sense of trust and security associated with the place an individual lives in: living in situations of unease or social degradation or in areas of low socio-economic

status may create a climate of fear for the future and discourage women and couples from having children (Meggiolaro, 2011).

Although from a theoretical point of view the hypothesis of the role of SC in fertility choices is a very promising one, empirical research is quite limited. Studies in the field are rare and they are each focused on a single aspect.

Most of the empirical literature on the topic concentrates on the role of exchange-based networks in fertility intentions as a source of emotional and material aid. The few papers on the topic focus on selected countries, namely those of Eastern Europe. With reference to Bulgaria, Buhler and Philipov (2005) argue that the process of interpersonal exchanges is relevant for reproductive decisions when it ensures access to financial resources. In a comparative study between Bulgaria and Hungary, Philipov et al. (2006) found that the 'exchange of help' among the family members had a positive effect on the intention to have a second child.

Another branch of interest is the social influence on fertility decisions (Bernardi et al., 2007). Böhler and Fratzak (2007) proposed including the influences of communication networks on reproductive behaviour in Poland and found that the intentions of childless respondents are positively influenced by network partners who are also childless or who have already taken the decision to have a first child. Balbo and Mills (2011) found contrasting effects of networks and social pressure: the presence of siblings who have small children have the effect of postponing having another, due to a competition for the informal childcare provided by the grandparents. At the same time, family SC—defined as closeness among the members of the extended family—positively influences the realisation of the intention to have another child.

Di Giulio et al. (2012) concentrated on the impact of supportive networks on intentions to have a second child in Italy, Bulgaria and Germany. They adopted a larger definition of SC, including indicators of both the exchange of help and support in terms of goods and emotions. They also included a measure of trust: the argument is that people who trust others should be more confident in utilising supportive networks as a help for rearing children, and this would promote the intention to have a second child. Interestingly, this positive effect has been found for Bulgaria and Italy but not for Germany, where there is a lower amount of network-based but stronger institutional support for families.

The role of trust on fertility differentials has been recently investigated in the literature: in countries where average trust is high, such as the Scandinavian ones, fertility is relatively higher than in countries where trust is low, such as those in Southern and Eastern Europe (Aassve et al., 2016). With reference to Italy, Aassve et al. (2021) considered the role of social trust as a coping mechanism when general uncertainty increases and found a robust and significantly positive impact of trust on fertility. In this framework, social trust is viewed as a key ingredient of the more general concept of social capital.

Several studies document fertility differences by characteristics of the place of residence. In a study on Germany, Hank (2002) showed that regional structures as well as local patterns of social interaction and culture translate into factors that directly affect the likelihood of having a first and a second child. In her study on Milan (Italy), Meggiolaro (2011) showed how the groups which the individual belongs to and the local communities where he/she lives affect fertility. Neighbourhoods with better services and structures influence women positively in their reproductive choices. The Author also accounted for trust and found that "Feeling part of a group produces a sense of security and protection, trust in the future, the ideal 'climate' for thinking about having a child" (Meggiolaro, 2011: 802).

As far as we know, no recent papers have made a direct attempt to consider a comprehensive concept of SC as determinant of reproductive behaviour. The studies we have found so far have addressed the issue of the relationship between SC and fertility by pointing to a single aspect, specifically the role of the social network, rather than that of trust and security feeling or that of the quality of the place where one lives. Moreover, very few papers have a comparative territorial perspective, and practically no one covers the whole European area.

With this paper, we aim to fill a gap and contribute to the overall debate. We adopt a comprehensive definition of SC, as described above (Grootaert & van Bastelaer, 2002). We propose an empirical model that explicitly links the probabilities of having one (further) child to SC. Our analysis is extended to all the EU countries. This allows the regional variability of the relationship between fertility and the broader context where people live to be taken into account. Moreover, by comparing results among groups of countries representing different welfare regimes we argue about the role played by institutions in the relationship above (Esping-Andersen, 1990; De Rose & Racioppi, 2001; Scheepers et al., 2002; Kärränen & Lehtone, 2006; Ciritel et al., 2019).

Our main hypothesis is that SC increases the probability of having children, net of economic, demographic and health characteristics (Hp_1).

Furthermore, we expect a certain degree of variability in this effect, according to the different welfare systems in European countries, that is a stronger impact of SC on the chance to have a (further) child in those societies with less supportive policies in favour of households and childbearing, namely in Eastern and Southern Europe (Hp_2).

4. Data and Methods

4.1 Data

Data come from the 2014 cross-sectional European Union Statistics on Income and Living Conditions survey (EU-SILC). This is the reference source for comparative studies on household income distribution, poverty, and social exclusion for all European countries (Eurostat, 2010, 2014). The EU-SILC cross-sectional survey provides comparable and high-quality indicators collected at the individual and household levels. The 2014 edition, moreover, provides a set of information useful to obtain a global synthetic measure of SC, which is of specific interest for this study. Therefore, despite the impossibility of using more up-to-date data from the most recent survey waves, and some other limitations which we will account for in the rest of the paper, these data offer a unique opportunity to study the relationship between SC and reproductive behaviour following our research approach.

We selected reproductive-age women (16–49) cohabiting with a partner for a total sample size of 15,735 units.

4.2 Dependent Variable

The main scope of this study is to explore the association between SC and reproductive behaviour under the hypothesis that the higher the endowment of SC, the higher the probability that a woman decides to give birth to a child, net of other individual and household demographic and socio-economic characteristics. Assuming that in contemporary Europe childbearing is the result of a rational choice, our target response variable is, in principle, the decision to have a (further) child at a certain step of the individual life course (Lesthaeghe, 1999; Hakim, 2003). Unfortunately, the EU-SILC survey is not designed to collect information on personal attitude, nor from a life-history perspective or taking the related decisional processes into account. Thus, ideally, we would like to measure the decision to have a (further) child and to estimate the role of SC at the time of decision formation; actually, we only observe the number of children already born at the date of the interview as well as the socio-economic conditions and the SC indicators at the same date. Furthermore, since the reproductive event is the result of a planning process that requires a certain length of time to be realised, an adequate temporal lag between the SC measurement and the birth event should be respected. To take these theoretical requirements into account, we decided to limit our analysis to the recent maternity experience—'recent childbearing'—and to relate it to the SC held in a time close to the event date. More specifically, we assume that giving birth to a child in a date close to that of the interview—one year before at latest—is the proxy of a recent decision (Note 1). Similarly, we assume that the SC endowment changes slowly: at the interview, it can be considered very close (if not equivalent) to that endowed at the time of the decision to have a child, the more so at the conceiving. In other words, we assume that the form and amount of social capital on which the person counted at the time of the effective planning of a child are the same as those observed a year later at the time of the interview.

We consider three categories of women, identifiable by means of a classification variable (say Y):

$Y = 0$: with no children less than 1 year old

$Y = 1$: with only one child (or twins) less than 1 year old

$Y = 2$: with 2 or more children and at least one less than 1 year old

This classification variable, which takes on three ordered categories (0, 1, 2), represents our dependent variable.

4.3 Social Capital Proxies and Control Variables

As already observed (Section 2), SC is a multidimensional and multifaceted concept that includes tangible and intangible aspects as well as structural and cognitive ones. Some of them, such as the kinship, institutions, rules, services, environment quality, etc., are relatively objective and observable constructs. The cognitive component refers to shared norms, values, trusts, attitudes, and beliefs, all of which are intangible, not directly observable, and subjectively declined (Saukani & Ismail, 2019). For these reasons, SC is difficult to measure directly. For empirical purposes, the use of proxy indicators is necessary, but no consensus on which indicators to be used had been reached yet (Grootaert & van Bastelaer, 2002). Consistently with the most widely accepted definition of SC mentioned in Section 2 and following Santini & De Pascale (2012a, 2012b) we selected the proxy variables listed in Table A1 of the Appendix (Note 2).

In particular, the first set of indicators describes real and virtual relationships. Real relationships are those based on face-to-face formal or informal socialising; 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 (items relative to childcare provided by relatives or friends, the presence of family workers). The question 'Do you have a computer?' detects the availability of the technological instrument which facilitates the creation of virtual networks, while the question 'Do you have a phone?' (including mobile phone) allows for detection of the availability of a device which helps to keep alive both real and virtual relationships. The variable related to the question 'Do you have a colour TV?' measures a negative feature of social relationships, in that the more time spent watching television is associated with substantially lower levels of

participation in social activities. Putnam (1995, 2000) has argued that SC in the United States has been declining and that the rise of television is a major factor behind this decline. This is also related with lower self-reported measures of trust. The set of questions about leisure and social activities helps to measure the degree of informal socializing.

All these elementary indicators are summarized through a simple arithmetic mean, hypothesizing that they are perfectly and mutually replaceable as they measure different aspects of the same facet of SC.

As an indicator of the environmental quality of the surroundings we included the exposure to excessive pollution and grime or other environmental problems.

The last indicator, that is the perceived level of crime, violence and vandalism has been included as a proxy for the security feeling of the individual with respect to the neighbourhood social behaviours, which affects trust.

All the elementary indicators considered so far have been previously recoded to be all positively related to SC.

Finally, the complex index for social relationships, and the two elementary indicators measuring, respectively, environment quality and security feeling, have been combined with each other through a simple geometric mean, which implies a lower interchangeability of categories (Guagnano et al., 2016). The obtained index of SC assumes continuous values within the interval (0,1).

To estimate the net effect of SC on reproductive behaviour we control for a set of variables usually considered in the scientific literature on fertility determinants (woman age, marital status, health status, education, employment status, household equalized disposable income, dwelling tenure status and dwelling condition).

Note that information on dwelling condition is obtained through a complex index, based on four elementary indicators, corresponding to the answers (yes/no) to the following questions: ‘Do you live in an overcrowded house?’; ‘Do you have any of the following problems related to the place where you live? (i.e.: Leaking roof, dump walls/floors/foundation, rot in windows frames or floor)’; ‘Is your dwelling too dark? Meaning is there not enough daylight coming through the windows?’; ‘Do you have too much noise in your dwelling from neighbours or from outside (traffic. business. factory)?’. Analogously to the synthetic measure of social relationship, these elementary indicators are summarized through a simple arithmetic mean since they refer to the same phenomenon. The obtained index assumes values within the interval (0,1), with 0 denoting the worst dwelling condition whereas 1 denoting the best one.

The full list of the control variables is reported in Appendix, Table A2.

4.4 Statistical Model

Given the ordinal nature of the dependent variable, the most suitable model is the ordered logit model, which is a regression model for an ordinal response variable based on the corresponding cumulative probabilities. The log odds of each cumulative probability are assumed to be linear function of the covariates, with regression coefficients constant across response categories. However, this condition —called proportional odds assumption— is not verified for all the covariates. Consequently, we specify a more flexible model, the so called partial proportional odds or generalized ordered logit model (Mc Culloch & Nelder, 1989; Peterson & Harrel, 1990; Fu, 1998; Williams, 2006), that is an ordered logit model which allows parameters to vary across categories.

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

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

with

$$P(Y_i = 1) = 1 - g(\mathbf{X}_i \boldsymbol{\beta}_1); P(Y_i = j) = g(\mathbf{X}_i \boldsymbol{\beta}_{j-1}) - g(\mathbf{X}_i \boldsymbol{\beta}_j); P(Y_i = J) = g(\mathbf{X}_i \boldsymbol{\beta}_{J-1}) \quad (2)$$

where i refers to the individual, \mathbf{X}_i is the vector of predictors for the i -th individual and $\boldsymbol{\beta}_j$ are the vectors of parameters to be estimated that may vary from a response category to another (Note 3).

It should be noted that, since the generalized model can produce negative predicted probabilities, some researchers suggest continuing to use the ordinal logit model even when the assumption of proportionality is violated (see Mc Culloch & Nelder 1989, p. 155). Thus, for better evaluating the implication of the violation and for comparative purposes, we also estimate a standard ordered logit model.

To take the geographical differences into account, we first estimate a model based on the entire sample, referring to Europe as a whole; then, we estimate separate models for the main geographical areas in which we group the countries, in order to reduce inter-countries heterogeneity mainly in terms of welfare regimes (Centre-West: Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, United Kingdom; East: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia; North: Denmark, Estonia, Finland, Latvia, Lithuania, Sweden; South: Cyprus,

Greece, Italy, Malta, Portugal, Spain) (Note 4).

5. Results

The response variable Y is distributed among EU countries as illustrated in Table 1. Our indicator of recent childbearing, that is the birth of a child within one year before the interview (between the years 2013 and 2014), confirms the very limited reproductive activity of European women: only 20% of them gave birth to a child (whether a first or a subsequent child) in the period considered, with no apparent differences between geographical areas.

Table 1. Sample distribution of women by number of children under 1 year by geographical area. EU-SILC 2014

Geographical area	Dependent variable			TOTAL
	Y			
	Childless or no children < 1yr (Y=0)	Only child or twins < 1yr (Y=1)	2 or more children of which at least 1 child <1yr (Y=2)	
Centre-West	4410	481	680	5571
(%)	(79.2)	(8.6)	(12.2)	(100)
East	2791	314	413	3518
(%)	(79.3)	(8.9)	(11.7)	(100)
North	2664	217	357	3238
(%)	(82.3)	(6.7)	(11.0)	(100)
South	2763	333	369	3465
(%)	(79.7)	(9.6)	(10.6)	(100)
<i>EU-27</i>	12628	1345	1819	15792
	(80.0)	(8.5)	(11.5)	(100)

Note. Centre-West: Austria, Belgium, France, Germany, Ireland, Luxembourg, the Netherlands, United Kingdom; East: Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia; North: Denmark, Estonia, Finland, Latvia, Lithuania, Sweden; South: Cyprus, Greece, Italy, Malta, Portugal, Spain.

Source: Our elaboration on EU-SILC data, 2014 wave.

The results of the partial proportional odds model are presented as predicted probabilities plotted in Figure 1, referred to the representative (modal) woman, that is, aged 25-34 years, married, full-time employed, homeowner, earning an income belonging to the highest category (fifth quintile) and living in a dwelling with a low level of decay (the corresponding index is equal to 0.869). The parameter estimates and the goodness-of-fit statistics are reported in the Appendix, Tables A3–A7.

In all the estimated models, SC shows a positive and significant effect, suggesting that the higher the amount of social capital endowment, the higher the probability of giving birth to a child in the reference period. This positive effect is larger in the northern and in eastern countries and lower in southern ones. In fact, the slopes of the curves represented in Figure 1, corresponding to the estimated probabilities of giving birth to the first or to a further child, is the highest for the first group of countries and the lowest in the other case. It can also be seen that the estimated probabilities are generally higher for the first child, than for a further child, although the net effect of SC is the same for the birth of the first or a further child. In fact, the corresponding estimated parameter does not change across response variable categories (i.e., the proportional odds assumption holds for this regressor), as can be seen in Tables A3–A7. Interestingly, SC, along with tenure status, is the only regressor that fulfils the proportional odds assumption for each estimated model. In other words, it shows the same effect on the probability of having a child, regardless of the birth order.

As far as the control variables is concerned, their effects are usually consistent with the literature (Balbo et al., 2013) (Note 5). Namely, probabilities to have a (further) child follow a reversed U shape by age; they are always higher for married women than for never-married ones and for homeowners than for renters. In addition, women working full-time are less likely to have a child than women who work part-time and women in other employment status. The effect of equalized disposable income is slightly positive up to the fourth quintile and negative for the last one, while dwelling condition shows a negative effect. The proportional odds assumption does not always hold for these covariates, except

for tenure status, and it never does for age, confirming that these factors differently act on the probabilities of having the first child or a further child. No statistically significant effects have been found for education and health status.

Focusing on territorial differences, we can note that the highest probability of having the first child is observed for the southern countries, while the lowest probability is observed for eastern countries. On the other side, for the probability of giving birth to a further child, the highest and the lowest values are generally observed for the northern and eastern countries, respectively.

Finally, referring to the results obtained by the traditional ordered logit model, we obtain coherent estimates, especially in terms of signs, i.e., of the direction of the effects (Note 6). However, we can note that territorial differences change quite a bit. In other words, without accounting for the failure of the proportional odds assumption, some results become misleading in terms of differences among geographical areas. Moreover, for all the parameters that are allowed to vary across the response categories, the estimates are very different from those obtained for the more general partial proportional odds model.

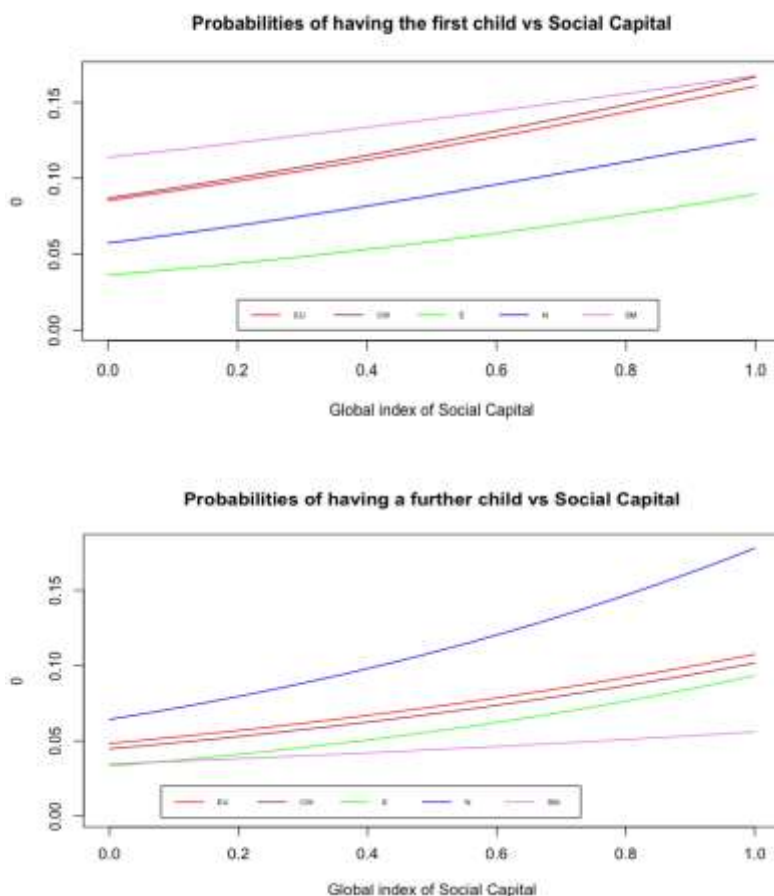


Figure 1. Predicted probabilities of having a first or a further child in the year preceding the interview by social capital, in different geographical areas – EU-SILC data, 2014 wave

6. Discussion

SC is an important resource that can influence the decision of a woman or of a couple to have a child. However, the definition and the measurement of this asset are not straightforward, and lack of clarity in these processes can challenge the statement above. The most common choice found in the literature on the topic is to concentrate on the role of kinship and social networks as a meso-level determinant of fertility. This is certainly correct since SC roots itself in inter-individual connections and relationships, yet it does not end with the social network. In this paper, we aimed to demonstrate that if one takes on a broader definition of SC, including its various dimensions, the possible association between this asset and the individual behaviour in terms of fertility is far from being trivial.

Based on the widely accepted definition by the World Bank Social Capital Initiative Programme research group, our index of SC includes proxies of the perception of trust and security, of informal socialising based on virtual and real relationships, of the fairness of living conditions in terms of the physical environment.

The results of the estimated models support the hypothesis of an overall positive and great impact of SC on fertility behaviour. In other words, as the social capital available to families increases, the probability that a woman will give birth to a child increases, all other conditions being equal. Thus, the first hypothesis (HP_1) of our work is confirmed by the data.

The second hypothesis of our study (Hp_2), instead, is only partially confirmed: although we observe differences between groups of countries, which are characterized by a relative within homogeneity as far as the geographical location in Europe and welfare regime are concerned, the gradient of the effects of SC on reproductive behaviour is a bit unexpected. In fact, the effect is stronger in the northern European countries followed by the eastern ones while the effect is less evident in the southern. Thus, our expectation that women living in countries with less supportive policies in favour of children and the family – namely the southern and eastern European countries - are more in need of kinship/community help is only partially fulfilled.

This partially counterintuitive result can be explained by the way we defined SC. In fact, we did not refer only to the individual social network and the tangible and intangible help it can provide in childbearing – as it is well proved by a great deal of literature on the topic (see Section 3), but we included other aspects, such as trust and environment quality, with less clear effect on fertility behaviour.

Overall, our results confirm that social capital as a whole is an important asset for the individual and his/her family in their project realization, but its different components could play different roles or have different weights in individual decisions and in different cultural and institutional contexts. Hence the choice of the indicators used as proxies for SC is crucial and represents the biggest challenge for this kind of research, including this our own.

The outcomes of this study must be read with caution due to some non-negligible limitations. First, EU_SILC data, though one if not the only source of comparable and complete information on household well-being across Europe, do not cover all the aspects we could have explored while dealing with the different SC dimensions. Namely, the choice of the indicators – although in line with the theoretical background – it has been entrusted to our sensitivity as researchers because there is no consolidated set of items to be used. Moreover, for some dimensions – i.e., the social morality dimension, that is a direct indicator of trust - we were forced to use only one item, and maybe not the best one.

Second, the survey does not collect information on reproductive intention, nor direct information on behaviour. Moreover, the cross-sectional nature of the data forced us to define a very tiny fertility indicator, that is, recent childbearing. In a period of very low fertility, like the contemporary era, and with family plans that take a quite long time to be realised, the informative value of our indicator is quite low. We could not even have taken advantage of the longitudinal version of the survey since the number of SC proxies is comparatively much lower than in the cross-sectional survey.

Finally, modelling the effect of SC as an individual's asset on fertility behaviour raises causality concerns since the relation might be spurious and the effect could work in both directions. For example, a social network can expand, and the frequency of interpersonal contacts and material/emotional exchanges can increase right after the birth of a child, not to mention the provision of childcare. Moreover, there would be a selection effect; that is, women (or couples) with certain fertility expectations 'select themselves' into certain areas through their choices of the neighbourhood in which to live (Meggiolaro, 2011). Again, one way to control for these causality issues could have been to use a longitudinal survey covering a longer time span of individual life histories, which was not available to us.

These various pitfalls confirm the difficulty in verifying the relationship between SC and fertility at the empirical level and the need to properly account for selection and contextual factors (Balbo et al., 2013). However, while aware of these limitations, we believe that our study, by highlighting the complexity of the concept of SC itself and the need to consider its many facets, can contribute in an original way to the debate on its potential role as an explanatory factor for individual behaviours.

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Notes

Note 1. One can object that EU-SILC survey provides a longitudinal component, that is the same subsample of respondents are re-interviewed in successive waves. This could help in linking the birth of a child at a certain date to the socio-economic status and SC assets measured at a previous time. Unfortunately, the questionnaire for the longitudinal survey is rather limited and does not include all the items we selected as SC elementary components. Moreover, the longitudinal sub-sample is not available for all EU countries.

Note 2. We are aware that our proposal is neither complete nor including the best indicators of the different SC capital aspects; however, some proxies were not provided and for several variables we found too many missing data, hence we had to exclude them.

Note 3. 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.

Note 4. Portugal is included into this group, because considered more similar to the southern countries than to the western ones.

Note 5. Due to space limitations, we avoided showing graphically the net effects of each covariate on the response probabilities, however they are available upon request, for both groups of estimated models.

Note 6. Note that in Tables A3–A7, for the traditional ordered logit model, the parameter estimates corresponding to the category $Y:1|2$ of the dependent variable are the same as those for the category $Y:0|1$, coherently with the proportional odds assumption. The estimate corresponding to the second intercept refers to the so-called threshold parameter and this differs from the first intercept.

Appendix A

Table A1. Social capital indicators

<i>1. Social relationship</i>		
LABEL	VARIABLE	CATEGORIES
<i>PHO</i>	Do you have a phone? (including mobile)	No
		Yes
<i>TVC</i>	Do you have a color tv?	No
		Yes
<i>PC</i>	Do you have a computer?	No
		Yes
<i>CHI</i>	Childcare provided by grandparents, others household members (outside parents), other relatives, friends, or neighbors (free of charge) (per household member if less than 12 years old).	No
		Yes
<i>FAW</i>	Are there 'family workers' in your family business? (number)	No
		Yes
<i>INC</i>	Do you have an internet connection?	No
		Yes
<i>MEA</i>	Get-together with friends/relatives for a drink/a meal at least once a month	No
		Yes
<i>LES</i>	Regularly participate in a leisure activity such as sport, cinema, concert	No
		Yes
<i>CIN</i>	Going to the cinema	No
		Yes

<i>LPE</i>	Going to live performances	No Yes
<i>CSI</i>	Visits to cultural sites	No Yes
<i>LSE</i>	Attendance to live sport events	No Yes
<i>GTR</i>	Getting together with family/relatives	No Yes
<i>GTF</i>	Getting together with friends	No Yes
<i>CRE</i>	Contacts with family/relatives	No Yes
<i>CFR</i>	Contacts with friends	No Yes
<i>CSM</i>	Communication via social media	No Yes
<i>HFO</i>	Help from other	No Yes
<i>ADW</i>	Personal matters (anyone to discuss with)	No Yes
<i>Territorial context</i>		
LABEL	VARIABLE	CATEGORIES
<i>H4H</i>	Pollution. grime or other environmental problems in the local area such as smoke. dust. unpleasant smells or polluted water	Yes No
<i>Social behavior</i>		
LABEL	VARIABLE	CATEGORIES
<i>CRH</i>	In your local area are there any problems of crime, violence or vandalism?	Yes No

Table A2. Individual and household indicators (control variables)

<i>INDIVIDUAL DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS</i>	
VARIABLE NAME	CATEGORIES
Age	16 - 24; 25 - 34; 35 - 39; 40 - 49
Marital Status	Never married; Married
Self-defined current employment status	Working full-time; Working part-time; Other
<i>HOUSEHOLD SOCIO-ECONOMIC CHARACTERISTICS</i>	
Equivalent disposable income	quintiles
Dwelling tenure status	Ownership; Rental
Dwelling condition	values in (0,1)

Note: Educational level and health status proved to be not statistically significant in the model analysis, so these variables were not included in this list.

Table A3. Parameters estimates for the birth of the first or a further child in the year preceding the interview (baseline category: No children) – Europe

Covariate (base category)	Partial proportional odds model					Ordered logit model				
	Estimate	Std.Err.	z	p-value	Estimate	Std.Err.	z	p-value		
Y:0 1	Age	25 - 34	0.869	0.078	11.141	0.000	0.928	0.077	12.099	0.000
	(16 - 24)	35 - 39	0.859	0.090	9.537	0.000	1.017	0.088	11.499	0.000
		40 - 50	-1.802	0.107	-16.834	0.000	-1.733	0.106	-16.336	0.000
	Marital status (Married)	Never Married	-0.794	0.050	-15.829	0.000	-0.824	0.049	-16.763	0.000
	Employment status (Full time)	Part-time	1.417	0.052	27.421	0.000	1.402	0.050	27.773	0.000
		Other	0.894	0.069	12.941	0.000	0.949	0.068	13.919	0.000
	Hequivalized disposable income (I quintile)	II quintile	0.287	0.082	3.480	0.001	0.255	0.080	3.169	0.002
		III quintile	0.366	0.080	4.595	0.000	0.320	0.078	4.102	0.000
		IV quintile	0.490	0.080	6.156	0.000	0.415	0.078	5.338	0.000
		V quintile	-0.090	0.081	-1.118	0.264	-0.193	0.079	-2.431	0.015
	Tenure status (Owner)	Rental	-0.601	0.053	-11.401	0.000	-0.591	0.053	-11.231	0.000
	Dwelling condition		-1.324	0.111	-11.927	0.000	-1.245	0.107	-11.587	0.000
	Social capital		0.865	0.126	6.859	0.000	0.863	0.126	6.854	0.000
	Intercept		-1.495	0.152	-9.844	0.000	-1.567	0.148	-10.575	0.000
Y:1 2	Age	25 - 34	1.456	0.121	12.043	0.000	0.928	0.077	12.099	0.000
	(16 - 24)	35 - 39	1.808	0.129	13.962	0.000	1.017	0.088	11.499	0.000
		40 - 50	-0.795	0.146	-5.437	0.000	-1.733	0.106	-16.336	0.000
	Marital status (Married)	Never Married	-1.021	0.063	-16.119	0.000	-0.824	0.049	-16.763	0.000
	Employment status (Full time)	Part-time	1.369	0.061	22.587	0.000	1.402	0.050	27.773	0.000
		Other	1.127	0.080	14.091	0.000	0.949	0.068	13.919	0.000
	Hequivalized disposable income (I quintile)	II quintile	0.106	0.092	1.148	0.251	0.255	0.080	3.169	0.002
		III quintile	0.115	0.089	1.289	0.197	0.320	0.078	4.102	0.000
		IV quintile	0.109	0.090	1.205	0.228	0.415	0.078	5.338	0.000
		V quintile	-0.693	0.097	-7.178	0.000	-0.193	0.079	-2.431	0.015
	Tenure status (Owner)	Rental	-0.601	0.053	-11.401	0.000	-0.591	0.053	-11.231	0.000
	Dwelling condition		-1.020	0.128	-7.967	0.000	-1.245	0.107	-11.587	0.000
	Social capital		0.865	0.126	6.859	0.000	0.863	0.126	6.854	0.000
	Intercept		-2.858	0.184	-15.551	0.000	-2.369	0.149	-15.872	0.000
Sample size	15735									
log Likelihood	-8162.800				-8295.190					
AIC	16377.600				16620.380					

Table A4. Parameters estimates for the birth of the first or a further child in the year preceding the interview (baseline category: No children) – Central-western countries

Covariate (base category)	Partial proportional odds model					Ordered logit model				
	Estimate	Std.Err.	z	p-value	Estimate	Std.Err.	z	p-value		
Y:0 1	Age	25 - 34	1.166	0.000	8.079	0.000	1.223	0.143	8.558	0.000
	(16 – 24)	35 - 39	1.372	0.166	8.276	0.000	1.579	0.163	9.677	0.000
		40 - 50	-1.596	0.192	-8.320	0.000	-1.531	0.191	-8.025	0.000
	Marital status	Never Married	-0.775	0.083	-9.289	0.000	-0.798	0.081	-9.799	0.000
	Employment status	Part-time	1.557	0.100	15.548	0.000	1.526	0.097	15.717	0.000
		Other	1.001	0.100	10.044	0.000	1.038	0.098	10.611	0.000
	Hequivalized disposable income (I quintile)	II quintile	0.862	0.425	2.029	0.042	1.197	0.412	2.903	0.004
		III quintile	0.963	0.398	2.418	0.016	1.155	0.388	2.980	0.003
		IV quintile	0.642	0.395	1.627	0.104	0.785	0.384	2.043	0.041
		V quintile	-0.220	0.395	-0.556	0.578	-0.138	0.385	-0.359	0.720
Tenure status	Rental	-0.877	0.087	-10.052	0.000	-0.883	0.087	-10.147	0.000	
Dwelling condition		-0.877	0.220	-3.985	0.000	-0.756	0.212	-3.567	0.000	
Social capital		0.884	0.207	4.271	0.000	0.869	0.207	4.208	0.000	
Intercept		-2.070	0.481	-4.303	0.000	-2.355	0.470	-5.010	0.000	
Y:1 2	Age	25 – 34	1.662	0.223	7.464	0.000	1.223	0.143	8.558	0.000
	(16 – 24)	35 – 39	2.331	0.239	9.760	0.000	1.579	0.163	9.677	0.000
		40 – 50	-0.651	0.267	-2.434	0.015	-1.531	0.191	-8.025	0.000
	Marital status	Never Married	-0.913	0.102	-8.985	0.000	-0.798	0.081	-9.799	0.000
	Employment status	Part-time	1.513	0.117	12.948	0.000	1.526	0.097	15.717	0.000
		Other	1.179	0.118	9.969	0.000	1.038	0.098	10.611	0.000
	Hequivalized disposable income (I quintile)	II quintile	2.285	0.655	3.489	0.000	1.197	0.412	2.903	0.004
		III quintile	1.930	0.634	3.043	0.002	1.155	0.388	2.980	0.003
		IV quintile	1.468	0.633	2.321	0.020	0.785	0.384	2.043	0.041
		V quintile	0.336	0.633	0.530	0.596	-0.138	0.385	-0.359	0.720
Tenure status	Rental	-0.877	0.087	-10.052	0.000	-0.883	0.087	-10.147	0.000	
Dwelling condition		-0.439	0.258	-1.704	0.088	-0.756	0.212	-3.567	0.000	
Social capital		0.884	0.207	4.271	0.000	0.869	0.207	4.208	0.000	
Intercept		-4.679	0.717	-6.520	0.000	-3.201	0.472	-6.787	0.000	
Sample size	5.547									
log Likelihood	-2803.910				-2850.90					
AIC	5659.830				5731.790					

Table A5. Parameters estimates for the birth of the first or a further child in the year preceding the interview (baseline category: No children) – Eastern countries

Covariate (base category)		Partial proportional odds model				Ordered logit model				
		Estimate	Std.Err.	z	p-value	Estimate	Std.Err.	z	p-value	
Y:0 1	Age (16 – 24)	25 - 34	0.524	0.146	3.589	0.000	0.637	0.141	4.499	0.000
		35 - 39	0.274	0.179	1.525	0.000	0.509	0.175	2.907	0.004
		40 - 50	-2.782	0.254	-10.965	0.000	-2.676	0.252	-10.639	0.000
	Marital status (Married)	Never Married	-0.769	0.109	-7.074	0.000	-0.840	0.106	-7.896	0.000
	Employment status (Full time)	Part-time	1.362	0.105	12.984	0.000	1.387	0.103	13.499	0.000
		Other	0.640	0.242	2.644	0.000	0.702	0.240	2.930	0.003
	Hequivalized disposable income (I quintile)	II quintile	0.324	0.115	2.810	0.042	0.348	0.115	3.027	0.002
		III quintile	0.262	0.133	1.969	0.016	0.278	0.133	2.088	0.037
		IV quintile	0.561	0.202	2.779	0.104	0.572	0.202	2.833	0.005
		V quintile	-0.594	0.561	-1.059	0.578	-0.604	0.561	-1.076	0.282
	Tenure status (Owner)	Rental	-0.599	0.157	-3.828	0.000	-0.579	0.156	-3.708	0.000
	Dwelling condition		-2.002	0.205	-9.764	0.000	-1.966	0.204	-9.631	0.000
	Social capital		1.098	0.271	4.054	0.000	1.106	0.270	4.090	0.000
	Intercept		-0.783	0.269	-2.909	0.000	-0.936	0.265	-3.529	0.000
Y:1 2	Age (16 – 24)	25 – 34	1.164	0.209	5.576	0.000	0.637	0.141	4.499	0.000
		35 – 39	1.371	0.236	5.819	0.000	0.509	0.175	2.907	0.004
		40 – 50	-1.785	0.326	-5.483	0.000	-2.676	0.252	-10.639	0.000
	Marital status (Married)	Never Married	-1.182	0.139	-8.498	0.000	-0.840	0.106	-7.896	0.000
	Employment status (Full time)	Part-time	1.396	0.121	11.500	0.000	1.387	0.103	13.499	0.000
		Other	0.816	0.261	3.124	0.002	0.702	0.240	2.930	0.003
	Hequivalized disposable income (I quintile)	II quintile	0.324	0.115	2.810	0.005	0.348	0.115	3.027	0.002
		III quintile	0.262	0.133	1.969	0.049	0.278	0.133	2.088	0.037
		IV quintile	0.561	0.202	2.779	0.005	0.572	0.202	2.833	0.005
		V quintile	-0.594	0.561	-1.059	0.290	-0.604	0.561	-1.076	0.282
	Tenure status (Owner)	Rental	-0.599	0.157	-3.828	0.000	-0.579	0.156	-3.708	0.000
	Dwelling condition		-2.002	0.205	-9.764	0.000	-1.966	0.204	-9.631	0.000
	Social capital		1.098	0.271	4.054	0.000	1.106	0.270	4.090	0.000
	Intercept		-2.200	0.307	-7.159	0.000	-1.776	0.268	-6.638	0.000
Sample size		3511								
log Likelihood		-1810.116				-1810.116				
AIC		3662.230				3662.230				

Table A6. Parameters estimates for the birth of the first or a further child in the year preceding the interview (baseline category: No children) – Northern countries

Covariate (base category)	Partial proportional odds model					Ordered logit model				
	Estimate	Std.Err.	z	p-value	Estimate	Std.Err.	z	p-value		
Y:0 1	Age (16 – 24)	25 - 34	1.405	0.172	8.157	0.000	1.461	0.169	8.659	0.000
		35 - 39	1.312	0.216	6.077	0.000	1.509	0.210	7.173	0.000
		40 - 50	-1.431	0.240	-5.975	0.000	-1.358	0.236	-5.741	0.000
	Marital status (Married)	Never Married	-0.973	0.120	-8.125	0.000	-1.022	0.116	-8.804	0.000
	Employment status (Full time)	Part-time	1.869	0.126	14.851	0.000	1.860	0.123	15.100	0.000
		Other	0.925	0.211	4.382	0.000	1.003	0.208	4.818	0.000
	Hequivalized disposable income (I quintile)	II quintile	0.174	0.216	0.806	0.402	0.181	0.215	0.839	0.401
		III quintile	0.027	0.218	0.125	0.900	0.054	0.217	0.248	0.804
		IV quintile	0.241	0.209	1.151	0.250	0.267	0.209	1.282	0.200
		V quintile	-0.376	0.203	-1.854	0.064	-0.350	0.202	-1.729	0.084
Tenure status (Owner)	Rental	-1.196	0.137	-8.747	0.000	-1.179	0.136	-8.663	0.000	
Dwelling condition		-1.225	0.281	-4.367	0.000	-1.235	0.280	-4.403	0.000	
Social capital		1.148	0.372	3.089	0.002	1.173	0.370	3.169	0.002	
Intercept		-1.940	0.405	-4.788	0.000	-2.024	0.401	-5.049	0.000	
Y:1 2	Age (16 – 24)	25 – 34	2.062	0.271	7.598	0.000	1.461	0.169	8.659	0.000
		35 – 39	2.350	0.301	7.810	0.000	1.509	0.210	7.173	0.000
		40 – 50	-0.474	0.334	-1.419	0.156	-1.358	0.236	-5.741	0.000
	Marital status (Married)	Never Married	-1.231	0.143	-8.582	0.000	-1.022	0.116	-8.804	0.000
	Employment status (Full time)	Part-time	1.803	0.144	12.513	0.000	1.860	0.123	15.100	0.000
		Other	1.163	0.241	4.826	0.000	1.003	0.208	4.818	0.000
	Hequivalized disposable income (I quintile)	II quintile	0.174	0.216	0.806	0.420	0.181	0.215	0.839	0.401
		III quintile	0.027	0.218	0.125	0.900	0.054	0.217	0.248	0.804
		IV quintile	0.241	0.209	1.151	0.250	0.267	0.209	1.282	0.200
		V quintile	-0.376	0.203	-1.854	0.064	-0.350	0.202	-1.729	0.084
Tenure status (Owner)	Rental	-1.196	0.137	-8.747	0.000	-1.179	0.136	-8.663	0.000	
Dwelling condition		-1.225	0.281	-4.367	0.000	-1.235	0.280	-4.403	0.000	
Social capital		1.148	0.372	3.089	0.002	1.173	0.370	3.169	0.002	
Intercept		-3.299	0.454	-7.261	0.000	-2.796	0.404	-6.924	0.000	
Sample size	3.212									
log Likelihood	-1383.440				-1406.250					
AIC	2808.890				2842.500					

Table A7. Parameters estimates for the birth of the first or a further child in the year preceding the interview (baseline category: No children) – Southern countries

Covariate (base category)		Partial proportional odds model				Ordered logit model				
		Estimate	Std.Err.	z	p-value	Estimate	Std.Err.	z	p-value	
Y:0 1	Age (16 – 24)	25 - 34	0.432	0.200	2.157	0.031	0.508	0.197	2.573	0.010
		35 - 39	0.510	0.212	2.408	0.016	0.649	0.209	3.105	0.002
		40 - 50	-1.712	0.236	-7.268	0.000	-1.629	0.233	-6.987	0.000
	Marital status (Married)	Never Married	-0.807	0.111	-7.244	0.000	-0.851	0.110	-7.720	0.000
	Employment status (Full time)	Part-time	0.458	0.106	4.336	0.000	0.455	0.106	4.310	0.000
		Other	0.313	0.148	2.115	0.034	0.304	0.148	2.059	0.040
	Hequivalized disposable income (I quintile)	II quintile	-0.212	0.165	-1.288	0.198	-0.258	0.161	-1.598	0.110
		III quintile	-0.340	0.158	-2.150	0.032	-0.405	0.156	-2.601	0.009
		IV quintile	-0.388	0.165	-2.353	0.019	-0.500	0.162	-3.082	0.002
		V quintile	-0.923	0.195	-4.740	0.000	-1.058	0.193	-5.492	0.000
	Tenure status (Owner)	Rental	-0.273	0.110	-2.483	0.013	-0.268	0.110	-2.442	0.015
	Dwelling condition		-0.894	0.210	-4.254	0.000	-0.902	0.210	-4.299	0.000
	Social capital		0.501	0.247	2.030	0.042	0.502	0.247	2.034	0.042
	Intercept		-0.477	0.327	-1.456	0.145	-0.464	0.324	-1.432	0.152
Y:1 2	Age (16 – 24)	25 – 34	1.030	0.327	3.153	0.002	0.508	0.197	2.573	0.010
		35 – 39	1.428	0.334	4.278	0.000	0.649	0.209	3.105	0.002
		40 – 50	-0.547	0.359	-1.524	0.128	-1.629	0.233	-6.987	0.000
	Marital status (Married)	Never Married	-1.264	0.172	-7.346	0.000	-0.851	0.110	-7.720	0.000
	Employment status (Full time)	Part-time	0.458	0.106	4.336	0.000	0.455	0.106	4.310	0.000
		Other	0.313	0.148	2.115	0.034	0.304	0.148	2.059	0.040
	Hequivalized disposable income (I quintile)	II quintile	-0.383	0.188	-2.041	0.041	-0.258	0.161	-1.598	0.110
		III quintile	-0.570	0.178	-3.198	0.001	-0.405	0.156	-2.601	0.009
		IV quintile	-0.901	0.192	-4.699	0.000	-0.500	0.162	-3.082	0.002
		V quintile	-1.928	0.281	-6.859	0.000	-1.058	0.193	-5.492	0.000
	Tenure status (Owner)	Rental	-0.273	0.110	-2.483	0.013	-0.268	0.110	-2.442	0.015
	Dwelling condition		-0.894	0.210	-4.254	0.000	-0.902	0.210	-4.299	0.000
	Social capital		0.501	0.247	2.030	0.042	0.502	0.247	2.034	0.042
	Intercept		-1.651	0.411	-4.015	0.000	-1.310	0.325	-4.026	0.000
Sample size					3.465					
log Likelihood					-1953.430				-1995.030	
AIC					3952.860				4020.060	

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