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Social Capital and Health of Older Europeans

From Reverse Causality to Health Inequalities*

Nicolas Sirven[†‡] Thierry Debrand[†]

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Abstract

This research uses a time-based approach of the causal relationship (Granger-like) between health and social capital for older people in Europe. We use panel data from waves 1 and 2 of SHARE (the *Survey of Health, Ageing, and Retirement in Europe*) for the analysis. Additional wave 3 data on retrospective life histories (SHARELIFE) are used to model the initial conditions in the model. For each of the first 2 waves, a dummy variable for involvement in social activities (voluntary associations, church, social clubs, etc.) is used as a proxy for social capital as involvement in Putnamesque associations; and seven health dichotomous variables are retained, covering a wide range of physical and mental health measures. A bivariate recursive Probit model is used to simultaneously investigate (i) the influence of baseline social capital on current health – controlling for baseline health and other current covariates, and (ii) the impact of baseline health on current participation in social activities – controlling for baseline social capital and other current covariates. As expected, we account for a reversed causal effect: individual social capital has a causal beneficial impact on health and *vice versa*. However, the effect of health on social capital appears to be significantly higher than the social capital effect on health. These results indicate that the sub-population reaching 50 years old in good health has a higher propensity to take part in social activities and to benefit from it (social support, etc.). Conversely, the other part of the population in poor health at 50, may see its health worsening faster because of the missing beneficial effect of social capital. Social capital may therefore be a potential vector of health inequalities.

Key words: Healthy Ageing, Social Capital, Health Inequality, Granger Causality, Panel Data

JEL Classification Numbers: C33, I12, Z13

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1 Introduction

The literature on social phenomena and health has for a long time been a well-established research topic in public health (Cobb, 1976; Lynch, 1977; Brown & Harris, 1978; Berkman & Syme, 1979;). It is only since the 1990's that subsequent studies dealing with social connectedness and social cohesion have systematically been referred as "social capital". Almost consequently to this vogue, many charges against social capital have made it one of the "essentially contested concepts" in the social sciences (Szreter & Woolcok, 2004). Nevertheless, empirical research undoubtedly provided some thriving conceptual and theoretical developments (Kawachi, Subramanian & Kim, 2008). For the pros, social capital is an encompassing umbrella under which unprecedented patterns of thinking have emerged.

One of the most salient new strands of research investigates joint individual and contextual effects of social capital on health. Several recent studies have already emphasized the positive influence of multilevel measures of social capital on individual health outcomes (e.g. Scheffler, Brown & Rice, 2007; Olsen & Dahl, 2007). A common finding of these studies suggests that the influence of social capital is underestimated when multi-level influence is not taken into account.

Another important contribution of the social capital literature has been to go beyond correlations. The recourse to instrumental variables (IV) shed some light on the until-then ill-known causal relationships between social capital and health (Folland, 2007; Rocco & Suhrcke, 2009; D'Hombres et al., 2010). The purpose of this research is to contribute to the ongoing debate on the causal relationships between social capital and health with regard to the assumption that both variables influence each other. A time-based approach (à la Granger) is considered in which a two-equation recursive model is used to simultaneously investigate (i) the influence of baseline social capital on current health – controlling for baseline health and other current covariates, and (ii) the impact of baseline health on current participation in social activities – controlling for baseline social capital and other current covariates. We use panel data from the Survey on Health, Ageing, and Retirement in Europe (SHARE). Waves 1 and 2 of SHARE provide a sample made up of 20,000 households (of which at least one member is aged 50 and over), interviewed in 2004 and again in 2006 in eleven European countries. Additional wave 3 data on retrospective life histories (SHARELIFE) are used to fit the dynamic model.

The focus on aged people is motivated by two main reasons. Firstly, "healthy ageing" strategies (WHO, 2006) are now central to public policies as ageing has become a major concern for public health and economic sustainability in Europe. Amongst the various directions that may help achieving this goal, increased participation of older people in social activities (or social capital) may be decisive (see Agren & Berensson, 2006). Secondly, although a growing body of the literature reports the absence of correlation between participation in social activities and self-reported health (D'Hombres *et al.*, 2009; Veenstra *et al.*, 2005; Ziersch & Baum, 2004; Greiner *et al.*, 2004;) or other health outcomes (Ellaway & Macintyre, 2007); a close look at the literature advocates that the positive effects of

Table 1: Sample Description by Age Class and Country

	Age class at Wave 1 (2004-05)							
Country	[50-54]	[55-59]	[60-64]	[65-69]	[70-74]	[75-79]	80+	Total
Austria	90	116	138	113	78	53	30	618
Germany	217	193	249	209	107	63	29	1,067
Sweden	192	271	278	222	143	104	81	1,291
Netherlands	228	289	240	172	134	72	61	1,196
Spain	138	175	159	163	166	101	72	974
Italy	188	300	317	245	182	99	61	1,392
France	201	276	205	192	156	129	98	1,257
Denmark	159	173	162	116	97	66	60	833
Greece	326	290	251	243	216	110	91	1,527
Switzerland	94	101	98	76	63	51	35	518
Belgium	312	445	334	316	289	206	139	2,041
N. obs.	2,145	2,629	2,431	2,067	1,631	1,054	757	12,714
As % of total	16.87	20.68	19.12	16.26	12.83	8.29	5.95	100

social capital on health could be significant for the sub-population of older people (Sirven & Debrand, 2008; Kondo *et al.*, 2007; Veenstra, 2000).

The paper is structured as follows: the next section presents data from the SHARE project and some descriptive statistics. The method section deals with econometric issues and the different tests applied here. Regression results and interpretations are given in the results section; while implications for public policy, potential limitations and further research issues are are discussed in the final section.

2 Data

2.1 Sample

The Survey on Health, Ageing, and Retirement in Europe (SHARE) is a multidisciplinary and cross-national cohort of individual data on health, socio-economic status and social and family relationships of more than 40,000 individuals aged 50 or over. Eleven countries contributed to the 2004 SHARE baseline study. They are a balanced representation of the various regions in Europe, ranging from Scandinavia (Denmark and Sweden) through Central Europe (Austria, France, Germany, Switzerland, Belgium, and the Netherlands) to the Mediterranean (Spain, Italy and Greece). Further data were collected in 2006-07 during the second wave of SHARE in these countries. SHARELIFE, the third wave of the project, was conducted in 2008-09 over the same population who took part in the two previous waves. This time, the respondents were interviewed about their life history. Different fields such as childhood health, education, job career, family life, housing, etc. were surveyed and provide useful information on initial conditions and life course. The longitudinal sample over the three waves consists of more than 12,000 non-institutionalised individuals born before 1955 in 11 countries (cf. Table 1).

Table 2: Rates of Participation in Social Activities

Type of Activity	Wave 1	Wave 2
Voluntary	0.148	0.157
Education	0.076	0.081
Social club, sport	0.207	0.226
Religious organisation	0.127	0.134
Political	0.052	0.053
Any of them	0.418	0.433

2.2 Indicators of Social Capital

For each wave, a dummy variable for involvement in social activities is derived from the participation (or not) to five social activities (voluntary/charity work, training course, sport/social club, religious organization, and political/community organization). Individual i will be assigned 1 as her social capital value if she is involved in at least one of these five associations and 0 elsewhere.

This variable is used as a proxy for social capital as involvement in Putnamesque associations. This is one of the most usual variables of individual social capital in the empirical literature; it is widely used in most surveys and thus enables comparisons with other studies. Social participation is also relevant from a public policy perspective, since voluntary associations are essential partners of government agencies in Europe – to the point that Members of the European Parliament proposed 2011 to be designated the European Year of Volunteering.

Table 2 and Table A1 in annex indicate that ore than 40% of the sample respondents (41.7% in wave 1 and 43.1% in wave 2) report taking part in at least one form of the above mentioned social activities. In 2006-07, northern countries (Sweden, Denmark, the Netherlands) and Switzerland have rates of social participation higher than 50%, and southern countries like Spain and Italy have rates under 20%. Notice that Greece keeps averages rates of social participation at both waves since a large majority of the respondents are involved in a religious community.

2.3 Health Measures

SHARE data provide an important range of health measures. Considering several measures of health in turn as dependant variables may shed light on the various possible phenomena related to social capital, as well as reducing the reporting bias effect. Table 3 and Table A2 present the 7 health variables that were retained in the analysis:

- Poor self-rated health (SRH): a variable dichotomising the US version of self-perceived health into two categories: (0) very good and excellent and (1) less than very good;
- Reporting limitations in ADL's: a dummy indicating if the respondent has difficulties in Katz' basic activities of daily living (Dressing, including putting on shoes

Table 3: Rates of Respondents in Poor Health

Health Measure	Wave 1	Wave 2
Poor SRH	0.263	0.322
ADL2+	0.074	0.085
GALI	0.388	0.402
Mobility	0.464	0.479
Low Grip	0.226	0.227
Euro-D	0.148	0.139
Cog. Imp.	0.044	0.054

and socks; Walking across a room; Bathing or showering; Eating, such as cutting up your food; Getting in and out of bed; Using the toilet, including getting up or down);

- Limitations with activities: a dummy taking the value 1 if the respondent reports having been limited (for the past six months) because of a health problem in activities people usually do, and 0 otherwise;
- Limitations with mobility, arm function and fine motor function: a dummy taking the value 0 if the respondent does not report any limitations, and 1 if she reports one or more limitations with mobility, arm function and fine motor function (walking 100 metres; sitting for about two hours; getting up from a chair after sitting for long periods; etc.);
- Low grip strength: a dummy indicating whether (1) the respondent belongs to the lowest 20% of the distribution of grip strength – by gender and BMI categories, (0) or not;
- Depressive symptoms (EURO-D scale): this binary index takes the value 1 for individuals reporting more than three depressive symptoms out of twelve (among depression, pessimism, culpability, irritability, etc.), and 0 otherwise (Prince et al., 1999); and,
- Relative cognitive impairments: an index derived from a cognitive score (Adam *et al.*, 2006) based on a memory test (20 items recall) and a test of executive functions (measuring verbal fluency based on naming as many animals as one can think of). The cognitive impairment dummy takes the value 1 for people whose score is below a minimum value – established at 1.5 standard deviation below the mean (Dewey & Prince, 2005).

2.4 Other Covariates

The usual covariates to control for in both the health equation and the social participation one are age (in class), gender, education (highest diploma obtained), marital status, labour market status (employed, unemployed, retired, other inactive), log of household net income per consumption unit (corrected for Purchase Power Parity - PPP), and country dummies. In order to take into account the fact that all respondents are not surveyed at the same time – e.g. due to country specific survey schedule – we constructed a variable

indicating the time spent in month between the first interview in wave 1 and the last interview in wave 2.

In addition to the usual panel data information provided by wave 1 and 2, SHARELIFE data offer the opportunity to take into account the potential influence of initial conditions and life course experience on current health status and social participation. A special attention was dedicated to the following variables: being born in the country of residence; reporting a better relative performance in maths and language at school when aged 10; having been in a hospital for more than a month before the age of 10; self-rating own health at 10 years old excellent or very good; having encountered periods of poor health before the age of 10; an index of the features of accommodation when aged 10 (ranging from (0) poor to (6) comfortable); the log of the number of moves from one accommodation to another so far; having ever worked in an voluntary association before the start of wave 1; and, a variable of household size when aged 10. Table A3 in annex displays descriptive statistics of these variables.

3 Method

The empirical literature indicates that social capital has, in general, a positive causal effect on health status. However, the IV estimators do not make clear if the influence of social capital on health could be overestimated (Folland, 2007), underestimated (Rocco & Suhrcke, 2009), or a mixed-bag when using different variables of social capital (D'Hombres *et al.*, 2010). A common problem of studies on social capital lies in that it is in general difficult to find decent instruments at the individual level for social capital (i.e. at least one exogenous variable that is predictive of social capital but takes a zero coefficient in the respective health measure equation). A convenient solution is to retain a set of variables defined at the aggregated scale – community, region, or state-level data and as a result, the use of IV in the specific case of social capital is potentially misleading because (i) instruments defined at the aggregated scale endow different individuals with common aggregated features, thus reducing "artificially" the standard errors and introducing some probable bias in the estimation; and, (ii) the reasoning on omitted variable bias becomes circular when some instruments retained in a given study could elsewhere be considered as a measure of social capital.

A more general reproach to studies employing IV is that too much attention is often paid to reveal a unique pathway of effects – in our case, from social capital to health. It makes sense to assume that social groups provide their members with emotional and social support, information, norms of behaviour, etc., that would have a positive impact on their health status. Conversely, it is as reasonable to consider that people spend time and effort in social activities, volunteer in associations, take part in clubs, and so on, because they are capable of doing so – or in other words, because they are in good mental and physical health. The principle of IV is basically to isolate one pathway of effects (in the present case, from social capital to health), purged from any "feedback effect". However, a potential causal reciprocal influence of social capital and health may have some important consequences in terms of public policy. To our knowledge, such an approach has not yet been taken into account.

The initial intuition, with the aim to measure the causal impact of social participation (d_t) on health (h_{t+1}) is to run a regression on the sub-population of individuals in good health at time t, in order to estimate the influence of the former variable and other covariates (x_t) at time t, on the latter variable at time $t+1$. The same reasoning applies for the analysis of the causal effect of h_t on d_{t+1}. However, sample selection in both cases prevents from a joint dynamic estimation. A more appropriate approach would be to consider a joint recursive model in which the dynamics of health are simultaneously associated with the dynamics of social participation. Each equation would take into account lagged values of the dependant variables, as well as lagged values of the dependant variable of the other equation. Formally, the model can be written as follows:

$$\begin{cases} H_{it} = \alpha^H H_{it-1} + \beta^D D_{it-1} + \gamma^H X_{it} + \varepsilon_{it}^H \\ D_{it} = \alpha^D D_{it-1} + \beta^H H_{it-1} + \gamma^D X_{it} + \varepsilon_{it}^D \end{cases}$$

where H_{it} is individual i's health status at time t which depends on H_{it-1} her health status at date $t-1$ and D_{it-1} her social participation at time $t-1$, and some X_{it} exogenous variables like age, gender, education, etc. In the same way, D_{it} is the social participation for individual i at time t which depends on D_{it-1}her social participation at time $t-1$ and H_{it-1} her self reported health status at time $t-1$ and the same X_{it} exogenous variables. A good understanding of health status and social participation patterns requires to take into account individual initial conditions. We introduce the lagged dependent variables to model the state dependence. The error terms can be written as:

$$\begin{cases} \varepsilon_{it}^H = \mu_i^H + \epsilon_{it}^H \\ \varepsilon_{it}^D = \mu_i^D + \epsilon_{it}^D \end{cases}$$

The error term is split into two components, μ_i^H and μ_i^D capture time invariant individual heterogeneity, and ϵ_{it}^H and ϵ_{it}^D are a time varying idiosyncratic components. One problem is that individual heterogeneity is unobserved. We suppose that $\left(\mu_i^H, \mu_i^D\right)$ and $\left(\epsilon_{it}^H, \epsilon_{it}^D\right)$ are iid and independently distributed from X; and $(\mu_i^H, \mu_i^D) \perp\!\!\!\perp (\epsilon_{it}^H, \epsilon_{it}^D)|X$. Moreover $(\varepsilon_{it}^H) \perp\!\!\!\perp (\varepsilon_{it'}^H)|X$ and $(\varepsilon_{it}^D) \perp\!\!\!\perp (\varepsilon_{it'}^D)|X$, thus $(\epsilon_{it}^H) \perp\!\!\!\perp (\epsilon_{it'}^H)|X$ and $(\epsilon_{it}^D) \perp\!\!\!\perp (\epsilon_{it'}^D)|X$ implying that the endogeneous variables $(H_{it-1}\ ;\ D_{it-1})$ entirely support the dynamic processes of the model.

A standard problem in econometrics is the difficulty of disentangling state dependence from individual heterogeneity. If unobserved individual heterogeneity is correlated with the observed exogenous variables, the parameter estimates α^H and α^D are inconsistent. To overcome this problem, it is possible to parameterize the individual effect (Wooldridge, 2002, 2005). Moreover, we must take account of the problem of initial conditions to control for state dependence in a dynamic specification. It is well known that in dynamic specifications the individual effect would be correlated with the lagged dependent variable. Individual's health status or social participation are not randomly distributed at the beginning of the panel data set. To solve these problems Wooldridge (2005) proposes an easy solution which consists in parameterising the distribution of the individual effects as a linear function of initial health at the first wave of the panel and of the time means of the regressors. However, this method requires at least 3 waves of panel data. Unfortunately,

only the two first waves of share (2004 et 2006) provide classic panel data information on social participation. Nevertheless, SHARELIFE retrospective data are based on a retrospective questionnaire, in which the individuals respond to question about their childhood and living condition in the past (cf. 2.4). We propose here to model the distribution of individual effects as a linear function of these initial conditions. Consequently, the model can be written as:

$$\begin{cases} H_{it} = \alpha^H H_{it-1} + \beta^H D_{it-1} + \gamma^H X_{it} + \overline{\gamma}^H \bar{X}_i + \eta^H X_i^{IC} + \epsilon_{it}^H \\ D_{it} = \alpha^D D_{it-1} + \beta^D H_{it-1} + \gamma^D X_{it} + \overline{\gamma}^D \bar{X}_i + \eta^D X_i^{IC} + \epsilon_{it}^D \end{cases}$$

where $\bar{X}_i$ are the average of time variant exognenous variables and X_i^{IC} are the variables describing initial conditions. therefore the distribution of $(\epsilon^H, \epsilon^D)'$:

$$(\epsilon^H, \epsilon^D)' \sim \mathcal{N}\left(0, \begin{bmatrix} 1 & \rho \\ \rho & 1 \end{bmatrix}\right)$$

ρ is the correlation coefficient between both equations. If $\rho = 0$, the two equations can be estimated separately. If $\rho \neq 0$, simultaneously estimating the two equations provides better estimates. Since t=2 in our case, the model can be estimated by Maximum Likelihood just like a standard bivariate Probit.

4 Results

4.1 Model Estimates

Models estimates seem sound with standard theory. By and large, the coefficients of the independent variables in the health equation appear to have the expected sign and significance levels. For instance, the probability to have a bad health status increases with age whatever the health measure considered; and a higher level of education reduces the probability of bad health. The influence of the labour market status indicates a classic "healthy worker effect" in the case of poor self-rated health, limitation with activities, limitation with mobility, and low grip strength. Notice that gender differences are only significant with regard to mobility, and depression; and the marital status does not appear to have any influence on health in the recursive model. Correction for a wide range of individual characteristics leads to a loss of significance of the coefficient of the income variable – apart from the grip strength equation where richer respondents seem to have higher probability to belong to the first quintile of the distribution. One interpretation is that high income often goes with jobs that do not require regular physical activity. Another common trend in every health equation is the influence of country dummies suggesting that individual characteristic do not explain all differences in health across Europe. However, the investigation of such differences goes beyond the scope of this study.

The empirical literature on the determinants of social participation is much less developed than the one dealing with health issues providing thus less guidance about the expected mechanisms. Nevertheless, the models estimates support some reasonable assumptions. The probability to get involved in a social activity increases from 50 years old

Table 4: Dynamic Recursive Probit Models Estimates - Summary

	Joint model with health dependant variable:						
	Poor SRH	ADL2+	GALI	Mobility	Low Grip	Euro-D	Cog. Imp.
Coeff.							
D -> H (beta D)	-0.096***	-0.084**	-0.057**	-0.068**	-0.032	-0.102**	-0.134**
H -> D (beta H)	-0.162***	-0.191***	-0.092***	-0.091***	-0.064*	-0.155***	-0.413***
ATE							
D -> H (beta D)	-0.026	-0.010	-0.018	-0.020	-0.005	-0.018	-0.010
H -> D (beta H)	-0.050	-0.059	-0.029	-0.028	-0.020	-0.048	-0.124
Model							
N	12410	12411	12413	12411	11389	12258	12287
Rho	-0.112	-0.105	-0.068	-0.061	-0.083	-0.095	-0.195
Chi^2	38.508	16.392	16.01	12.112	12.885	18.588	32.008

legend: * p<.1; ** p<.05; *** p<.001

to 65 - as people retire and benefit from leisure time (respondents in employment have indeed a lower probability to take part in social activities) -, before it decreases, perhaps because of health deterioration at older ages. Education is one of the most salient variables associated with social capital, as suggested by the early literature on the social capital (Coleman, 1988; Putnam, 1993). Gender differences have a lower explanative power once we control for the above mentionned individual characteristics, and income does not appear to be a significant determinant of social participation. Country dummies clearly indicate a north-south gradient in participation in social activities in Europe. Living in a northern country significantly strengthens the chances to take part in social activities.

The recursive models provide new insights on the mutual influence of health and social capital. At the outset, dynamic Probits indicate that each dependant variable follows a time dependency: on average, respondents' health status at time t shapes their condition at time $t+1$. The same process occurs with social participation. Crossed effects shed light on the causal reciprocal influence of social capital on health, and *vice versa*. Table A4 in annex displays the full regresions model estimates and Table 4 summarizes the models estimates for β^D and β^H. On the one hand, taking part in social activities at time t basically reduces respondents' probability of poor health at time $t+1$ ceteris paribus. In other words, after controlling for baseline health and other usual covariates, social participation has a causal beneficial impact on health. However, the magnitude of the effect does vary between health measures. Marginal effects of social capital on health are the lowest for ADL, and cognitive impairments; and, no causal effect of social participation on health is found in the case of grip strength. On the other hand, the "feedback effect" of health is significant for all health measures considered here. Being in poor health at time t reduces the chances to take part in social activities at time $t+1$. Whatever the health measure, the impact of health on social capital appears to be significantly higher (2 tailed tests) than the social capital effect on health.

4.2 Robustness Checks

With the aim to gain confidence from the results, different model specifications have been tested. First, we modified the thresholds in some of the health variables: (i) the threshold

for self-perceived health was reduced and the variable dichotomised into (1) excellent, very good, or good and (0) less than good; and (ii) thresholds for limitations have been raised to the cut-off point of two items for mobility, and (iii) activity limitations cut-off point has been reduced to encompass only "severely limited" repondents. Notice that thresholds for mental health variables have not been changed due to the consensus on measurement of depression and cognitive impairments in the empirical literature, and changing the cut-off point for ADL.(*i.e.* focusing on strictly more than one limitation in activities of daily living) would lead to a very little number of observations. The results indicate that (i) more restrictive health conditions increase the ATE of health on social capital; which is consistent with the idea that worse health impedes social participation; and, (ii) change in cut-off points does not modify the fact that social capital has a significant causal beneficial influence on health - still appart from low grip strength. In the detail, the modification of thresholds does not lead to any significant change in the ATE of social participation on SRH, while increasing the thresholds of mobility and activity limitations improves the influence of social capital on health. This latter result suggests a convex negative relationship between social capital and poor health: the marginal effect of social capital is stronger for people whose health status is worse. In the perspective of a health production function (Grossman, 1972; Folland, 2008), social capital (as made of the social investments i.e. the sunk costs of time and efforts in social activities) could be seen as an asset with the usual properties of diminishing returns.

Second, we wanted to check whether the main influence of social participation was actually due to physical activity since "sport clubs" belongs to one of the category of the social activities in SHARE. Respondents at each wave who participate only in "social clubs or sport clubs" were excluded attributed the value 0 with regard to the dummy of social participation, while those who got involved in mixed activities ("social clubs or sport clubs" and at least one other social activity) kept the value 1. Although the causal influence of social participation remains significant in most cases (apart from low grip strength), (i) the causal influence of social capital on health is slightly reduced when participation in sport clubs or physical activity is taken into account; and, (ii) β^D becomes significant only at <10% in the case of ADL. Although these results mainly confirm the idea that social capital has a beneficial causal influenec on health, they also suggest that the index of social capital that is used here cannot be said to solely reflect the influence of social networks, or social connectedness on health since it partly captures the influence of the "nature" (physically demanding or not) of the social activity.

5 Discussion

5.1 Does social capital contribute to better health?

Dynamic recursive Probit models suggest that taking part into social activities in 2004-05 significantly reduces the chances of poor health in 2006-07 for SHARE respondents, in 11 European countries, once we control for baseline health and the usual current covariates. This result supports the hypothesis of a time-based causal beneficial effect of social capital on health; and as such, it corroborates recent findings of the empirical literature. In the

detail, our proxy for social capital predicts notable shrinkage in the chances of reporting poor SRH – and that finding appears to be robust to cut-point shift in the health status categories. Other physical and mental health measures provide comparable results although the magnitude of the impact of social capital on health differs.

However, it is intriguing that no significant effect is ever found here in the case of low grip strength.[1] One immediate explanation could rely on the fact that grip strength is an objective measure of health while others health measures are self-declared, suggesting that when health variables are "purged" from potential reporting bias, the influence of social capital is not significant anymore. However, this argument does not hold since (i) health variables based on a list of items (ADL; Limitations, Mobility, Euro-d) are less subject to reporting bias than SRH, (ii) the variable for relative cognitive impairments follows from an objective assessment of mental health. Another explanation for the lack of effect of social capital on low grip strength is to be found elsewhere.

The choice of the proxy of social capital has to be discussed with regard to the contribution of our work in the empirical literature of social capital. Our findings may not be generalised to the influence of "social connectedness" or "social relationships" since the results are sensitive to the nature of the social activity that is carried out. It looks difficult – if not impossible – to go further in distinguishing among the various features of social activities that may have an impact on health: number of people involved, number of regular contacts with members outside the association, different forms of social support given and received from the people met in the social activities, etc. In order to overcome some of these limits, a name generator for social networks is being added to the wave 4 of SHARE (2010-11). It would provide much more detailed data on individual social capital in the near future.

5.2 Does social capital contribute to health inequalities?

Our findings indicate that the average causal effect of social participation on health is always significantly smaller that the "feedback effect" from health on social participation. In the perspective where people reach 50 years old with different health status – say, good health and poor health – the dynamics of health and social participation may have an impact on how this baseline inequality in health evolves over time. Dynamic recursive models allow for micro-simulations of individuals' situation over the life course. Holding everything else constant (income, marital status, etc.), respondents in good health at 50 years old will have a higher propensity to join in social activities and to benefit from it in terms of a lower depreciation of their health in the future, while those in poor health at 50 – who have a lower probability to get involved in social activities – will see their health worsening at a faster rate. As a consequence, social capital may therefore be a potential vector of health inequalities.

[1] Many different cut-off points for grip strength have actually been tried, and since it originally is a continuous variable, linear dynamic recursive regressions have been ran. In any case, no significant causal effect of social capital has been found.

The basic idea behind this scenario depicts an elsewhere well-know situation where the category of people who are already privileged in terms of socio-economic status and health usually benefit from health programs such as nutrition campaigns, promotion of physical and mental activity at old ages, etc. Indeed in our case, people taking part in social activities come from an educated background, suggesting a close link between social capital and human capital. The fact that social capital may have individual benefits and collective drawbacks is not a brand new idea in the social sciences, since French sociologist Pierre Bourdieu (1986) developed the concept of social capital – together with cultural and symbolic capital – to support the thesis of class reproduction in modern societies.

A new-fangled approach may come from the analysis of health distribution among the sub-population of aged people in poor health. According to robustness checks based on changes in cut-points in health measures, it appeared in some cases that social participation may have decreasing returns on health. Under the assumptions that (i) the average causal effect of social capital is especially strong among people whose health is worse; and (ii) this effect remains constant over time; then, health inequalities should increase in the late life-time between people in poor health who do take part in social activities and people in poor health who do not. Meanwhile, health inequalities due to social participation among people in baseline good health should evolve in a much confined way because of the decreasing returns of social capital on health. Although testing for these assumptions will certainly not be easily done, these are promising leads for a better understanding of the relationships between social phenomena and health.

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Table A1: Rates of Participation in Social Activities by Country

	Voluntary		Education		Social club, sport	
Country	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Austria	0.097	0.107	0.049	0.053	0.162	0.212
Germany	0.161	0.171	0.077	0.080	0.280	0.272
Sweden	0.204	0.235	0.158	0.177	0.287	0.309
Netherlands	0.267	0.287	0.078	0.098	0.327	0.354
Spain	0.025	0.029	0.024	0.043	0.060	0.090
Italy	0.086	0.085	0.010	0.013	0.065	0.086
France	0.184	0.179	0.045	0.041	0.211	0.244
Denmark	0.212	0.257	0.094	0.119	0.354	0.421
Greece	0.029	0.021	0.047	0.031	0.058	0.064
Switzerland	0.176	0.189	0.185	0.166	0.365	0.361
Belgium	0.184	0.187	0.105	0.110	0.238	0.237
Total	0.148	0.157	0.076	0.081	0.207	0.226

Table 2 continued:

	Religious organisation		Political		Any of them	
Country	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Austria	0.280	0.105	0.066	0.058	0.435	0.358
Germany	0.107	0.112	0.052	0.039	0.433	0.436
Sweden	0.065	0.127	0.050	0.064	0.500	0.564
Netherlands	0.130	0.142	0.038	0.050	0.532	0.566
Spain	0.105	0.122	0.018	0.017	0.197	0.243
Italy	0.060	0.080	0.029	0.018	0.189	0.223
France	0.064	0.084	0.044	0.049	0.389	0.395
Denmark	0.055	0.089	0.056	0.048	0.531	0.621
Greece	0.360	0.308	0.050	0.045	0.460	0.398
Switzerland	0.127	0.168	0.097	0.108	0.583	0.566
Belgium	0.080	0.106	0.081	0.094	0.444	0.467
Total	0.127	0.134	0.052	0.053	0.418	0.433

Table A2: Rates of Respondents in Poor Health by Country

	Poor SRH		ADL2+		GALI		Mobility
Country	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1
Austria	0.285	0.322	0.070	0.088	0.474	0.518	0.497
Germany	0.327	0.370	0.069	0.084	0.468	0.500	0.499
Sweden	0.076	0.260	0.051	0.071	0.418	0.393	0.407
Netherlands	0.223	0.288	0.035	0.044	0.420	0.449	0.390
Spain	0.418	0.495	0.114	0.121	0.464	0.452	0.542
Italy	0.389	0.459	0.083	0.088	0.390	0.431	0.527
France	0.304	0.368	0.095	0.091	0.355	0.365	0.480
Denmark	0.196	0.247	0.070	0.067	0.408	0.377	0.381
Greece	0.279	0.251	0.062	0.064	0.275	0.273	0.497
Switzerland	0.133	0.162	0.050	0.071	0.320	0.320	0.359
Belgium	0.229	0.277	0.095	0.118	0.361	0.398	0.462
Total	0.263	0.322	0.074	0.085	0.388	0.402	0.464

Table 3 continued

		Low Grip		Euro-D		Cog. Imp.	
Country	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Austria	0.540	0.168	0.215	0.095	0.107	0.023	0.047
Germany	0.470	0.137	0.151	0.096	0.093	0.014	0.021
Sweden	0.432	0.184	0.163	0.083	0.079	0.006	0.015
Netherlands	0.355	0.143	0.168	0.110	0.099	0.014	0.013
Spain	0.546	0.369	0.372	0.287	0.235	0.125	0.166
Italy	0.557	0.308	0.284	0.215	0.226	0.113	0.113
France	0.470	0.250	0.259	0.216	0.196	0.049	0.054
Denmark	0.406	0.184	0.248	0.093	0.094	0.012	0.022
Greece	0.577	0.287	0.260	0.154	0.101	0.050	0.065
Switzerland	0.346	0.173	0.181	0.085	0.087	0.015	0.025
Belgium	0.475	0.216	0.202	0.138	0.152	0.033	0.044
Total	0.479	0.226	0.227	0.148	0.139	0.044	0.054

Table A3: Descriptive Statistics of Independent Variables

Individual Characteristics	Mean	S.D.
gender	0.453	
Age (years) ate wave 1	64.312	8.960
Living with spouse/partner at wave 1	0.743	
Living with spouse/partner at wave 2	0.729	
Log(income per cons. unit) at wave 1	9.756	1.178
Log(income per cons. unit) at wave 2	9.493	1.391
Education		
None or Primary	0.512	0.500
Secundary	0.262	0.440
Tertiary	0.220	0.415
Other	0.006	0.078
Intitial Conditions		
Migrant (1=yes)	0.063	
Log(N. of moves in life)	1.449	0.606
Relative School Performance	0.480	
Ever worked in a volunt. Association	0.019	
Retrospective SRH age 10 (1>good)	0.090	
2+ illnesses when child (1=yes)	0.116	0.320
Feat. of accomodation when child	1.864	1.706
Household size when 10	5.665	2.469

Table A4: Full Bivariate Recursive Probit Models Estimates

	MODEL 1				MODEL 2			
Dep. var. (Ht, Dt)	**Poor SRH**		**Social Capital**		**ADL2+**		**Social Capital**	
Indep. var.	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Health t-1								
Poor SRH	1.355***	0.030	-0.162***	0.030				
ADL2+					1.502***	0.048	-0.191***	0.051
GALI								
Mobility								
Low grip strength								
Euro-D								
Rel. Cognitive Impairments								
Social Capital t-1								
Take part in social activities (1=yes)	-0.096***	0.028	1.151***	0.026	-0.084**	0.040	1.153***	0.026
Individual Characteristics t								
Gender (1=man)	-0.110***	0.027	-0.044*	0.026	-0.064*	0.039	-0.039	0.026
Age class at wave 2								
50-54	-0.585***	0.069	0.199***	0.065	-0.823***	0.104	0.207***	0.065
55-59	-0.390***	0.054	0.201***	0.053	-0.688***	0.071	0.205***	0.054
60-64	-0.367***	0.053	0.271***	0.053	-0.593***	0.067	0.274***	0.053
65-69	-0.293***	0.053	0.271***	0.053	-0.575***	0.067	0.275***	0.053
70-74	-0.196***	0.055	0.246***	0.055	-0.449***	0.067	0.242***	0.055
75-79	-0.076	0.058	0.121**	0.058	-0.229***	0.065	0.116**	0.058
80+	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Living with spouse/partner at wave 2 (1=yes)	0.266*	0.160	-0.264*	0.153	-0.326	0.205	-0.251	0.154
Log(income per cons. unit) at wave 2	0.058***	0.018	-0.012	0.018	0.022	0.023	-0.013	0.018
Education								
None or Primary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secundary	-0.137***	0.035	0.122***	0.033	-0.080	0.050	0.126***	0.033
Tertiary	-0.251***	0.041	0.257***	0.038	-0.277***	0.060	0.269***	0.038
Country of residence								
Germany	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Austria	-0.158**	0.075	-0.202***	0.072	-0.053	0.104	-0.192***	0.072
Sweden	0.035	0.066	0.263***	0.062	-0.088	0.094	0.298***	0.062
Netherlands	-0.148**	0.066	0.284***	0.061	-0.290***	0.099	0.290***	0.061
Spain	0.002	0.069	-0.104	0.068	-0.099	0.094	-0.100	0.069
Italy	-0.010	0.062	-0.245***	0.061	-0.182**	0.088	-0.248***	0.061
France	-0.088	0.071	-0.083	0.067	-0.218**	0.101	-0.071	0.067
Denmark	-0.204***	0.072	0.426***	0.067	-0.179*	0.106	0.441***	0.067
Greece	-0.511***	0.063	-0.035	0.057	-0.324***	0.088	-0.027	0.057
Switzerland	-0.533***	0.087	0.200**	0.078	-0.120	0.119	0.227***	0.077
Belgium	-0.267***	0.070	0.050	0.064	-0.022	0.097	0.074	0.064
Interview time								
Months between waves 1&2	-0.001	0.004	-0.008**	0.004	-0.010*	0.006	-0.008**	0.004
Average of time variant covariates								
Living with spouse/partner at wave 1&2	-0.245	0.163	0.213	0.158	0.250	0.210	0.201	0.158
Log(income per cons. unit) at wave 1&2	-0.111***	0.025	0.054**	0.025	-0.059*	0.032	0.058**	0.025
Intitial Conditions								
Migrant (1=yes)	0.128**	0.055	-0.194***	0.053	0.106	0.076	-0.203***	0.053
Log(N. of moves in life)	-0.004	0.026	-0.017	0.025	0.015	0.038	-0.014	0.025
Relative School Performance	-0.036	0.028	0.103***	0.026	0.007	0.039	0.108***	0.026
Ever worked in a volunt. Association (1=yes)	-0.027	0.096	0.305***	0.099	0.214*	0.126	0.315***	0.099
Retrospective SRH age 10 (1>good)	0.198***	0.045	0.001	0.045	0.186***	0.059	-0.009	0.045
2+ illnesses when child (1=yes)	0.039	0.042	0.007	0.041	0.014	0.059	0.004	0.040
Feat. of accomodation when child	-0.029***	0.009	0.006	0.009	-0.012	0.013	0.006	0.009
Household size when 10	0.001	0.005	0.011**	0.005	0.007	0.007	0.011**	0.005
Intercept	0.287	0.199	-1.177***	0.194	-0.279	0.273	-1.272***	0.194
Rho			-0.112***	0.018			-0.105***	0.026

Note: *** p<0.01, ** p<0.05, * p<0.1

Table A4 continued

	MODEL 3				MODEL 4			
Dep. var. (Ht, Dt)	**GALI**		**Social Capital**		**Mobility**		**Social Capital**	
Indep. var.	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Health t-1								
Poor SRH								
ADL2+								
GALI	1.102***	0.025	-0.092***	0.026				
Mobility					1.249***	0.026	-0.091***	0.026
Low grip strength								
Euro-D								
Rel. Cognitive Impairments								
Social Capital t-1								
Take part in social activities (1=yes)	-0.057**	0.026	1.155***	0.026	-0.068**	0.027	1.157***	0.026
Individual Characteristics t								
Gender (1=man)	-0.061**	0.026	-0.042	0.026	-0.264***	0.026	-0.050*	0.026
Age class at wave 2								
50-54	-0.657***	0.066	0.207***	0.065	-0.827***	0.069	0.198***	0.066
55-59	-0.517***	0.052	0.209***	0.053	-0.741***	0.056	0.196***	0.054
60-64	-0.448***	0.052	0.276***	0.053	-0.577***	0.055	0.268***	0.053
65-69	-0.356***	0.052	0.276***	0.053	-0.502***	0.056	0.271***	0.053
70-74	-0.202***	0.053	0.245***	0.055	-0.333***	0.057	0.241***	0.055
75-79	-0.105*	0.056	0.120**	0.058	-0.155***	0.060	0.119**	0.058
80+	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Living with spouse/partner at wave 2 (1=yes)	0.065	0.147	-0.266*	0.154	0.067	0.154	-0.263*	0.154
Log(income per cons. unit) at wave 2	0.016	0.017	-0.013	0.018	0.023	0.017	-0.014	0.018
Education								
None or Primary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secundary	-0.076**	0.033	0.126***	0.033	-0.056	0.034	0.127***	0.033
Tertiary	-0.178***	0.038	0.265***	0.038	-0.211***	0.038	0.266***	0.038
Country of residence								
Germany	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Austria	-0.011	0.070	-0.193***	0.073	0.137*	0.075	-0.194***	0.072
Sweden	-0.305***	0.063	0.297***	0.062	-0.025	0.064	0.294***	0.062
Netherlands	-0.138**	0.062	0.295***	0.061	-0.242***	0.065	0.288***	0.061
Spain	-0.332***	0.066	-0.111	0.069	-0.045	0.070	-0.104	0.069
Italy	-0.227***	0.060	-0.257***	0.061	0.115*	0.063	-0.245***	0.061
France	-0.374***	0.068	-0.089	0.067	-0.089	0.070	-0.075	0.067
Denmark	-0.332***	0.067	0.437***	0.067	-0.077	0.070	0.433***	0.067
Greece	-0.587***	0.057	-0.043	0.058	0.288***	0.059	-0.024	0.057
Switzerland	-0.453***	0.079	0.216***	0.078	-0.277***	0.083	0.219***	0.078
Belgium	-0.246***	0.066	0.055	0.064	-0.011	0.068	0.067	0.064
Interview time								
Months between waves 1&2	0.001	0.004	-0.009**	0.004	-0.001	0.004	-0.008**	0.004
Average of time variant covariates								
Living with spouse/partner at wave 1&2	-0.122	0.151	0.217	0.158	-0.140	0.158	0.214	0.158
Log(income per cons. unit) at wave 1&2	-0.048**	0.023	0.058**	0.025	-0.076***	0.024	0.058**	0.025
Intitial Conditions								
Migrant (1=yes)	0.083	0.052	-0.197***	0.053	0.050	0.054	-0.200***	0.053
Log(N. of moves in life)	0.021	0.025	-0.015	0.025	0.038	0.025	-0.015	0.025
Relative School Performance	-0.020	0.026	0.108***	0.026	-0.021	0.027	0.110***	0.026
Ever worked in a volunt. Association (1=yes)	-0.030	0.089	0.312***	0.099	0.038	0.090	0.313***	0.099
Retrospective SRH age 10 (1>good)	0.247***	0.044	-0.009	0.045	0.160***	0.046	-0.007	0.045
2+ illnesses when child (1=yes)	0.065	0.040	0.005	0.040	0.048	0.042	0.005	0.041
Feat. of accomodation when child	0.001	0.009	0.006	0.009	-0.012	0.009	0.005	0.009
Household size when 10	0.009*	0.005	0.011**	0.005	-0.007	0.005	0.011**	0.005
Intercept	0.219	0.188	-1.228***	0.194	0.641***	0.194	-1.223***	0.195
Rho			-0.068***	0.017			-0.061***	0.018

Note: *** p<0.01, ** p<0.05, * p<0.1

Table A4 continued

	MODEL 5				MODEL 6			
Dep. var. (Ht, Dt)	**Low Grip Strength**		**Social Capital**		**Euro-D**		**Social Capital**	
Indep. var.	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Health t-1								
Poor SRH								
ADL2+								
GALI								
Mobility								
Low grip strength	1.442***	0.038	-0.064*	0.037				
Euro-D					1.186***	0.036	-0.155***	0.037
Rel. Cognitive Impairments								
Social Capital t-1								
Take part in social activities (1=yes)	-0.032	0.036	1.165***	0.027	-0.102***	0.034	1.154***	0.026
Individual Characteristics t								
Gender (1=man)	-1.034***	0.044	-0.075**	0.029	-0.294***	0.034	-0.044*	0.026
Age class at wave 2								
50-54	-1.279***	0.094	0.188***	0.069	-0.228***	0.079	0.219***	0.065
55-59	-1.115***	0.070	0.176***	0.057	-0.197***	0.063	0.217***	0.054
60-64	-0.944***	0.069	0.243***	0.057	-0.318***	0.063	0.279***	0.053
65-69	-0.808***	0.067	0.242***	0.056	-0.212***	0.062	0.280***	0.053
70-74	-0.570***	0.069	0.216***	0.058	-0.180***	0.064	0.244***	0.055
75-79	-0.407***	0.070	0.078	0.062	-0.094	0.066	0.115**	0.058
80+	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Living with spouse/partner at wave 2 (1=yes)	0.197	0.191	-0.307*	0.160	-0.663***	0.191	-0.277*	0.155
Log(income per cons. unit) at wave 2	0.076***	0.023	-0.016	0.019	0.016	0.021	-0.014	0.018
Education								
None or Primary	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Secundary	-0.112**	0.045	0.124***	0.035	-0.090**	0.043	0.126***	0.033
Tertiary	-0.054	0.052	0.272***	0.039	-0.173***	0.051	0.268***	0.038
Country of residence								
Germany	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Austria	0.021	0.100	-0.150*	0.077	0.032	0.096	-0.188***	0.073
Sweden	-0.161*	0.090	0.298***	0.064	-0.172**	0.088	0.300***	0.062
Netherlands	-0.021	0.086	0.304***	0.063	-0.071	0.086	0.305***	0.061
Spain	0.361***	0.087	-0.087	0.072	0.193**	0.085	-0.086	0.069
Italy	0.144*	0.082	-0.273***	0.064	0.332***	0.079	-0.225***	0.061
France	0.171*	0.091	-0.120*	0.070	0.161*	0.087	-0.046	0.067
Denmark	0.267***	0.090	0.422***	0.069	-0.046	0.094	0.444***	0.067
Greece	0.094	0.079	-0.031	0.060	-0.153*	0.081	-0.016	0.057
Switzerland	-0.123	0.104	0.213***	0.080	-0.103	0.109	0.237***	0.078
Belgium	-0.018	0.091	0.026	0.066	0.135	0.087	0.088	0.064
Interview time								
Months between waves 1&2	0.004	0.006	-0.011***	0.004	-0.005	0.005	-0.008*	0.004
Average of time variant covariates								
Living with spouse/partner at wave 1&2	-0.233	0.196	0.253	0.165	0.629***	0.196	0.219	0.159
Log(income per cons. unit) at wave 1&2	-0.125***	0.031	0.057**	0.026	-0.064**	0.028	0.056**	0.025
Intitial Conditions								
Migrant (1=yes)	-0.007	0.073	-0.189***	0.055	0.071	0.066	-0.190***	0.053
Log(N. of moves in life)	0.049	0.033	-0.013	0.026	0.097***	0.031	-0.012	0.025
Relative School Performance	-0.063*	0.036	0.107***	0.027	-0.042	0.033	0.107***	0.026
Ever worked in a volunt. Association (1=yes)	-0.048	0.118	0.312***	0.104	0.077	0.114	0.320***	0.099
Retrospective SRH age 10 (1>good)	0.059	0.057	-0.001	0.047	0.198***	0.053	-0.009	0.045
2+ illnesses when child (1=yes)	0.119**	0.053	0.003	0.042	0.128***	0.049	0.008	0.041
Feat. of accomodation when child	0.014	0.012	0.002	0.009	0.005	0.011	0.005	0.009
Household size when 10	-0.015**	0.007	0.014***	0.005	0.012*	0.007	0.011**	0.005
Intercept	0.215	0.253	-1.079***	0.203	-0.651***	0.233	-1.253***	0.194
Rho			-0.084***	0.023			-0.095***	0.022

Note: *** p<0.01, ** p<0.05, * p<0.1

Table A4 continued

	MODEL 7			
Dep. var. (Ht, Dt)	**Rel. Cogintive. Imp.**		**Social Capital**	
Indep. var.	**Coef.**	**S.E.**	**Coef.**	**S.E.**
Health t-1				
Poor SRH				
ADL2+				
GALI				
Mobility				
Low grip strength				
Euro-D				
Rel. Cognitive Impairments	1.143***	0.068	-0.413***	0.079
Social Capital t-1				
Take part in social activities (1=yes)	-0.134**	0.052	1.154***	0.026
Individual Characteristics t				
Gender (1=man)	0.033	0.049	-0.035	0.026
Age class at wave 2				
50-54	-1.182***	0.146	0.190***	0.066
55-59	-1.123***	0.094	0.179***	0.054
60-64	-0.987***	0.085	0.245***	0.054
65-69	-0.799***	0.079	0.250***	0.054
70-74	-0.646***	0.074	0.221***	0.056
75-79	-0.472***	0.075	0.105*	0.058
80+	Ref.	Ref.	Ref.	Ref.
Living with spouse/partner at wave 2 (1=yes)	0.074	0.298	-0.266*	0.153
Log(income per cons. unit) at wave 2	0.010	0.027	-0.014	0.018
Education				
None or Primary	Ref.	Ref.	Ref.	Ref.
Secundary	-0.515***	0.079	0.124***	0.033
Tertiary	-0.436***	0.098	0.275***	0.038
Country of residence				
Germany	Ref.	Ref.	Ref.	Ref.
Austria	0.311**	0.150	-0.188***	0.073
Sweden	-0.252	0.166	0.301***	0.062
Netherlands	-0.262	0.160	0.301***	0.061
Spain	0.526***	0.131	-0.087	0.069
Italy	0.374***	0.128	-0.230***	0.062
France	0.083	0.153	-0.076	0.067
Denmark	0.196	0.170	0.439***	0.067
Greece	0.149	0.129	-0.027	0.057
Switzerland	-0.077	0.180	0.227***	0.078
Belgium	0.002	0.149	0.064	0.064
Interview time				
Months between waves 1&2	-0.014*	0.008	-0.009**	0.004
Average of time variant covariates				
Living with spouse/partner at wave 1&2	-0.144	0.303	0.214	0.158
Log(income per cons. unit) at wave 1&2	-0.038	0.038	0.056**	0.025
Intitial Conditions				
Migrant (1=yes)	0.347***	0.098	-0.194***	0.054
Log(N. of moves in life)	-0.161***	0.043	-0.022	0.025
Relative School Performance	-0.257***	0.052	0.103***	0.026
Ever worked in a volunt. Association (1=yes)	-0.200	0.220	0.301***	0.099
Retrospective SRH age 10 (1>good)	0.110	0.084	-0.014	0.045
2+ illnesses when child (1=yes)	-0.101	0.086	0.005	0.041
Feat. of accomodation when child	-0.052***	0.019	0.004	0.009
Household size when 10	0.019**	0.008	0.012**	0.005
Intercept	-0.113	0.335	-1.194***	0.194
Rho			-0.197***	0.035

Note: *** p<0.01, ** p<0.05, * p<0.1

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Social Capital and Health of Older Europeans
From Reverse Causality to Health Inequalities

Nicolas Sirven (Irdes), Thierry Debrand (Irdes)

This research uses a time-based approach of the causal relationship (Granger-like) between health and social capital for older people in Europe. We use panel data from waves 1 and 2 of SHARE (the *Survey of Health, Ageing, and Retirement in Europe*) for the analysis. Additional wave 3 data on retrospective life histories (SHARELIFE) are used to model the initial conditions in the model. For each of the first 2 waves, a dummy variable for involvement in social activities (voluntary associations, church, social clubs, etc.) is used as a *proxy* for social capital as involvement in Putnamesque associations; and seven health dichotomous variables are retained, covering a wide range of physical and mental health measures. A bivariate recursive Probit model is used to simultaneously investigate (i) the influence of baseline social capital on current health - controlling for baseline health and other current covariates, and (ii) the impact of baseline health on current participation in social activities - controlling for baseline social capital and other current covariates. As expected, we account for a reversed causal effect: individual social capital has a causal beneficial impact on health and *vice versa*. However, the effect of health on social capital appears to be significantly higher than the social capital effect on health. These results indicate that the sub-population reaching 50 years old in good health has a higher propensity to take part in social activities and to benefit from it (social support, etc.). Conversely, the other part of the population in poor health at 50, may see its health worsening faster because of the missing beneficial effect of social capital. Social capital may therefore be a potential vector of health inequalities.

Capital social et santé des Européens âgés

Nicolas Sirven (Irdes), Thierry Debrand (Irdes)

L'objet de cette étude est d'analyser les relations de causalité entre participation sociale (capital social) et santé des personnes âgées en Europe. Nous utilisons les trois vagues de l'enquête SHARE (Enquête sur la santé, le vieillissement et la retraite en Europe) auprès des individus de 50 ans et plus dans onze pays. Pour chacune des deux premières vagues (2004 et 2006), une variable dichotomique renseigne sur la participation à des activités sociales (associations, clubs, partis politiques, etc.) et sept variables dichotomiques renseignent sur l'état de santé physique et mental des répondants. Un modèle Probit bivarié et récursif est utilisé pour estimer l'influence de la participation sociale en 2004 sur la santé en 2006 et réciproquement, de la santé en 2004 sur la participation sociale en 2006. En plus des variables de contrôle usuelles, les données rétrospectives de la troisième vague d'enquête sur les histoires de vie (SHARELIFE) permettent de prendre en compte les conditions initiales de l'échantillon. Les résultats suggèrent un effet causal réciproque : la participation sociale favorise une meilleure santé et vice-versa. Néanmoins, l'effet de la santé sur la participation sociale apparaît plus important que l'effet inverse. Par conséquent, les individus âgés en bonne santé ont d'autant plus de chances de préserver leur santé à travers l'effet bénéfique du capital social. De même, ceux en moins bonne santé ont moins de chances de participer à des activités sociales et ne bénéficiant pas de leur effet bénéfique, ont à leur tour une probabilité plus forte de voir leur état de santé se dégrader plus vite. En somme, malgré ses effets individuels bénéfiques, le capital social est un vecteur potentiel d'accroissement des inégalités de santé parmi les personnes âgées.

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