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ABSTRACT

Biased Survival Expectations and Behaviours: Does Domain Specific Information Matter?*

We study biased survival expectations across two domains and examine whether such biased expectations influence health and financial behaviors. Combining individual-level longitudinal data, retrospective, and end of life data from several European countries for more than a decade, we estimate time-varying individual level bias in 'survival expectations' (BSE) at the individual level and compare it biased 'meteorological expectations' (BME). We exploit variation in an individual's family history (parental age at death) to estimate the effect of BSE on health and financial behaviors and compare it to BME, and other tests to discuss whether the effect of BSE results from the effect of private information. We find that BSE increases the probability of adopting less risky behaviors and financial behaviors. We estimate that a one standard deviation increase in BSE reduces the average probability of smoking by 48% and holding retirement accounts by 69%. In contrast, BME barely affects healthy behaviors, and is only associated with a change in some financial behaviors.

JEL Classification: I18, D14, G22

Keywords: biased expectations, survival expectations, meteorological expectations, longevity optimism, private information, health behaviour, financial behaviour

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1. Introduction

Rational expectations models (e.g., rational addiction models) are grounded on the assumption that individuals accurately form their survival expectations (Yaari, 1965). Consistently, some research has documented that subjective survival expectations are *on average* consistent with life table probabilities (Hurd and McGarry 1995, Hurd and McGarry 2002 and Palloni and Novak, 2016). However, already some studies show that aggregate life table realizations do not account for individual-specific heterogeneity (Gan et al., 2004)[1]. The availability of end-of-life data makes it possible to compare more precisely individual level objective and subjective survival expectation evidence[2]. Examining subjective longevity expectations over an individual's life cycle, some studies find evidence of an underestimation (overestimation) of subjective survival at younger (older) age (Elder, 2007, Hurd et al., 2009), suggesting evidence of biased survival expectations. Do such biased expectations affect behaviour? Does the information domain matter?

We study individual-level measures of biased expectations across two domains, namely one's own longevity and the (predicted) weather. More specifically, we measure biased survival expectations (BSE) by comparing for each individual interviewed in end-of-life exit interviews in Europe, their *actual survival realizations* (and predicted survival for those alive) with their *expectations*. Similarly, we compare BSE to 'biased meteorological expectations' (BME), that is, how individuals' weather predictions compare to weather realisations.

[1] De Bresser, (2017) draws on two Dutch surveys, administered to the same respondents during the same month, documenting similar relationships between socio-demographic covariates and the objective and subjective survival expectations.

[2] Some different datasets, such as the Health and Retirement Survey (HRS) in the United States and the Survey of Health Ageing and Retirement in Europe (SHARE) contain a specific module with an end-of-life panel component which exhibits to date a reasonable sample with a reasonable response rate. Some studies have already documented evidence of an age specific distribution of subjective and objective survival in the United States (Bissonnette *et al*. 2017, Palloni and Novak 2016).

Next, upon documenting evidence of biased expectations, we examine the impact of biased expectations on both their survival and the weather on health and financial behaviours. More specifically, we examine the hypothesis of private information driving such effects by exploiting the variation in an individual's family longevity history (parental age at death) to identify the causal effect of biased expectations on several health (e.g., engaging in preventive actions) and financial behaviours (e.g., saving more). The overestimation of one's subjective survival can be explained by an individual's private information about their objective survival probability, which can come from knowledge of technological or medical advances, or individual-specific genetic survival information[3]. Another test of the role of private information lies in examining whether individual biased expectations vary by domain that differ in the extent of individual control (e.g., limited control of the weather).

We add to the literature in several ways. First, we take advantage of unique data from an end-of-life questionnaire of the Survey of Health Ageing and Retirement in Europe (SHARE) and its retrospective wave (SHARELIFE), which allows us to precisely estimate individual level survival expectations which we then link to the respondent's actual observed survival[4]. Second, we study BSE using longitudinal data from several European countries, which exhibit a large cultural variation in behavioural reference points in the formation of expectations compared to studies using United States data. Third, we differentiate biased expectation in two domains, such as one own survival (or health), and the wealthier (or methodological expectations). Finally, we extend the previous literature[5] by providing causal

[3] Alternatively, behavioural biases such as longevity *optimism,* or tendency to view the future more in one's favour, *can underpin* individuals' differences in survival expectations.

[4] We use the stock sampling approach of Jenkins (1995), which allows us to change the unit of analysis from the individual to the time at risk of death, and in turn simplifies the complex sequence of likelihoods to the standard estimation of a binary outcome.

[5] So far, most of the literature examines how survival expectations are modified by changes in health behaviours (Smith et al., 2001), genetic information (Hurd and McGarry, 1995; Perozek, 2008), better knowledge of parents' health (van Doorn and Kasl, 1998) and health-related experiences in life (Benítez-Silva, 2008; Costa-Font and Costa-Font, 2011). Previous evidence supports the idea that subjective survival expectations are good predictors of longevity (Hurd and McGarry, 1995, 2002).

estimates of biased expectations to specific financial and health behaviours[6]. Hence, we add to the still growing literature on biased expectations and specifically on the role of private information (Kim *et al*, 2017).

The next section describes this paper relates to the existing literature. Section three describes the data, and the empirical strategy is reported in section four. We report the main results in section five. Next, section six reports a battery of robustness check, and section seven describes other potential pathways. A final section concludes.

2. Related Literature

Biased Survival Expectations (BSE). Subjective survival expectations are central to long term decisions regarding saving and consumption (Levhari and Mirman, 1977; Hamersmesh, 1985; Hurd, 1989), retirement and employment (Hurd et al, 2004; Cocco and Gomes, 2011), as well as risky health behaviours (Khwaja et al, 2007). However, the evidence of bias in expectation formation mainly relies on the comparison between cross-sectional expectation data and survival life tables. Consistently, Post and Hanewald (2013) show that the dispersion of subjective survival expectations is more in line with the dispersion of human mortality tables. However, life table models are affected by selection, individual heterogeneity as well as potential cohort effects and non-response of those with higher mortality risk (Bissonette et al, 2017). In contrast, exit interviews are less affected by selection and can precisely identify survival at the individual level.

[6] For instance, Salm (2010) found that a 1% higher subjective mortality rate was associated with an annual decrease in consumption of non-durable goods of 1.8%. Groneck et al. (2017) claim that underestimation of young age and overestimation of old age survival probabilities might give rise to the occurrence of over and under saving, respectively. Puri and Robinson (2007) found that overestimated survival (from life tables) gives rise to more conservative saving behaviours (more savings). However, they identify a non-linearity at the top share of the survival distribution and do not examine optimism.

Cognitive Biases and Optimism. It is unclear from the literature whether BSE are the result of cognitive biases or the result of other explanations. Individuals differ in their ability to judge their own mortality risk (Lichtenstein et al, 1978), due to differences in personality and emotions. Younger respondents tend, on average, to underestimate their objective survival chances, and the opposite is true for older people (Gronek et al, 2017). Although Steffen (2009) found that both men and women underestimate their life expectancy compared to actuarial life expectancy, Teppa and Lafourcade (2013) estimate that women exhibit a systematic lower subjective survival probability relative to actuarial survival probabilities. Mirowski (1999) argues that surviving at older ages may be a source of optimism if the individual believes that is "increasingly remarkable". Hence, optimism can stand out as a potential explanation for biased survival expectations. Biased longevity expectations should be distinguished from more general forms of optimism, as we discuss later in the paper.

In estimating survival probabilities, there are important reporting biases to account for such the rounding of the data and the presence of focal points (e.g., 0.5) as discussed in Bruine et al., (2000). A nontrivial question is how to estimate survival expectations by age from expectation questions of survival of an additional year of life, which is dealt with examining a subjective hazard function under some distributional assumptions (see Bissonette et al., 2017). Viscusi and Hakes (2003) estimate subjective survival probability and find that they capture a generalised assessment of an individual health status different from a subjective probability as such. Consistently, age, gender and socio-economic status are systematically found to influence subjective survival expectations (Hamermesh, 1985; Hurd and McGarry, 1995; Khwaja et al, 2007).

Behaviour and BSE. Although some studies document the presence of discrepancies between perceived and realized survival, there is limited, or no consensus on the effect of BSE on actual behaviour. Gronek et al, (2017) find no evidence that biased survival expectations affect savings behaviours. Previous studies have examined the effect of survival expectations on retirement (O'Donnell et al., 2006; van der Klaauw and Wolpin, 2008), demand for annuities (Schulze and Post, 2010; Teppa and Lafourcade, 2013), portfolio allocation (Kézdi and Willis, 2011), education (Arcidiacono et al., 2012), migration (McKenzie et al, 2013), savings (Bloom et al., 2006) and smoking behaviour (Balia, 2011). However, most such studies do not account for the endogeneity of survival expectation formation on actual survival. This paper exploits the evidence on parental survival to account for such endogeneity drawing from an instrumental variable strategy.

3. The Data

We use data from SHARE (Survey of Health, Ageing and Retirement in Europe)[7]. This survey is the European equivalent of the Health and Retirement Survey. We use data from the "Main Questionnaire" of waves 1 (2004-05), 2 (2006-07), 3 (2009), 4 (2011), 5 (2011) and 6 (2015) and the "End of life" module for waves 2 (2006-07), 3 (2009), 4 (2011-13), 5 (2013) and 6 (2015). We also use and the retrospective SHARELIFE data in our robustness checks. Our final samples are obtained by following several steps (see Table B1 from Appendix B). Using the initial samples for waves 1 to 6 (N=260,244), we have selected those countries which appear in all waves (i.e, Austria, Belgium Denmark, France, Germany, Italy, Spain, Sweden, and Switzerland; N=160,388). Second, we select observations with non-missing values for

[7] The SHARE target population consists of all persons aged 50 years and older at the time of sampling who have their regular domicile in the respective SHARE country, which contains micro level information on demographics, socio-economic status, health status, social and family networks. Persons are excluded if they are incarcerated, hospitalized, or out of the country during the entire survey period or unable to speak the country's languages (Bergman et al., 2019).

calibrated sampling weights[8] (N=156,320). Third, we merge two consecutive waves of SHARE, in the case of survivors two consecutive "Main Questionnaires" of SHARE, whereas for the deceased we merge the "Main Questionnaire" of one wave with the "End-of-life Questionnaire"[9] of the next wave (N=118,025). We identify there are 29,376 non-follow-up respondents, that is, respondents who have only participated in one wave. Next, we compare the characteristics of the non-follow-up respondents with those of the survivors and deceased subsamples. Finally, we distinguish those respondents who have answered the life expectancy module from those who have not.[10] Retention rates[11] increase remarkably over time in all countries resulting in very high overall panel stability after several waves (Table B2 from Appendix B).

Subjective survival. The "Main Questionnaire" contains an "Expectations" module which starts with a warm-up question asking, "*What do you think the chances are that it will be sunny tomorrow?*". This should help respondents feel at ease with the numerical scale used in the whole set of questions in this module. To make understanding easier these questions are accompanied by cards, with a numerical sequence of probability: from 0, meaning means absolutely no chance, to a value of 100, meaning absolutely certainty. Furthermore, respondents are asked to state their Subjective Survival Probability (SSP) on a scale from 0 to 100 using the following question: "*What are the chances that you will live to be age [T] or more?*". The target T takes the values {75, 80, 85, 90,…,120} depending on the age of the respondent. Respondents aged under 65 at the time of the interview are presented a target of

[8] Calibrated sampling weights are missing for respondents younger than 50 years (i.e., age-ineligible partners of an age eligible respondent) and those with missing information on the set of calibration variables (i.e., age, gender and NUTS1 code).
[9] The "End of life" module in the event of death is completed between two waves (questions are answered by a proxy respondent). Using the unique identifier assigned to each respondent, it is possible to link the "End of life" module with the "Main questionnaire" of the wave immediately preceding it.
[10] This last step configures our final samples: 2,040 for the deceased's subsample and 67,860 for the survivors' subsample, and we test if there is a sample selection problem due to the exclusion of those who have not reported their survival expectations
[11] To cope with potential selection bias generated by non-response and panel attrition, SHARE suggests using calibrated sampling weights using the methodology designed by Deville and Särndal (1992).

75, while those aged between 65 and 69 have a target of 80, and so on (T=85 for 70-74 years, T=90 for 75-79 years, T=95 for 80-84 years, T=100 for 85-89 years, T=105 for 95-100, T=110 for 100-104 years and T=120 for 105 years and older).

Biased Survival Expectations (BSE). Figure B1 shows the evolution of SSP across the six waves. We find no significant differences and a parsimonious reduction of survival probabilities as individuals becomes older. Given the significant reduction in sample size, we compare the density function of the survival subjective probability between follow-up respondents and non-follow up respondents. Regarding the validity of SHARE information, Schulz and Doblhammer (2011) compared age-specific death rates for all SHARE countries of wave 1 with age-specific death rates from the Human Mortality Database. They found that empirical death rates mostly ranged within the confidence interval up to age 65, but from age 65 onwards, they were predominantly below the lower bound of the confidence interval[12]. Consequently, older respondents institutionalized shortly before death may be coded as attrition cases, instead of deceased.

Kernel density functions are shown in Figure B2 (Appendix B) and results of the test of equality of distributions are reported in Table B3. When examining all waves pooled or paired waves, we identify similar density functions, which leads us to reject the null of equality of distributions[13]. Table B4 displays the mean survival subjective probabilities by country and target (T) using the final sample (N=69,900). There is large cross-country heterogeneity in survival expectations across European countries. Such evidence is confirmed by F tests comparing the highest and lowest means across countries. Danish respondents show the largest survival expectations for targets 75, 80 and 85, whereas Italians have the highest survival

[12] Two reasons may explain this underestimation: (i) the institutionalized population is missing in the first wave of SHARE, and although respondents are followed into institutions in the second wave, the institutionalization rate in SHARE is very low, (ii) except for France, the mortality follow-up is not based on registers, but on the "End-of-life interview".

[13] We only reject the null hypothesis when comparing follow-up and non-follow-up respondents between waves 2 and 4 (which could be justified given the greater time interval between both waves).

expectations for the oldest cohorts[14]. In contrast, Belgians report the lowest expectations for the youngest cohort, Germans are the least optimistic for targets 80, 85 and 90, and finally, Swedish aged 90 and older are the most pessimistic of all the countries considered[15].

4. Empirical Strategy

4.1. Main specification

Using the Weibull specification (commented in section 4.1; see Appendix C for the explanation of the duration model), we estimate the predicted survival probabilities, which we denote as "objective survival probabilities" (OSP_{ict}). Accordingly, we define our longevity optimism (or "biased survival expectations") indicator as the difference between subjective and objective survival expectations as follows:

$$BSE_{ict} = SSP_{ict} - OSP_{ict} \qquad (1)$$

Next, we measure the effect of longevity optimism (BSE_{ict}) for *an* individual *i* living in country *c* at time (wave) *t;* on several behaviours' (D_{ict}) related to health and financial domains (health, lifestyle, savings, financial investments, and risk taking; see Table A3), as follows:

$$D_{ict} = \alpha_0 + \alpha_1 BSE_{ict} + \alpha_2 X_{ict} + T_t + C_c + \epsilon_{ict} \qquad (2)$$

where D_{itc} refers to the behaviour indicator considered for individual *i* living in country *c* at time (wave) *t;* X_{itc} is a vector of explanatory variables[16], T_t and C_c denotes wave and country

[14] This fact may be explained by the combination of a high life expectancy (80.2 years in 2015) and being one of the countries in the world with the highest number of centenarian population. Source: Health status - Life expectancy at birth - OECD Data.

[15] If we consider the classification of countries proposed by Lewis (1996), we can see that: Group III (Austria and Denmark) exhibits the highest SSP for target ages 75, 80 and 85, whereas Group IV (Italy and Spain) shows the highest SSP for the oldest cohorts. In contrast, Group II (Belgium and France) is the group with the lowest SSP for all targets except T=90 years (see classification of countries on Table A4). Table B5 reports survival expectations by gender across different target ages. Importantly, we find that among the survivor's women tend to exhibit higher subjective survival probabilities, but the effect seems to decline when target ages are expanded, and at age 90 men have higher survival probability among survivors.

[16] Gender, age, age squared, level of education, marital status, number of days stayed in hospital during the last year (surgery or medical tests), number of days stayed at hospital during the last year (mental health), number of

fixed effects and ϵ_i is an error term. We include three groups of explanatory variables: (i) socio-demographic characteristics, (ii) economic controls and (iii) health-related controls. Additionally, we include country fixed effects and wave fixed effects. The definition of each is shown in Table A2.

4.2. Endogeneity of Biased Survival Expectations on Behaviour

Given the potential for endogeneity, we follow an instrumental variable approach. In the first stage, we estimate (3) by BSE:

$$BSE_{ict} = \beta_0 + \beta_1 MAD_{ict} + \beta_2 FAD_{ict} + \beta_3 ML_{ict} + \beta_4 FL_{ict} + \beta_5 X_{ict} + T_t + C_c + \varepsilon_{ict} \quad (3)$$

where MAD_{itc} and FAD_{itc} represent mother's and father's age at death, respectively, $ML_{ict}$and FL_{ict} are binary variables that take the value 1 if the mother (father) is alive at the time of the survey binary, and 0 otherwise. A valid instrument should be uncorrelated with the error term of (2) but correlated with BSE_{ict}. Hurd and McGarry (2002) and Dormont et al, (2014) have shown that death of a parent is associated with a reduction in subjective survival expectations. Additionally, genetic factors or parental ill health are a form of private information that predicts their descendants' health status, and thus, affect their survival expectations. Therefore, the validity of our instruments relies on the fact that parent's living status affects children's behaviours only through the channel of their SSP. We have selected four instruments: father's age at death, mother's age at death, whether the father and the mother are alive. Here, we exploit link between parents and children objective longevity[17].

days stayed at other institutions during the last year, number of visits to general practitioner during the last year, relation with economic activity, living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP).

[17] Ikeda et al., (2006) showed that the older the age of death of both mothers and fathers, the lower the probability of death for adult children aged between 40 and 79 years. It also seems that longevity is more strongly associated

In measuring the effect of parent's age of death we have distinguished between individuals those whose parents have already passed away at the time of the survey from those who are still alive. In the former case, we have used the reported age of death. In the latter, we draw on the predicted age of parental death using multiple imputation (Rubin, 1987). A detailed explanation of the imputation process is reported on Appendix B. The density function and descriptive statistics of deceased parents (reported age of decease in SHARE) and living parents (imputed age of decease) are shown on Figure B3 and Table B7[18]. Sections 6.3 and 6.4 reports robustness checks testing for the validity of our instruments. Finally, the predicted values of $BSE_{ict}(\widehat{BSE}_{ict})$ are used instead of the original values of BSE_{ict} in equation (1).

$$IND_{ict} = \gamma_0 + \gamma_1 \widehat{BSE}_{ict} + \gamma_2 X_{ict} + T_t + C_c + \omega_{ict} \qquad (4)$$

For each indicator (IND_{ict}) we have estimated four different models, gradually introducing new explanatory variables (X_{ict}). Different specification differs depending on socio-demographic controls[19] country fixed effects and wave fixed effects. Next, consider controls for the number of days spent in hospital in the previous year (due to surgery or medical tests), the number of days stayed at hospital during last year (mental health), the number of days stayed at other institutions during last year and the number of visits to a general practitioner during the previous year[20].For each indicator and each model specification we provide three test statistics for the IV estimation (see Tables B13 to B16)[21].

with maternal death age than parental death age and that mother's longevity reduces the incidence of some pathologies such as pulmonary disease or hypertension (Goldberg et al. 1996; Gjonca and Zaninotto 2008).

[18] The predicted kernel density function (using the imputed values for the living parents' subsample) is displaced to the right as compared to the density function for deceased parents. Imputed age of death is around two years higher as compared to parents' reported age, regardless of the adult's child gender.

[19] Including gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education, and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)).

[20] Finally, a third specification considers a series of controls for economic activity Such as employment retirement status, home working, living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP).

[21] The rejection of the null hypothesis for the Durbin-Wu Hausman test indicates that the OLS estimations are inconsistent and that the IV technique is required. The Stock and Yogo critical values at 5% are lower than the Cragg-Donald statistic, which tests for weak instruments. Finally, as we have one endogenous variable and two

4.3. Biased Meteorological Expectations

To identify whether individual biased expectations vary by domain, we have constructed an indicator that compares the subjective probability of a sunny day the following day after the interview with the meteorological probability of a sunny day (using weather data). Gaisma website[22] provides sunrise and sunset, and dusk times for thousands of locations all over the world. For each month and region, we have computed average daylight minutes ($DMD_{m,r}$) as the difference between sunrise and sunset times (see Table B9). The World Meteorological Organization[23] provides the mean number of sunshine hours per month, year, and region. First, we have defined the number of sunshine minutes per month m of year y in region r ($SMM_{m,y,r}$), where region *r* is the equivalent of NUTS-2 of SHARE. Second, we have computed the average sunshine minutes per day in month m of year y in region r ($SMD_{m,y,r}$) as the ratio between sunshine minutes per month and days per month for each year (to consider leap years) (see Table B10).

$$SMD_{m,y,r} = \frac{SMM_{m,y,r}}{Days\ per\ month_y} \tag{5}$$

The meteorological probability of a sunny day in month m of year y in region r ($MetSD_{m,y,r}$) is defined as the ratio between sunlight minutes per day ($SMD_{m,y,r}$) and daylight minutes per day ($DMD_{m,r}$) (see Table B11):

$$MetSD_{m,y,r} = \frac{SMD_{m,y,r}}{DMD_{m,r}} * 100 \tag{6}$$

$MetSD_{m,y,r}$ is regressed over country and regional fixed effects and the meteorological predicted probability of sunny day ($\widehat{MetSD}_{m,y,r}$) is obtained.

instruments, we perform an overidentification test. The p-value from the Sargan test shows that the instruments are uncorrelated with the error term of the outcome equation, and thus are valid instruments.

[22] https://www.gaisma.com/en

[23] http://data.un.org/Data.aspx?d=CLINO&f=ElementCode%3A15

The expectations' module of SHARE includes the following question: "*what do you think the chances are that it will be sunny tomorrow? For example, '90' would mean a 90 per cent chance of sunny weather. You can say any number from 0 to 100*". We use the answer to this question to define reported probability of a sunny day by individual i interviewed in month m of year y in region r ($Rep_{i,m,y,r}$)[24].

"Meteorological expectations" of individual i interviewed in month m of year y in region r ($BME_{i,m,y,r}$) is the difference between reported probability of a sunny day and meteorological predicted probability of a sunny day:

$$BME_{i,m,y,r} = RepSD_{i,m,y,r} - \widehat{MetSD}_{m,y,r} \quad (7)$$

Table B12 compares both indicators of biased expectations. Our estimates suggest that: (about 56% individuals exhibit both positively biased survival and meteorological expectations (i.e, BSE>0 and BME>0) and about 8% have negatively biased expectations for both domains. The share of respondents exhibiting positively biased expectation on both domains is 9.2 pp is higher for men as compared to women, differ by age and are, 3.5 pp higher for survivors as compared to deceased. Finally, we find that Austria and Denmark exhibit the highest share of individuals with positively biased expectations, whereas Belgium, France and Germany exhibit the highest of negatively biased expectations (i.e., with the highest percentage for BSE<0 and BME<0). Finally, we estimate OLS regressions for the same set of indicators used in equation (4), but replacing it by expectations based on meteorological beliefs ($BME_{i,m,y,r}$):

$$IND_{ict} = \delta_0 + \delta_1 ME_{i,m,y,r} + \delta_2 X_{ict} + T_t + C_c + \varsigma_{ict} \quad (8)$$

where X_{ict} is the same set of control variables used in (4) and we proceed in a similar fashion, adding them gradually; T_t and C_c are fixed and country fixed effects and ς_{ict} is an error term.

[24] The sample of respondents to this question is 69,315 as compared with the total sample which amounts to 69,900 observations.

5. Results

5.1. Biased Subjective Survival

We begin with estimating BSE among survivors and the individual characteristics predicted to make an influence. Table B8 reports estimates of the discrete-time hazard model and identifies a long list of unhealthy lifestyles that correlate with objective survival across waves. Estimates suggest that the hazard rate (1.429) increases over time but follows a decreasing pattern. At each survival time, men exhibit a higher hazard ratio (+88.4%) hazard ratio than women. Compared to individuals who have never smoked, the hazard rate is 52.4% higher among current smokers[25] and 36.6% higher for past smokers. Consistently, we estimate a higher hazard rate among respondents that fail to perform any moderate nor vigorous physical activity experience larger hazard rate, and those who drink every day or almost every day (23.4%). Being diagnosed with cancer[26] and Alzheimer's increases mortality risk by 156.6% and 58.5%, respectively, and we document that similarly, those who have suffered a stroke exhibit a 54.3% higher hazard ratio. Individuals feeling depressed exhibit an 18.1% higher hazard ratio which confirms previous evidence regarding the relationship between depression and mortality (Mykletun et al., 2009). Finally, we document a negative association between the survival hazard rate and educational attainment[27].

Figure 1 depicts the subjective survival probability (SSP) and objective survival probability (OSP) for both deceased, and survivors, across individual's ages. Consistently with the hypothesis of biased survival expectations, we find evidence of significant subjective

[25] Being a smoker was found to be equivalent to being at least four years older in terms of its negative effects on two-year survival (Wang, 2014).
[26] The high impact of cancer coincides with previous evidence by Hurd and McGarry (2002) who found that cancer was the strongest predictor of mortality, increasing two-year mortality rate by 150%.
[27] The hazard ratio for no education and primary education are 53.1% and 57.5% higher than the omitted category (tertiary education). Furthermore, the hazard rate for those who have 1,000 PPP additional units of adjusted wealth is 66.3% of the hazard rate for those who do not have such wealth.

biased survival expectations, *both among survivors and the deceased*. However, such bias widens among the deceased over time whilst it remains relatively stable among survivors.

[Insert Figure 1 about here]

Table 1 examines age differences in BSE *between deceased and survivors*. For each age cohort, the column SSP indicates the average subjective survival probability of reaching target T (between 0 and 100) and the column OSP shows the average objective survival probability (between 0 and 100) obtained from the duration model with the Weibull specification[28]. We find that BSE does not vary across the age cohorts 65-69 and 70-74. The last two columns in Table 1 displays the percentage of individuals revealing both a positive and negative bias. More specifically, we define an individual as exhibiting positive BSE if SSP is higher than the predicted OSP, whereas we classify the reverse as negatively biased. Although the percentage of individuals with biased survival expectations among the survivors is stable it peaks at age 95. In contrast, among the deceased, biased survival expectations peak at age 80. One explanation for the overestimation of survival expectations for the older cohort is due to the detrimental effect of ageing on cognitive abilities needed to estimate mortality rates[29](Elder, 2007).

[Insert Table 1 about here]

[28] For example, for the age cohort 50-64, we estimate an average SSP of reaching target age T=75 years is 50.88 for the deceased subsample and 68.06 for the survivor's subsample. In contrast the objective survival probability of reaching target age T=75 years is 34.64 for the deceased subsample and 56.57 for the survivor's subsample. This implies that the gap between SSP and OSP is higher for the deceased subsample (16.24 pp vs. 11.51 pp for the survivors).

[29] Similarly, Grevenbrock et al. (2016) finds that cognitive impairments cause upward biases in survival beliefs for the oldest age group (age group 85-89) which leads to an overestimation of survival chances by about 15 percentage points. An alternative explanation proposed by Kahneman and Tversky (1979) is that individuals tend to overweight small probabilities and underweight large probabilities.

When we estimate BSE by gender (in Table C2 in the appendix) we find that consistently with prior research, men *are more likely to exhibit biased survival expectations than women* for both deceased and survivors[30], though the bias is higher both in the deceased subsample, and among women (10.2 pp). This implies that although women tend to reveal more negatively biased expectations, deceased women exhibit more positively biased expectations than surviving women[31]. Similarly, when we examine differences across countries (Table C3)[32], we find that *two thirds of the population exhibit a positive biased expectation and one third a negative biased expectation*. Among the sample of diseased, Italians are on average those that reveal the highest positive bias whilst the Swedish reveal highest share of negatively biased. In contrast, among survivors Belgians, Germans and French respondents exhibit the highest share of negatively biased survival and Danish and Spanish the highest share of positive bias survival.

5.2. Explaining Biased Survival Expectations

Table D1 examines covariates explaining BSE which make up the first stage instrumental variable regression[33]. The four instruments considered are significant and exhibit the expected signs. They suggest that the effect of age of death and living status is higher for fathers than for mothers. On average, each year of maternal (paternal) age at death raises BSE by 0.0012 points (0.0017 points). Individuals with a living mother (or father) exhibit a higher BSE by 0.0114 points (0.0248 points). Men are significantly more positively biased than women (12.42 points), and each year of life increases BSE by 7.62 points. Living in Denmark and Spain increases the probability of positive biased survival by 16.5 and 15.1 pp respectively,

[30] See as Kutlu-Koc and Kalwij (2017) and Teppa and Lafourcade (2013) found this for the Netherlands; O'Donnell et al. (2008) for the UK; and Perozek (2008) and Bissonnette et al. (2017) for the US

[31] The first result is in line with previous evidence: (i) Wenglert and Rosén (2000) and Wu et al. (2013) found that women are more pessimistic than males in projecting survival probabilities, (ii) Hurd and McGarry (2002) and Gan et al. (2005) observed that men tended to overestimate their lifetimes.

[32] Group I: Italy and Spain. Group II: Belgium and France. Group III: Austria and Denmark. Group IV: Germany, Sweden and Switzerland.

[33] Table D3 reports the results of the regressions introducing the four instruments, X_{itc} (vector of explanatory variables), wave and country fixed effects. In most regressions, the four instruments are not significant, confirming that parents' living status only affects offspring's behaviors through the channel of LO.

as opposed to living in Germany, where expectations only increase by 2.2 pp. Consistently, those who are coded as having stayed at the hospital are more likely to show negatively biased expectations. On the contrary, stays at other institutions due to convalescence or rehabilitation are associated with only a slight increase in negatively biased expectations.

Time invariant fixed effects reduce the BSE by 30.2 points between waves 2 and 4, which corresponds to the period 2007-2011. The influence of education is U-shaped, revealing that individuals with no education, those with primary education and those with post-secondary tertiary education are significantly more positively biased than those with lower secondary education. Consistently with previous research (Hurd and McGarry, 2002), we find that income plays a larger influence than wealth, and high-income people are less pessimistic. Each 1,000 PPP units of adjusted income (wealth) increase BSE by 66.4 pp (1.2pp).

Figure B4 displays the predicted subjective longevity by respondent's age, gender and parents' living status. When both parents are alive, BSE increases with respondent's age (e.g., BSE for men (women) aged 70-74 years old is eight (seven) times higher as compared to BSE for men (women) aged 50-54 years old). In contrast, when both parents have deceased, we find a considerably smaller effect among over 75. Comparing BSE by respondent's gender, we find that biased survival is higher for men regardless of parents' living status except for the first age cohort (50-54 years). When both parents have deceased, BSE for men describe an inverted U-shape, peaking at 75-79 years, whereas BSE for women continue relatively stable for the three last age cohorts.

5.3. Effects of biased survival expectations on health behaviours

Table 2 reports the estimated effect of longevity optimism on a number of outcomes. Table B13 in the appendix reports the effect of a one standard increase BSE and BME. IV estimates suggest that *biased survival expectations reduce the probability of unhealthy*

lifestyles such as smoking, alcohol intake and sedentary lifestyles. This evidence is consistent with the hypothesis that individuals who expect to live longer adjust their behaviours accordingly. Estimates suggest that one standard deviation increase in BSE decreases (increase) the probability of smoking (never having smoked) by 13pp (24.9pp), which entail an average decrease (increase) of 48% (51%)[34]. Similarly, a one standard deviation increase in BSE reduce (increase) the probability of daily alcohol consumption (not having drunk alcohol during the last 3 months or less than once per month) in 19.9pp (28.8pp)[35]. These results are consistent with previous evidence that finds that binge and heavy binge drinkers think that their driving ability and ability to tolerate alcohol is better than average (Sloan et al. 2013). However, such positive bias does not explain why some adults consume large amounts of alcohol. We estimate that a one standard deviation increase in BSE, reduces sedentary lifestyles, raising the probability of moderate or vigorous physical activity in 24.5pp.

We find that both positive and negative biased subjective expectations (BSE) exert comparable effects on smoking behaviour. However, we identify heterogeneous effects on other behaviours. When we examine the effects of meteorological expectations (ME), we observe a similar sign and consistent effect, but its magnitude, except for "sedentary lifestyles", is almost negligible.

[Insert Table 2 about here]

5.4. Effects on health behavioural outcomes

[34] This result may result from the fact that smokers perceive that they are more likely to experience certain diseases (Sloan et al., 2001) and it is consistent with rational addiction theory according to which smokers are forward looking individuals who internalize the detrimental effects of smoking (Becker and Murphy, 1988).
[35] These effects entail a 71.1% (94.83%) increase (decrease) with respect to the mean probabilities.

Next, when we turn into examining anthropometric and health outcomes (Table 3)[36], we document that a positive BSE increases the likelihood of a normal weight and increases the likelihood of obesity. A one standard deviation increases in BSE increases (decreases) the probability of being normal weight (obese) by 17.9pp (27.8pp), which implies an increase (decrease) by 47.5% (46.7%) with respect to the mean probability of being normal weight (obese). These results confirm previous evidence that individuals with BSE generally have better physical health.

5.5. Effects on cognitive abilities

Next, we find that individuals with biased survival expectations can recall more words, both in the first and the second recall. One standard deviation increase in an individual's BSE increases the number of words recalled (0.52 in the first recall, 0.55 in the second one). Furthermore, we find that BSE increases maximum grip strength test scores. A one standard deviation increase in an individual's BSE leads to an increase in the maximum grip strength test by 1.47 kg, or an average increase in 4.3% with respect to the average score. Consistently, negative BSE deliver a consistent effect with an opposite sign, but effect sizes are smaller in magnitude. However, when we look at effect sizes, we find that positively biased expectations (BSE>0) produce a larger effect than negatively biased expectations (BSE<0). In contrast, the effect for meteorological optimism albeit consistent, is more modest.

[Insert Table 3 about here]

5.6. Effects on financial behaviour[37]

[36] Table B3 reports the estimated coefficients and Table B14 reports the effect of a one standard increase of LO and ME.
[37] Table B4 reports the estimated coefficients and Table B15 reports the effect of a one standard increase of LO and ME.

We then estimate the effect of biased survival expectations (BSE) on the probability of owning financial assets and including cash and increases household wealth. One standard deviation change in BSE increases the probability of ownership of bonds by 2pp, mutual funds by 3.8pp and individual retirement accounts by 5pp[38] . Consistently, it decreases the probability of having bank accounts by 17.4 pp, investing in stocks by 2.3 pp, having a mortgage by 5.4 pp and having other debts by 5.3 pp[39]. Consistently, negatively biased survival expectations (BSE<0) explain some financial investments[40]. These results point to an intense deaccumulation of assets, and paradoxically, at the same time a higher concern for the well-being of the family (purchase of life insurance).

Compared to health behaviours, biased meteorological expectations exert a more modest effect on a few financial behaviours. If heterogeneity in BME is mostly due to private information, one might expect the absolute difference to correlate with behavior or lifestyle. For instance, people who work outside the household, or follow the news may get more accurate weather estimates than the authors' benchmark. However, we find that negative and positive ME seem to have opposite effects. Indeed, we find that a one standard deviation changes in meteorological optimism (BME) increases (decrease) investments in bonds (life insurance) by 13.5% (22.5%) with respect to its average probabilities. It also increases the probability of having a mortgage by 36.92%. In comparison, the effect of one standard deviation increases in negatively biased meteorological expectations (BME<0) is more modest (10.5% and 14.5%, respectively).

[38] These effects entail an average change in 45% for bonds, 76% for shares, 50% for mutual funds (specifically, -16.2% for funds invested mostly in stocks; -19.80% for funds equally divided in stocks and bonds; 52.3% for funds mostly invested in bonds) and 69.2% for retirement accounts.
[39] These effects entail and average decrease by 18.66% (bank accounts), 37.17% (stocks), 50.05% (mortgage) and 46.93% (other debts) with respect to mean probabilities.
[40] A one standard deviation changes in BSE<0 reduces investment in bonds by 2.70pp (0.65 pp as compared to BSE>0), mutual funds by 4.69 pp (0.9pp as compared to BSE>0), total wealth by 11.55 (1,000 PPP), and increases life insurance uptake by 6.12 pp (0.86pp as compared to BSE>0).

[Insert Table 4 about here]

5.7. Effects on financial risk-taking survival[41]

Finally, Table 5 reports the effect of BSE on above average financial risk taking, and documents that one standard deviation increase in negatively biased survival (BSE<0) increases the uptake of prudent financial behaviours. Finally, we on average find that ethe effect of positively biased survival expectations (BSE>0) is twice that of negatively biased expectations (BSE<0). The effects for MO are in line with those of BSE but are significantly smaller.

[Insert Table 5 about here]

6. Robustness checks

6.1. Focal Responses

One potential explanation of our results could be the presence of focal responses. Focal responses refer to responses clustered around certain 'focal points' of the distribution (Hurd and McGarry, 2002). From the histograms (Figure D1) it becomes clear that this is indeed the case in our study. For example, 17.2% of the deceased reported a null probability, which refers to 20.8% of the survivors and 18.9% of the deceased sample reported a survival probability of 50%, and 17% of the survivors reported a probability of 100%. Some authors suggest that these responses may constitute a signal of inability for answering probabilistic questions (Bruine de Bruine et al.,2002), while others refer to these responses also contain valuable information (Manski and Molinari, 2010). Bruine de Bruin et al. (2002) coined the term "epistemic uncertainty" to describe the behaviour of respondents who reported a 50 per cent probability.

[41] Table B5 reports the estimated coefficients and Table B16 reports the effect of a one standard increase of BSE and BME.

They consider that in this case where the respondent does not have any expectations at all, the response would be equivalent to "*don't know*".

Some authors claim that the likelihood of providing focal points is positively associated with lower cognitive performance. Perry (2005) found that individuals answering focal responses of zero and one were on average less educated, held fewer assets and had lower income than the rest of the sample. On the contrary, those respondents reporting a 50 percent chance of surviving compared to the rest of the sample. Likewise, Hurd et al. (1998) and Kleinjans and van Soest (2014) observed that more educated individuals were less prone to reveal focal points. Table D3 reports cognitive and economic related variables for focal and non-focal respondents and the corresponding comments are shown below the table[42].

As a robustness check, we re-estimate the model excluding focal responses. Table B1 shows the characteristics of the sample for survivors and deceased after *excluding focal responses* (0, 50 and 100)[43]. The estimated coefficients and hazard ratios for the preferred Weibull specification are reported in Table B8 (3rd column). Our estimates suggest that the magnitude and significance is very similar to the original sample. Figure D2 compares the density function for the "biased survival" indicator including and excluding focal points. Again, differences between both density functions are almost negligible, which suggests that the inclusion of focal responses does not distort the conclusions of the paper (as has been also observed by Kleinjans and van Soest, 2014).

6.2. Respondents' understanding of probabilities

[42] In order to correct for focal responses several alternatives have been proposed: (i) bayesian updating mechanism to smooth focal points (Gan et al, 2005), (ii) replacement of focal point answers at zero with 0.01 and focal point answers at 100 with 99.9 (Picone et al., 2004), (iii) instrumental variables for subjective mortality expectations in order to adjust for focal answers (Delavande et al., 2006). However, other authors have decided against correcting probabilities. Khwaja et al. (2007), Salm (2010) and Post and Hanewald (2013) consider that focal responses are still what agents base their decisions on. Hill et al. (2005) consider that an answer of 50 per cent may be the true probability, if the respondent believes that the event of dying is equally likely to occur or not to occur.

[43] In this re-estimation process, we again test which hazard function fits better to the data. Cox-Snell residuals and information criteria point to the Weibull function as before (graphs are available upon request; AIC and BIC shown in Table C1).

A prerequisite for the consistent interpretation of subjective survival expectations is that respondents can answer probabilistic questions (Manski, 2004)**.** Hence, as an additional robustness check, we have excluded those individuals who provided an erroneous response to the following probabilistic question: "*If the chance of getting a disease is 10 per cent, how many people out of 1000 (one thousand) would be expected to get the disease?*"[44]. Again, compared to the baseline coefficients and hazard ratios, estimates resulting from the re-estimated model are of similar magnitude. Figure D3 shows the kernel density function of the "biased survival" indicator for both the total sample and the reduced sample after applying the exclusion criteria. Importantly, the shape of both density functions does not suggest evidence of bias.

6.3. Use of (private) medical information from SHARELIFE

Another concern is that the imputed parental age at death refers to parents who are alive at the time of the survey, but parental age at death is not time varying. Hence, we use retrospective data from parental vital status available in SHARE Wave 3, known as SHARELIFE[45]. We can test for the effects of private information with regards to one's own health consist with other work (Viscusi and Hakes, 2003). Hence, we have re-estimated our models using two additional instruments: blood pressure being checked the previous year and having his/her blood tested[46] both proxies for potential private health information.

[44] With the reduced sample (N=22,198) we have re-estimated the discrete-time hazard model (see Table B1 for a description of the sample). The information criteria (reported in Table C1) and the Cox-Snell residuals (available upon request) show that the Weibull specification provides the best fit. The estimated coefficients and hazard ratios for the preferred specification are reported in Table B8 (4th column).

[45] SHARELIFE collects respondent's life histories, including medical tests, and the disadvantage is that merging SHARELIFE with our sample implies an important reduction in the number of observations (from 69,900 to 33,269).

[46] The rationale refers to a link between parent's history of health conditions, such as blood pressure and diabetes, and the probability that children suffer the same pathology (Hakonarson et al. 2007; Newtwon-Cheh et al., 2009). Therefore, offspring who have a higher risk of suffering a heart attack or developing diabetes may be more concerned about their survival probabilities.

Consistently, we find that the magnitude and significance of the estimated coefficients compares to that of the entire sample[47].

Table D1 (4th column) reports the results of the IV regression for BSE, and we find that the values of the corresponding instruments to parent's age of death and parent's living status compare to those using the entire sample. Having blood pressure checked in the last year reduces BSE in 11.6 and having blood tested in the last year reduces BSE by 8.1pp. However, Table D4 reveals that even after such adjustment, the effect of the BSE confirms our previous conclusions.

Figure D4 compares observed BSE for the total sample, with predicted BSE for the subsample of respondents who also completed SHARELIFE using all instruments (parents' age of decease, blood pressure and blood check) and predicted BSE using only two instruments (blood pressure and blood check; 5th column of Table D1). Although the differences are not large, we find that when all the instruments are used the predicted BSE is closer to the observed BSE.

6.4. Instrument validity

In interpreting BSE as the difference between objective and subjective survival expectations, one potential interpretation of our estimates is that private information (unknown to the econometrician) influences expectations above and beyond other more general biases such as optimism. To examine these concerns more closely, Figure D5 compares the observed BSE, the predicted BSE (according to estimations of Table D1) and the predicted BSE taking the average for each survey respondent. Consistently with the hypothesis that BSE reflects partially an effect of unknown private information, we observe that, for both survivors and

[47] Consistently, Table B8 (5th column) reports the results for the discrete-time hazard model using the new sample (N=33,269).

deceased samples, the predicted BSE is smaller but still significant and exhibit a large effects size, in line with previous estimates.

To check the reliability of the instruments, we re-estimate the first-stage regression using lagged instruments. Although the sample size is considerably reduced, Table D5 shows that the instrumental variable estimates[48], are relevant and significant, and robust. Similarly, to enhance the causal claims, we examine the two bound weak instrument method proposed by Conley et al. (2012) that allows us to retrieve inferences even when the instrumental variables do not satisfy the exogeneity restriction (see Appendix E for explanation of both approaches). Figure E1 shows estimates using as the instrument "father's age of death" (similar results have been obtained for the other instruments; results available upon request). On the left side we show the graphs for the Local-to-Zero approach. The solid line depicts the 2SLS father's age of death effect estimate for the respective indicator (for simplicity, we only show the results for one indicator of each group). The two dash lines depict upper and lower limits of the respective test scores. Overall, the results confirm that even with substantial deviation from the exclusion restriction, the instrument still has a considerable effect over the outcome variable[49].

Finally, Figure E1 also shows the 95% confidence bounds of the instrumental variable's coefficient using father's age of death). Taking as reference the zero-line (red-line), once the confidence bounds include the zero-value, the 2SLS are no longer significant at the 95% level of significance. On the contrary, if the upper limit crosses the zero-line at a high value of δ, then the 2SLS are robust to possible violations of the exclusion restriction assumption. Similar

[48] The first column corresponds to the estimates using the entire sample and current instruments. The second and third columns correspond to estimations of those individuals for whom lagged observations are available: using current instruments in the second column and delayed instruments in the third column.

[49] In the right column figures confidence intervals are presented. The x axis measures how strong the violation of the exclusion restriction needs to be for the instrument to turn insignificant. In all figures, the confidence intervals do not include the value 0 (red line), so we can infer that the IV estimations are robust to possible violations of the exclusion restriction

figures have been obtained for the instrument “mother’s age of death” (figures available upon *request).*

6.5. Inclusion of parental characteristics in the discrete hazard model

As a final check, we re-estimate the discrete hazard model including as explanatory variables the age at death of the parents and the fact of having a living parent. Table C1 shows that, once again, the Weibull model is the preferred model. Using this specification, Table E2 shows the estimated coefficients and hazard ratios for the initial sample, excluding focal responses, excluding those who answered probabilistic questions erroneously and for the subsample that answered SHARELIFE. with the results compare to those of Table B8. Although living mother and father ins now non-significant, age at death reveals the expected negative effect on the probability of death.

7. Mechanisms.

The Nature of Private information. To examine whether BSE convey the effect of the type of respondent's private information, or measurement error we estimate the effect lagged BSE as well as of the death of a brother, sister, or child as other form of private information in addition to one’s parents. The results (Table E1 in the appendix) show that the effect of lagged BSE is significant at 1% and this significance is preserved when the explanatory variables are progressively included, and when the death of the brother, sister or child is added. However, the death of a sibling is not significant at 5% level, nor is the death of a child exert a significant either. Hence, we conclude that the nature of private information matters, as only parental longevity plays a role in expectation formation.

Finally, we examine the effect of two additional pathways that can be driving the effect, one is the effect of BSE on social contacts, as well as the individual sense of control of one's life, so called locus of control.

Social contacts. Individuals with BSE might engage in more social contacts and tend to decrease in the probability of sedentary lifestyles. We estimate equations (4) and (8) using as the dependent variable a binary indicator that takes the value 1 if the respondent has participated in the last month in voluntary or charity work, gone to a sports or social club, taken part in political community activities, a religious organization or attended educational or training courses, 0 otherwise (see Table A3 for definitions). Table B17 reports the estimated coefficients and Table B18 reports the effect of a one standard increase of BSE and ME. We find that one standard deviation change in BSE increases the probability of having social contacts by 6.08 pp (which represents 38.72% with respect to the mean probability), which is six times higher than the effect of one standard deviation is positive BSE. Similarly, we find that optimistic ME increase social contacts (5.8 pp or increase by 37% with respect to the mean probability).

Locus of control. Another potential effects reforms to changes in an individual's sense of control of their life as they age, which we refer to as locus of control as initially proposed by Rotter (1954). We estimate equations (4) and (8) using as dependent variables four binary indicators that take the value 1 if respondent answers that they feel that things are out of control: often, sometimes, rarely, and never. Table B17 reports the estimated coefficients and Table B18 reports the effect of a one standard increase of BSE and ME.

Consistently, we find that BSE is associated with a reduction in the probability of losing of control. A one standard deviation increase in BSE increases the probability of "feeling things are out of control: often" by 152.57% and increases the probability of "feeling things are out of control: never" by 42.36%. In contrast, longevity pessimism (BSE<0) gives rise to a large

increase in the probability of often feeling overwhelmed (194.2%). In contrast, the effects of BME, are not as robust as those of BSE. These results confirm that BSE may give rise to active coping strategies and the feeling of control of their life (Lopes and Cunhna, 2008).

8. Conclusion

We study how biased expectations of one survival and the predicated weather affect health and financial behaviours. We have estimated biased survival expectations (BSE), computed as the difference between actual and subjective survival using individual level longitudinal evidence of individuals in a long list of European countries. Similarly, we estimate a measure of biased meteorological optimism (BMO) comparing as the difference between individual level weather predictions and weather realisations. Next, we draw on an instrumental variable analysis that takes advantage of rich data on parental survival to estimate the effect of BSE on health and financial behaviour, which is compared to the effect of BMO.

We estimate evidence of a bias between subjective and objective survival expectations in both domains, and such BSE influences health and financial behaviours. However, we find that a symmetric effect of positively and negatively biased survival expectations on behaviours[50]. Although we document some consistent variation with BMO, we find significant differences in biased survival across domains which explain different effects on behaviours. BSE influences some health and financial behaviours such as smoking, sedentary lifestyles, purchasing life insurance and saving for old age. However, BMO *does not influence health behaviours*. One standard deviation change in BSE is associated with an increase in the probability of healthier habits (never having smoked by 51%, not having drunk in the last 3 months by 94.83% and not having a sedentary lifestyle by 211.5%). Similarly, one standard

[50] In some cases, the effect of a one standard deviation increase of negative BSE is higher as compared to that of positive BSE. For example, an increase of negative BSE generates a strong disinvestment in bonds, mutual funds (mostly in bonds) and a significant decrease in total wealth.

deviation change in BSE increases the probability of taking above average financial risks expecting to earn above average returns (83.1%), investing to a layer extent in fixed income securities, such as corporate bonds by 45.45% and mutual funds (mostly in bonds) by 52.3%, and individual retirement accounts (69.2%).

In contrast, BMO increases the probability of owning bonds (13.49%), mortgage (36.9%), but decreases the probability of purchasing life insurance (-22.5%). These results are consistent with evidence that biased expectations are domain specific. A clear policy implication emerges if a more positive biased in expectation formation can be learned during a period of life. The latter might result from private information, as well as optimism though our estimates cannot fully distinguish between the two. If we interpret our results are reflecting optimism (positive expectations about the future) then our estimates is consistent with twin studies showing that optimism during individuals' impressionable years can influence health behaviours (Plomin, 1992).

Our estimates help explain results from Wang and Sloan (2018) who draw attention to the negative effects arising from the underestimation of the risks associated with non-adherence to prescribed treatment. In their analysis of patients diagnosed with diabetes, they note that many sufferers are not conscientious in their adherence to medical recommendations. Similarly, Picone et al. (2004) document that women with biased survival expectations are more likely to perform breast self-exams and to request Pap smears and mammograms consistently with our estimates suggesting positive effects on "healthy" lifestyle, (i.e., smoking, drinking, physical exercise) of BSE. Hence, we conclude that BSE are the result of a combination of private information (e.g., parental age at death) and cognitive biases such as optimism. The formation of such expectations varies across domains and exerts economically relevant effects in explaining health and financial behaviours.

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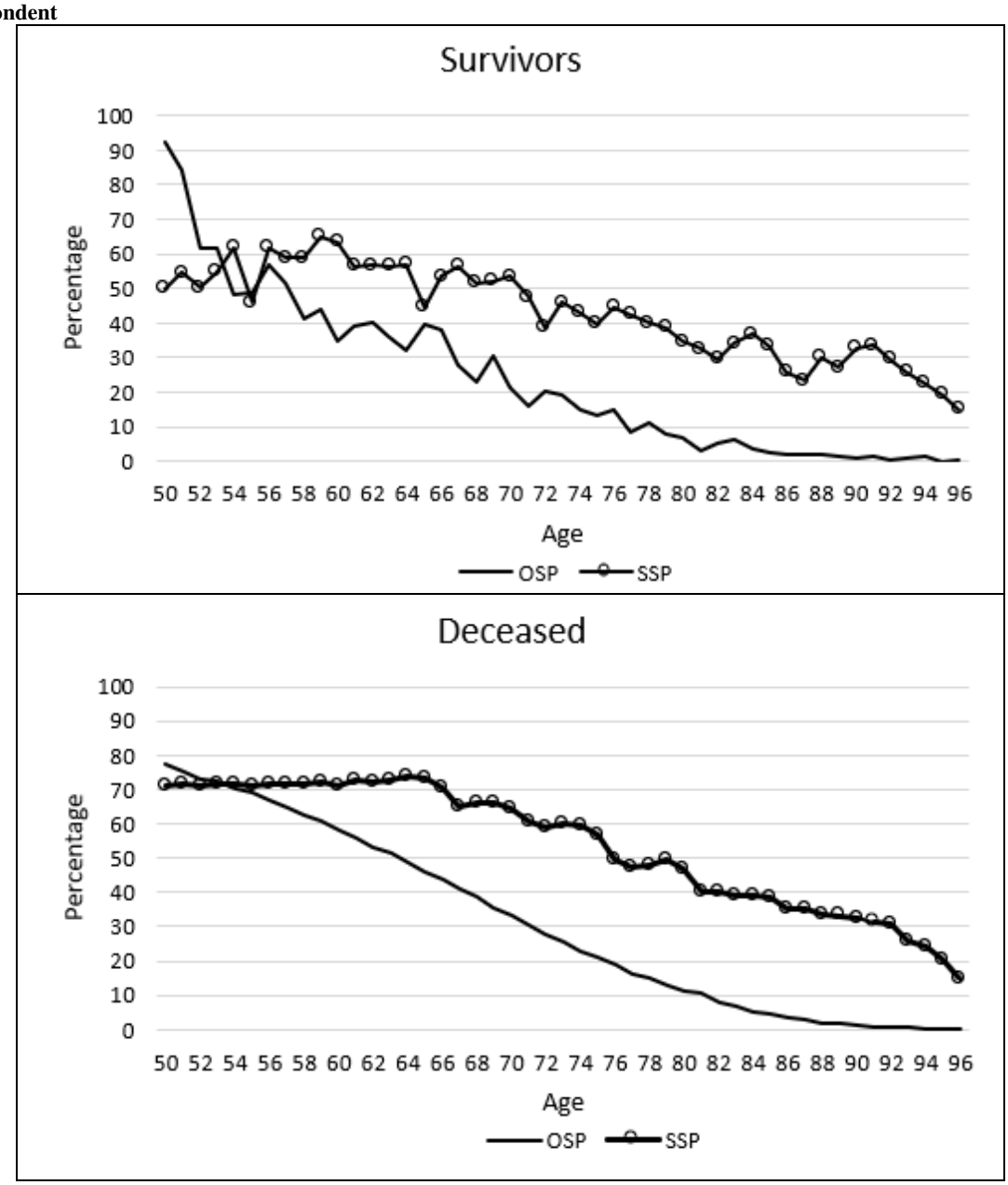
Figures and Tables

Figure 1. Comparison of subjective survival probability (SSP) and objective survival probability (OSP) by age of the respondent



Note: These figures display objective survival expectations (OSP) and subjective survival expectations (SSP) for the subsample of survivors and deceased. The distance between OSP and SSP is what we have defined as "biased survival expectations· in equation (1).
Subjective survival probabilities (SSP) correspond to the answer to the question of SHARE questionnaire "What are the chances that you will live to be age [T] or more?". The target T takes the values {75, 80, 85, 90,…,120} depending on the age of the respondent. Respondents aged under 65 at the time of the interview are presented a target of 75, while those aged between 65 and 69 have a target of 80, and so on (T=85 for 70-74 years, T=90 for 75-79 years, T=95 for 80-84 years, T=100 for 85-89 years, T=105 for 95-100, T=110 for 100-104 years and T=120 for 105 years and older).

Table 1. Comparison of subjective survival probability and objective survival probability by age at baseline

All subsample (by age at baseline)

Age at baseline	N	Survival expectations					Meteorological expectations	
		SSP (%)	OSP (%)	BSE Difference SSP-OSP	BSE>0 (%)	BSE<0 (%)	BME>0 (%)	BME>0 (%)
50-64	55,609	67.79 (26.94)	56.22 (25.39)	11.57 (33.89)	63.96	36.04	74.87	25.13
65-69	7,065	49.43 (31.21)	20.07 (20.14)	29.36 (36.78)	75.64	24.36	72.77	27.23
70-74	4,404	40.84 (31.30)	11.20 (15.61)	29.64 (34.79)	76.69	23.30	75.70	24.30
75-79	2,110	33.04 (31.97)	3.84 (8.00)	29.19 (32.99)	73.87	26.13	68.34	31.66
80-84	617	34.86 (30.90)	1.41 (4.28)	33.45 (31.39)	78.28	21.72	74.35	25.65
85-94	83	31.88 (31.09)	0.76 (2.94)	31.13 (30.79)	75.70	24.30	71.16	28.84
95-100	12	41.58 (29.51)	0.00004 (0.00012)	41.58 (29.51)	75.83	24.17	64.84	35.16
All	69,900	62.48 (29.87)	47.00 (29.72)	15.48 (34.99)	66.53	33.47	74.49	25.51

Deceased subsample (by age at baseline)

Age at baseline	N	Survival expectations					Meteorological expectations	
		SSP (%)	OSP (%)	BSE Difference SSP-OSP	BSE>0 (%)	BSE<0 (%)	BME>0 (%)	BME>0 (%)
50-64	823	50.88 (32.22)	34.64 (28.32)	16.24 (36.54)	67.01	32.99	71.73	28.27
65-69	346	42.45 (32.26)	13.28 (18.89)	29.17 (34.73)	74.35	25.65	66.33	33.67
70-74	358	36.68 (32.00)	6.57 (12.18)	30.11 (35.35)	73.21	26.79	78.59	21.41
75-79	312	25.68 (30.29)	2.05 (5.46)	23.64 (30.13)	62.54	37.46	57.99	42.01
80-84	164	28.96 (27.94)	1.57 (3.75)	27.39 (27.97)	80.01	19.99	67.33	32.67
85-94	31	22.82 (27.32)	0.62 (3.00)	22.20 (26.84)	70.79	29.21	70.30	29.70
95-100	6	38.41 (32.36)	0.00 (0.00)	38.41 (32.36)	65.92	34.08	76.30	23.70
All	2,040	40.63 (32.87)	17.18 (24.54)	23.44 (34.82)	70.04	29.96	70.02	29.98

Survivors subsample (by age at baseline)

Age at baseline	N	Survival expectations					Meteorological expectations	
		SSP (%)	OSP (%)	BSE Difference SSP-OSP	BSE>0 (%)	BSE<0 (%)	BME>0 (%)	BME>0 (%)
50-64	54,786	68.06 (26.76)	56.57 (25.19)	11.49 (33.84)	63.91	36.09	74.92	25.08
65-69	6,719	49.81 (31.12)	20.44 (20.14)	29.37 (36.89)	75.71	24.29	73.11	26.89
70-74	4,046	41.28 (31.20)	11.69 (15.85)	29.59 (34.73)	77.06	22.94	75.39	24.61
75-79	1,798	34.21 (32.08)	4.13 (8.30)	30.08 (33.35)	75.68	24.32	69.99	30.01
80-84	453	37.24 (31.74)	1.34 (4.48)	35.90 (32.38)	77.58	22.42	77.18	22.82
85-94	52	35.90 (32.03)	0.82 (2.94)	35.08 (31.80)	77.88	22.12	71.54	28.46
95-100	6	47.08 (27.31)	0.00006 (0.00015)	47.08 (27.31)	92.98	7.02	45.01	54.99
All	67,860	63.21 (29.48)	47.99 (29.35)	15.21 (34.96)	63.41	36.59	74.65	25.35

Note: SSP: subjective survival probability. Indicates the average subjective survival probability of reaching target age T (T= 75 years if Age <65; T= 80 years if 65≤ Age < 70; T= 85 years if 70 ≤ Age < 75; T= 90 years if 75 ≤ Age < 80; T= 95 years if 80 ≤ Age < 85; T= 100 years if 85 ≤ Age < 94; T= 105 years if 95≤ Age.OSP: objective survival probability. Indicates the average objective survival probability predicted from duration model for the same target age T. Standard errors in brackets. Using calibrated sampling weights

Table 2. Effect of one standard deviation increase (or decrease) of biased survival expectations (BSE) and biased meteorological expectations (BME) over lifestyle variables

	One standard deviation increase of BSE>0	One standard deviation increase of BSE<0	One standard deviation increase of BME>0	One standard deviation increase of BME<0
Smokes now				
Effect in percentual points	-13.0761 pp	14.6422 pp	-0.1927 pp	0.1983 pp
With respect to the mean probability	-48.4122 %	54.2103 %	-0.7134 %	0.7342 %
Has never smoked				
Effect in percentual points	24.9441 pp	-26.5743 pp	0.1171 pp	-0.3261 pp
With respect to the mean probability	51.0941 %	-54.4333 %	0.2399 %	-0.6680 %
Drinks every day or 5/6 times per week				
Effect in percentual points	-19.9053 pp	16.1852 pp	-0.6479 pp	0.3922 pp
With respect to the mean probability	-71.1922 %	57.8869 %	-2.3173 %	1.4028 %
Has not drunk during last 3 months or less than once per month				
Effect in percentual points	28.8476 pp	-8.5222 pp	1.0238 pp	-0.2453 pp
With respect to the mean probability	94.8309 %	-28.0151 %	3.3657 %	-0.8065 %
Sedentary lifestyle				
Effect in percentual points	-24.4977 pp	15.0736 pp	-0.7197 pp	1.0929 pp
With respect to the mean probability	-211.5522 %	130.1692 %	-6.2151 %	9.4381 %

Note: The effects for BSE are obtained after estimating equation (4) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B13 (and on Table D.1 for first-stage regression). The effects for BME are obtained after estimating equation (8) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B13. Mean values for the dependent variables are reported on Table B6.

Table 3. Effect of one standard deviation increase (or decrease) of biased survival expectations (BSE) and biased meteorological expectations (BME) over health-related variables

	One standard deviation increase of BSE>0	One standard deviation increase of BSE<0	One standard deviation increase of BME>0	One standard deviation increase of BME<0
Normal weight				
Effect in percentual points	17.8893 pp	-11.7843 pp	0.0397 pp	-0.0485 pp
With respect to the mean probability	47.5022 %	-31.2913 %	0.1053 %	-0.1287 %
Obese or overweight				
Effect in percentual points	-27.7656 pp	21.9060 pp	-1.1183 pp	0.8550 pp
With respect to the mean probability	-46.7670 %	36.8975 %	-1.8836 %	1.4401 %
Ten word listing (first recall)				
Effect in words	0.5227 words	-0.1183 words	0.0843 words	-0.0020 words
With respect to the mean probability	10.4756 %	-2.3715 %	1.6903 %	-0.0403 %
Ten word listing (second recall)				
Effect in words	0.5478 words	-0.3359 words	0.0007 words	-0.0003 words
With respect to the mean probability	15.3436 %	-9.4098 %	0.0185 %	-0.0086 %
Maximum grip strength measure				
Effect in percentual points	1.4695 kilos	-1.0969kilos	0.0147 kilos	-0.0060 kilos
With respect to the mean probability	4.3207 %	-3.2253%	0.0432 %	-0.0178 %

Note: BSE are obtained after estimating equation (4) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B14 (and on Table D.1 for first-stage regression). BME are obtained after estimating equation (8) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B14. Mean values for the dependent variables are reported on Table B6.

Table 4. Effect of one standard deviation increase (or decrease) of biased survival expectations (BSE) and biased meteorological expectations (ME) over financial behaviour

	One standard deviation increase of BSE>0	One standard deviation increase of BSE<0	One standard deviation increase of BME>0	One standard deviation increase of BME<0
Bank accounts				
Effect in percentual points	-17.4381 pp	16.4206 pp	-0.1511 pp	0.0867 pp
With respect to the mean probability	-18.6603 %	17.5715 %	-0.1617 %	0.0927 %
Government or corporate bonds				
Effect in percentual points	2.0500 pp	-2.6957 pp	0.6083 pp	-0.4730 pp
With respect to the mean probability	45.4539 %	-59.7725 %	13.4869 %	-10.4882 %
Stocks or shares (listed or unlisted in stock market)				
Effect in percentual points	-2.2562 pp	2.7745 pp	0.0321 pp	0.1704 pp
With respect to the mean probability	-37.1694 %	45.7084 %	0.5290 %	2.8073 %
Mutual funds				
Effect in percentual points	3.7894 pp	-4.6898 pp	0.1266 pp	-0.0323 pp
With respect to the mean probability	50.1245 %	-62.0344 %	1.6741 %	-0.4275 %
Mutual funds: mostly in stocks				
Effect in percentual points	-5.5313 pp	2.1874 pp	0.1058 pp	0.1263 pp
With respect to the mean probability	-16.2208 %	6.4146 %	0.3102 %	0.3705 %
Mutual funds: half in stocks, half in bonds				
Effect in percentual points	-8.8961 pp	21.3028 pp	-0.3325 pp	0.2159 pp
With respect to the mean probability	-19.8044 %	47.4238 %	-0.7401 %	0.4807 %
Mutual funds: mostly in bonds				
Effect in percentual points	10.9752 pp	-9.2257 pp	1.6812 pp	-0.0676 pp
With respect to the mean probability	52.3128 %	-43.9736 %	8.0134 %	-0.3221 %
Individual retirement accounts				
Effect in percentual points	5.0458 pp	-5.8236 pp	0.1965 pp	-0.0426 pp
With respect to the mean probability	69.2159 %	-79.8846 %	2.6949 %	-0.5844 %
Life insurance				
Effect in percentual points	-5.2644 pp	6.1218 pp	-2.7202 pp	1.7481 pp
With respect to the mean probability	-43.6157 %	50.7191 %	-22.5365 %	14.4831 %
Mortgage				
Effect in percentual points	3.8137 pp	-2.3360 pp	3.9915 pp	-0.2909 pp
With respect to the mean probability	35.2791 %	-21.6092 %	36.9237 %	-2.6907 %
Other debts (excluding mortgage)				
Effect in percentual points	3.4837 pp	-2.8515 pp	0.5289 pp	-0.3158 pp
With respect to the mean probability	30.5591 %	-25.0129 %	4.6396 %	-2.7705 %
Total wealth amount (1,000PPP)				
Effect in 1,000 PPP	5.2038 pp	-11.5545 pp	0.2418 pp	-0.0220 pp
With respect to the mean probability	3.1103 %	-6.9060 %	0.1445 %	-0.0132 %

Note: BSE are obtained after estimating equation (4) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B15 (and on Table D.1 for first-stage regression). The effects for BME are obtained after estimating equation (8) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B15. Mean values for the dependent variables are reported on Table B6.

Table 5. Effect of one standard deviation increase (or decrease) of biased survival expectations (BSE) and biased meteorological expectations (BME) over the amount of financial risk that the respondent is willing to take when making investments

	One standard deviation increase of BSE>0	One standard deviation increase of BSE<0	One standard deviation increase of BME>0	One standard deviation increase of BME<0
Take substantial risk expecting to earn substantial returns				
Effect in percentual points	0.6016 pp	-0.5048 pp	0.1115 pp	-0.2248 pp
With t to the mean probability	6.9797 %	-5.8559 %	1.2929 %	-2.6074 %
Take above average financial risks expecting to earn above average returns				
Effect in percentual points	25.8636 pp	-17.1768 pp	0.5233 pp	-0.7786 pp
With t to the mean probability	83.1092 %	-55.1955 %	1.6814 %	-2.5018 %
Take average financial risks expecting to earn average returns				
Effect in percentual points	-1.6327 pp	1.8169 pp	-0.0756 pp	0.1763 pp
With t to the mean probability	-6.5465 %	7.2849 %	-0.3030 %	0.7068 %
Not willing to take any financial risks				
Effect in percentual points	-13.5807 pp	6.2775 pp	-0.2021 pp	0.2439 pp
With t to the mean probability	-38.2341 %	17.6732 %	-0.5690 %	0.6865 %

Note: The effects for BSE are obtained after estimating equation (4) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B16 (and on Table D.1 for first-stage regression). The effects for BME are obtained after estimating equation (8) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B16. Mean values for the dependent variables are reported on Table B6.

Appendix for online publication only

Appendix A. Definition of variables

Table A1 . Explanatory variables in the stock-sampling duration model

Categories	Definition
Socio-demographic variables	o Age and age squared. o Gender o Level of education. Education is categorized in four levels using the 1997 International Standard Classification of Education (ISCED): primary, lower secondary, upper secondary, post-secondary non tertiary and tertiary education. o Living alone o Living in a rural area
Economic-related variables	o Household income refers to annual income (in euros) net of taxes collected by all household members. Income was adjusted for the purchasing power of different currencies using the PPP exchange rate of the year in which the "Main Questionnaire" was performed. Income was divided by the square root of the number of household members to adjust for household size. o Household net worth is defined as the value of total assets (the total amount of financial assets plus the total amount of non-financial assets; note that this indicator only takes into account the value of dwellings from non-financial assets) minus the total value of outstanding liabilities as is expressed in the same terms as household income o Being employed at the time of the survey.
Health status	o Self-reported health status[51]. We define five binary variables corresponding to the following categories: excellent, very good, good, fair and poor. o Chronic conditions. We define seven binary variables corresponding to the following pathologies: Alzheimer, diabetes, cancer, high blood pressure, lung disease, stroke and heart attack. o Number of days stayed at hospital during last year for surgery or medical tests. o Number of days stayed at hospital during last year due to mental health problems. o Number of days stayed in other institutions other than a hospital or a nursing home during last year (i.e., institutions for rehabilitation, convalescence) o Number of visits to general practitioner during last year.
Smoking	[SHARE questions]: Have you ever smoked cigarettes, cigars or a pipe daily for a period of at least one year? and Do you smoke at the present time? We define two binary variables: o Current smoker: takes the value 1 if the respondent is smoking at the time of the survey, 0 otherwise. o Past smoker: takes the value 1 if the respondent has smoked at least one year, but is not currently smoking, 0 otherwise.
Drinking alcohol	[SHARE questions]: I am now going to ask you a few questions about what you drink. During the last 3 months, how often have you drunk any alcoholic beverages, like beer, cider, wine, spirits or cocktails? We define two binary variables corresponding to the following categories o Not having drunk during the last 3 months or less than one per month (teetotal) o Drinking every day or 5-6 times per week
Sedentary lifestyle	[SHARE questions]: We would like to know about the type and amount of physical activity you do in your daily life. How often do you engage in vigorous physical activity (such as sports, heavy housework, or a job that involves physical labour) or in activities that require a moderate level of energy (such as gardening, cleaning the car, or doing a walk)? We define a binary variable "sedentary lifestyle" that takes the value 1 if the respondent is engaged in a vigorous or moderate activity "one or three times a month" or "hardly ever, or never" ·.
Weight	Using body mass index (BMI) provided by SHARE we define the following categories and include the variable "normal weight" in the regression. o Underweight: if BMI is lower than 20. o Normal weight: if BMI lies between 20 and 24.9 o Overweight: if BMI lies between 25 and 29.9 o Obese: if BMI is greater than 30.
Memory test	Memory was tested using a standard version of two word-list learning tests (Brandt, 1991) with immediate and delayed recall. The interviewer read a list of 10 words. In the immediate recall, participants are asked to recall as many words as possible in one minute, immediately after hearing them. In the delayed recall, participants are asked to recall as many words as possible in one minute, after several other interview questions. Each word correctly recalled scores 1 point. Finally, the episodic memory score is calculated by adding up the number of target words recalled immediately, and the number of target words recalled after the delay. Thus, the score ranges between 0 and 20 with a high score indicating good cognitive function.

[51] Self-reported health is a good indicator of morbidity and a powerful predictor of future health and mortality (Burström and Fredlund, 2001; Van Doorslaer and Gerdtham (2003).

Table A2. Explanatory variables in the first-stage regression for biased survival expectations

Categories	Definition
Socio-demographic variables	o Age and age squared. o Gender o Level of education. Education is categorized in four levels using the 1997 International Standard Classification of Education (ISCED): primary, lower secondary, upper secondary, post-secondary non tertiary and tertiary education. o Marital status (married/cohabiting, single, separated/divorced, widow) o Living alone o Living in a rural area
Economic-related variables	o Household income refers to annual income (in euros) net of taxes collected by all household members. Income was adjusted for the purchasing power of different currencies using the PPP exchange rate of the year in which the "Main Questionnaire" was performed. Income was divided by the square root of the number of household members to adjust for household size. o Household net worth is defined as the value of total assets (the total amount of financial assets plus the total amount of non-financial assets; note that this indicator only takes into account the value of dwellings from non-financial assets) minus the total value of outstanding liabilities as is expressed in the same terms as household income o Relation with economic activity at the time of the survey (employed, unemployed, retired, houseworking).
Health status	o Number of days stayed at hospital during last year for surgery or medical tests. o Number of days stayed at hospital during last year due to mental health problems. o Number of days stayed in other institutions other than a hospital or a nursing home during last year (i.e., institutions for rehabilitation, convalescence) o Number of visits to general practitioner during last year.

Table A3. Dependent variables in the biased survival models

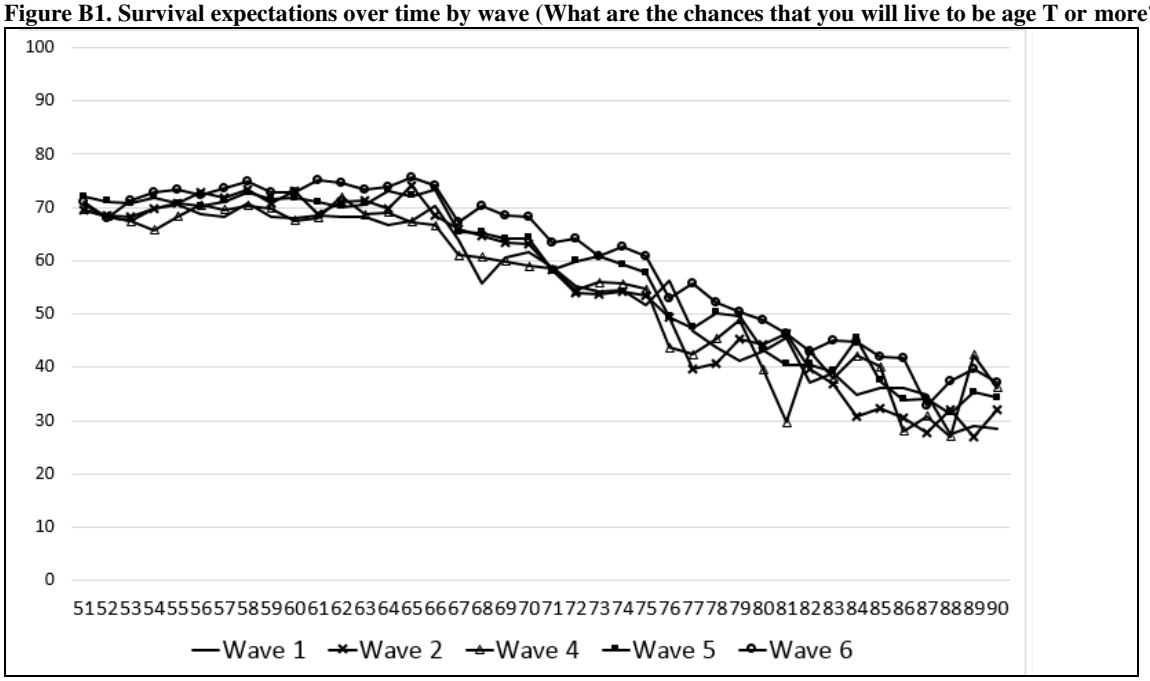
Categories	Definition
Smoking	As defined in Table A1
Drinking alcohol	As defined in Table A1
Sedentary lifestyle	As defined in Table A1
Social contacts	[SHARE question] Which of the activities listed on this card - if any - have you done in the last twelve months? We define a binary variable "social contacts" that takes the value 1 if the respondent has participated in the last month in voluntary or charity work, gone to sport club or social club, taken part in political/community/religious organization or attended to educational or training courses, 0 otherwise.
Locus of control	[SHARE question] How often do you feel that what happens to you is out of your control? o Often o Sometimes o Rarely o Never
Financial assets	[SHARE question]: The next questions ask about a number of different kinds of savings or investments that you may have. We define five binary variables corresponding to the following assets: o Bank accounts o Government or corporate bonds o Stocks or shares listed or unlisted in the stock market o Funds or managed investment accounts: mostly in stocks, half in bonds and half in stocks, mostly in bonds. o Retirement accounts o Life insurance policies [SHARE question] Do you have mortgages or loans on this property? We define a binary variable "mortgage" that takes the value 1 if the respondent answers in the affirmative to previous question, 0 otherwise. [SHARE question] The next question refers to money that you may owe, excluding mortgages or money owed on land, property or firms (if any). Looking at card 36, which of these types of debts do you currently have, if any? We define the binary variable "Other debts (excluding mortgage)" if the respondent reports having any debt on cars and other vehicles (vans/motorcycles/boats, etc.), debt on credit cards / store cards, loans (from bank, building society or other financial institution), debts to relatives or friends, student loans or overdue bills (phone, electricity, heating, rent).
Risk taking attitude	[SHARE question]: When people invest their savings they can choose between assets that give low return with little risk to lose money, for instance a bank account or a safe bond, or assets with a high return but also a higher risk of losing, for instance stocks and shares. Which of the statements on the card comes closest to the amount of financial risk that you are willing to take when you save or make investments? We define four binary variables corresponding to each answer: o Take substantial financial risks expecting to earn substantial returns o Take above average financial risks expecting to earn above average returns o Take average financial risks expecting to earn average returns o Not willing to take any financial risks.

Table A4. Classification of countries
Countries have been group according to cultural similarities defined by the Lewis model (1996).

Group	Countries	Categorization
Group 1	Italy Spain	Multi-active countries: warm, emotional, loquacious and impulsive
Group 2	Belgium France	A bit further from multi-active countries
Group 3	Austria Denmark	Share characteristics from multi-active countries and linear-active countries
Group 4	Germany Sweden Switzerland	Linear-active countries, who are identified as factual, cool and decisive planners

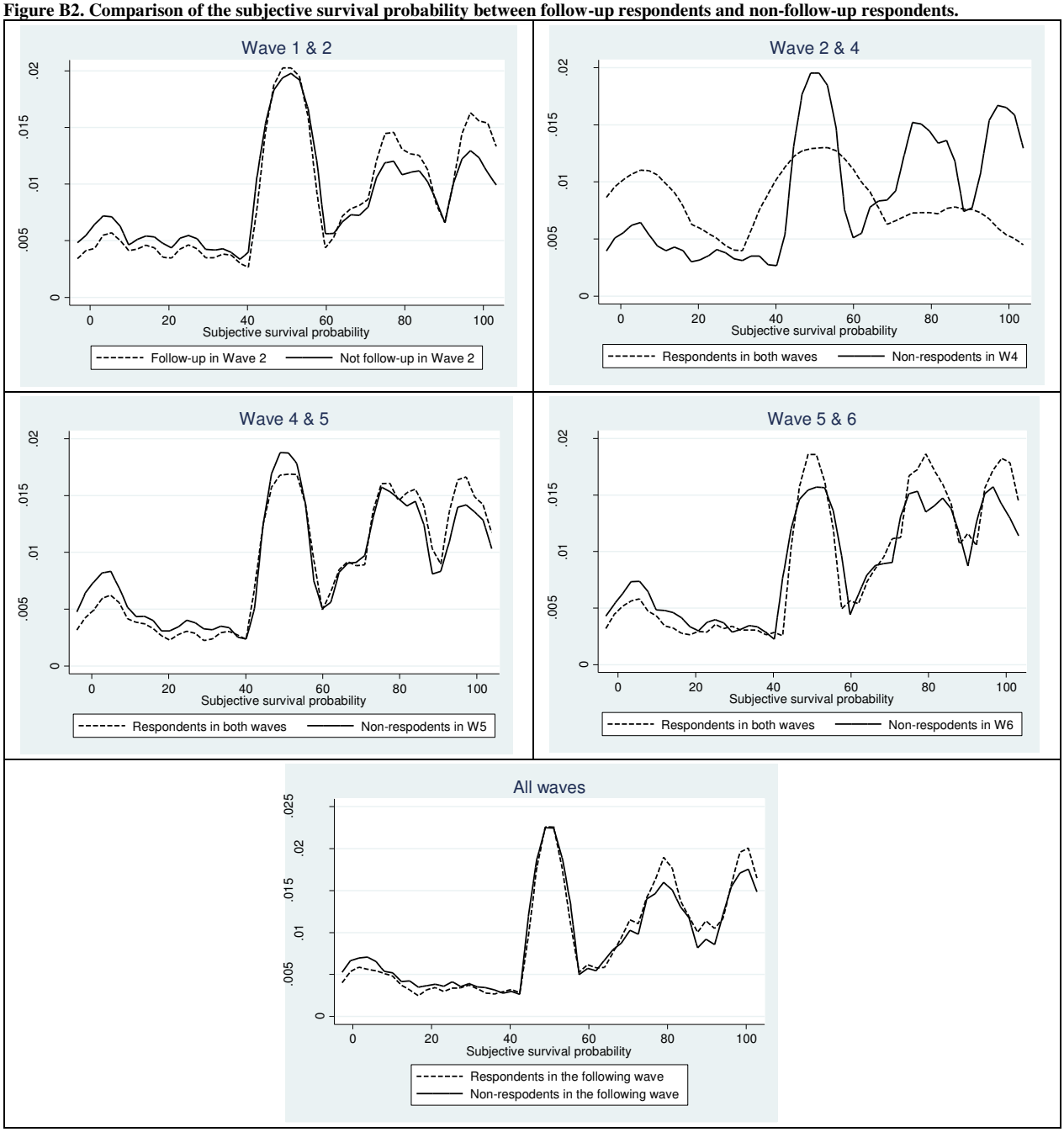
Appendix B. Descriptive statistics

Figure B1. Survival expectations over time by wave (What are the chances that you will live to be age T or more?)



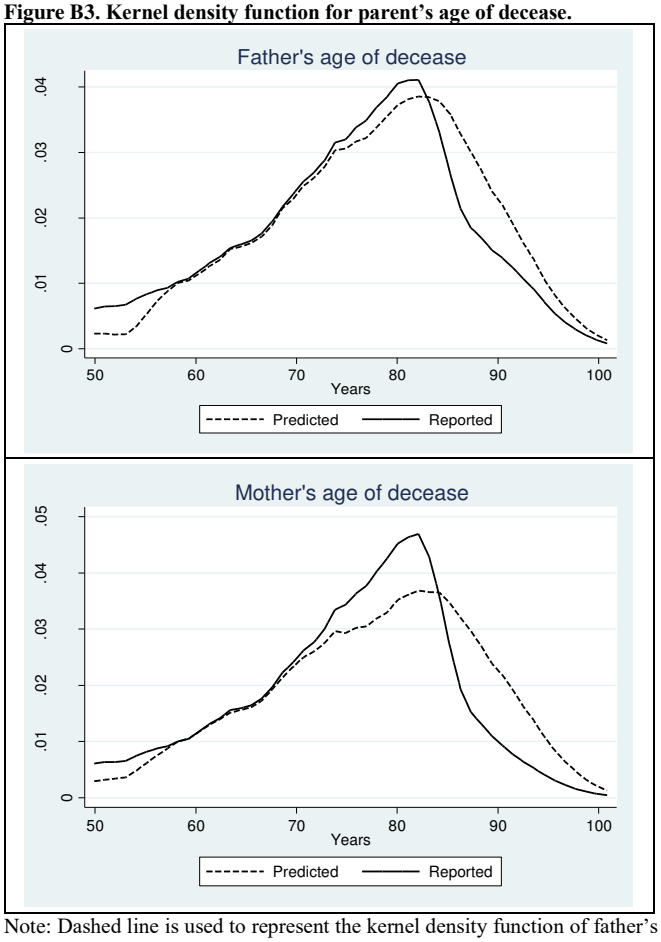
Note: This figure reports the probability of an individual subjective longevity attaining a target age. Using calibrated sampling weights. Target: T= 75 years if Age <65; T= 80 years if 65 ≤ Age < 70; T= 85 years if 70 ≤ Age < 75; T= 90 years if 75 ≤ Age < 80; Individuals aged 80 or older have been collapsed at age 90. In this case, we summarize the expectations of living to age 95 or older.
Sample size: 21,384 for Wave 1; 21,741 for Wave 2; 32,405 for Wave 4; 42,495 for Wave 5; 38,295 for Wave 6.

Figure B2. Comparison of the subjective survival probability between follow-up respondents and non-follow-up respondents.



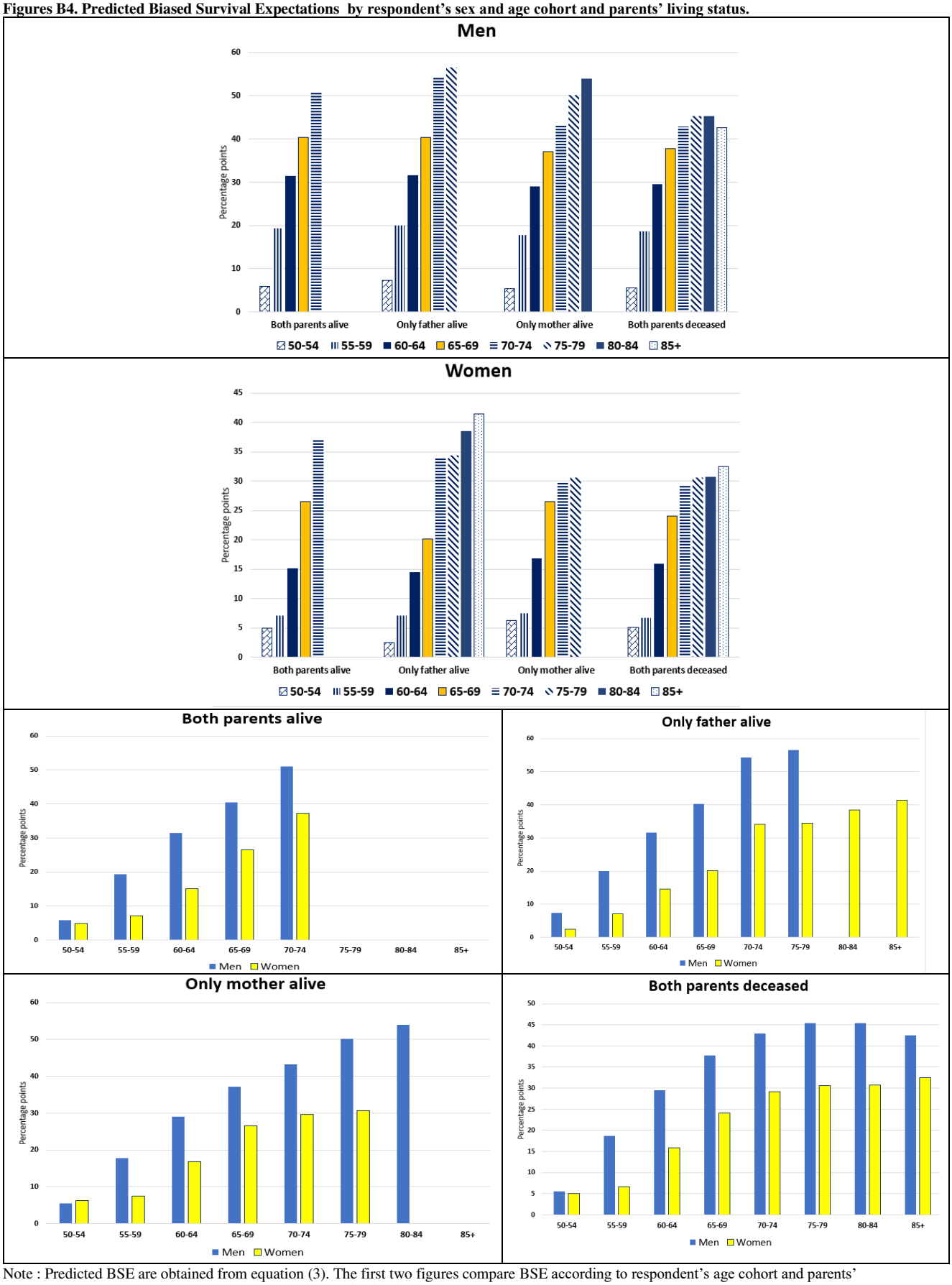
Each graph shows the kernel density function for the subjective survival probability reported by SHARE. Dashed line corresponds to the sample respondents who participate in two consecutive waves. Straight lines corresponds to the sample of respondents in one wave who disappear in the next one.

Figure B3. Kernel density function for parent's age of decease.



Note: Dashed line is used to represent the kernel density function of father's (mother's) age of decease for those fathers (mothers) who have died at the time of the survey. Straight line is used to represent the kernel density function of father's (mother's) age of decease for those fathers (mothers) who are still alive at time of the survey, and for whom age of decease has been predicted using multiple imputation. This technique allows predicting what age at decease for living parents would have been using information from the "Main Questionnaire". It requires two main assumptions: (i) the data must be missing at random, which is clearly the case because age at decease is missing for all living parents, and (ii) the reasons for the missing data must be captured by other variables that do not have missing values. As the age of decease is a continuous variable, and OLS imputation method has been chosen. We have used the deceased subsample and selected those variables for which parent's characteristics are also available. These variables are: (i) gender, (ii) age of the father/mother and age at the last survey for the deceased sample, (iii) number of children of the father/mother and number of children of the deceased, (iv) frequency of contact between respondent and father/mother and frequency of contact between the deceased and his/her children, (v) distance between father's/mother's household and respondent's household and distance between the deceased's household and his/her children, (vi) country and year fixed effects. To test the sensitivity of our results, we have selected five different random seed values, and added five different imputations to our main dataset. The results in these alternative cases were very similar to the original estimations.

Figures B4. Predicted Biased Survival Expectations by respondent's sex and age cohort and parents' living status.



Note : Predicted BSE are obtained from equation (3). The first two figures compare BSE according to respondent's age cohort and parents' living status. The other four figures compare LO by gender for the same age cohort and parent's living status.

Table B1. Design of the samples.

	Wave 1	Wave 2	Wave 4	Wave 5	Wave 6	Total
Initial sample	30,434	37,174	58,184	66,221	68,231	260,244
Select countries interviewed in all waves [a]	22,119	22,381	33,418	43,491	38,979	160,388
Select observations with not missing calibrated sampling weights [b]	21,384	21,741	32,405	42,495	38,295	156,320

[a] Croatia not included in wave 1, 2, 4 and 5; Czech Republic not included in wave 1; Estonia not included in wave 1, 2 and 5; Greece not included in wave 4 and 5; Ireland not included in wave 1, 4, 5 and 6; Israel not included in wave 4; Hungary not included in wave 1, 2, 5 and 6; Luxembourg not included in wave 1, 2 and 4; Netherlands not included in wave 6; Poland not included in wave 1 and 5; Portugal not included in wave 1, 2 and 5; Slovenia not included in wave 1 and 2.

[b] Calibrated sampling weights are missing for respondents younger than 50 years (i.e., age-ineligible partners of an age eligible respondent) and those with missing information on the set of calibration variables (i.e., age, gender and NUTS1 code).

	Wave 1 & Wave 2	Wave 2 & Wave 3-4	Wave 4 & Wave 5	Wave 5 & Wave 6	Total
Merging consecutive waves of SHARE (obtained from last row of previous table) [c]					
Survivors sample	14,493	13,933	24,515	32,559	85,500
Deceased sample	463	644	862	1,180	3,149
Not follow-up respondents	6,428	7,164	7,028	8,756	29,376
Total	21,384	21,741	32,405	42,495	118,025
Report subjective survival probability					
Survivors sample	13,427	12,842	11,364	30,227	67,860
Deceased sample	372	524	284	860	2,040
Not follow-up respondents	5,733	6,346	3,738	7,877	23,694
Total	19,532	19,712	15,386	38,964	93,594
Do not report subjective survival probability [d]					
Survivors sample	1,066	1,091	13,151	2,332	17,640
Deceased sample	91	120	578	320	1,109
Not follow-up respondents	695	818	3,290	879	5,682
Total	1,852	2,029	17,019	3,531	24,431
For the robustness checks					
Excluding erroneous responses to probabilistic question					
Survivors sample	2,847	2,478	2,187	21,494	29,006
Deceased sample	169	178	106	724	1,177
Total	3,016	2,656	2,293	22,218	30,183
Excluding focal responses for survival expectations' question: 0, 50 or 100					
Survivors sample	7,268	7,208	6,670	18,581	39,727
Deceased sample	198	253	163	552	1,166
Total	7,466	7,461	6,833	19,133	40,893

[c] Resulting from merging two consecutive final sample datasets obtained in the previous table.

[d] Missing, do not know, refusal.

Survivors sample: alive in the second wave; Deceased sample: died between both waves; Not follow-up respondents: only appear in one wave.

Table B2. Wave to wave retention rates of all wave 1 samples (%)

	Wave 1&2	Wave 2&3	Wave 3&4	Wave 4&5	Wave 5&6
Austria	74.4	71.3	74.3	78.3	81.4
Beligium	76.3	83.9	80.6	84.4	85.7
Denmark	77.0	80.2	85.2	89.6	88.3
France	67.0	76.2	82.4	72.5	71.1
Germany	55.1	73.6	77.6	68.3	89.5
Italy	71.4	87.1	84.8	88.0	89.3
Spain	68.6	83.3	80.1	89.2	88.2
Sweden	70.6	70.6	73.4	79.4	85.2
Switzerland	74.6	85.3	87.0	86.3	89.8
All countries	70.6	79.1	80.6	81.8	85.4

Source: Own work and Bergman et al. (2017)

Table B3. Test of equality of distributions. Comparison of the sample of follow-up respondents in two consecutive waves and the sample of non-follow-up respondents (participate in one wave, but disappear in the next one)

		Respondents in both waves	Non-respondents in the following wave	Test of equality of distributions [a]
Waves 1 &2	Mean.	62.44	57.89	1.257
	Std.Dev.	(29.20)	(30.35)	0.2086
	N	12,890	6,642	
Waves 2 &4	Mean.	46.02	62.79	-12.475
	Std.Dev.	(32.58)	(29.68)	-12.475
	N	993	19,109	
Waves 4 &5	Mean.	64.72	60.61	1.486
	Std.Dev.	(28.97)	(30.40)	0.1374
	N	10,961	4,421	
Waves 5 &6	Mean.	(65.79)	62.32	0.063
	Std.Dev.	28.59	(30.29)	0.9500
	N	(29,298)	9,666	
All waves	Mean.	64.54	61.61	1.212
	Std.Dev.	(28.96)	(30.07)	0.2255
	N	53,242	35,838	

[a] Wilcoxon Rank sum test. Null hypothesis: both samples are from are from populations with the same distribution.

Table B4. Survival expectations over time by wave (What are the chances that you will live to be age T or more?). By countries and groups of countries

	Target	T= 75	T= 80	T= 85	T= 90	T= +90
Austria	Mean	73.94	65.67	58.28	46.99	36.18
	Std.Dev	(24.97)	(26.44)	(29.58)	(29.92)	(30.60)
	N	6,387	762	467	210	77
Belgium	Mean	67.50	62.68	55.63	44.70	33.86
	Std.Dev	(23.43)	(25.05)	(27.26)	(29.29)	(29.58)
	N	5,335	528	341	166	67
Denmark	Mean	78.86	74.27	66.85	53.87	37.82
	Std.Dev	(22.96)	(25.28)	(28.52)	(31.51)	(32.78)
	N	8,637	1,041	695	313	105
France	Mean	69.17	62.74	56.85	47.61	35.80
	Std.Dev	(25.53)	(27.25)	(27.32)	(29.52)	(29.76)
	N	6,635	833	566	284	112
Germany	Mean	69.54	60.83	54.32	41.47	30.93
	Std.Dev	(25.47)	(26.84)	(28.47)	(29.84)	(29.27)
	N	6,004	654	331	138	35
Italy	Mean	71.86	65.94	60.96	54.30	46.41
	Std.Dev	(26.64)	(27.83)	(29.88)	(31.82)	(32.97)
	N	6,274	826	443	156	54
Spain	Mean	72.75	65.19	59.57	48.97	38.45
	Std.Dev	(24.88)	(28.08)	(28.44)	(30.99)	(31.09)
	N	5,880	1,036	711	406	132
Sweden	Mean	74.91	67.50	57.85	44.05	28.20
	Std.Dev	(23.65)	(26.53)	(29.22)	(31.22)	(30.31)
	N	5,574	765	464	259	70
Switzerland	Mean	75.12	69.53	62.10	53.57	42.04
	Std.Dev	(22.25)	(24.26)	(26.25)	(29.22)	(30.98)
	N	4,883	620	386	178	60
Group I	Mean	71.81	64.87	61.21	51.33	42.71
	Std.Dev	(26.03)	(28.41)	(29.24)	(31.82)	(32.30)
	N	8,085	2,184	2,169	1,783	1,697
Group II	Mean	67.57	61.68	55.62	46.26	33.97
	Std.Dev	(24.51)	(26.31)	(27.01)	(29.56)	(29.47)
	N	11,195	2,262	2,156	1,775	1,833
Group III	Mean	76.94	69.44	62.10	50.90	38.12
	Std.Dev	(23.71)	(25.85)	(29.10)	(30.07)	(30.86)
	N	8,106	1,860	1,941	1,207	1,226
Group IV	Mean	72.99	66.46	58.23	47.11	34.85
	Std.Dev	(24.15)	(25.90)	(28.33)	(30.89)	(31.14)
	N	11,165	2,965	2,651	1,943	1,697
All sample	Mean	70.95	63.92	57.70	47.49	37.11
	Std.Dev	(25.47)	(27.27)	(28.69)	(30.81)	(31.22)
	N	55,609	7,065	4,404	2,110	712
Test by country						
Highest SSP	Country	Denmark	Denmark	Denmark	Italy	Italy
Test difference of	F-test	$F_{1,68538}$=530.98	$F_{1,17158}$=175.80	$F_{1,16780}$=105.35	$F_{1,12851}$=68.87	$F_{1,13323}$= 101.86
means [a]	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Lowest SSP	Country	Belgium	Germany	Germany	Germany	Sweden
Test difference of	F-test	$F_{1,68538}$=124.53	$F_{1,17158}$=30.61	$F_{1,16780}$=35.94	$F_{1,12851}$=73.36	$F_{1,13323}$= 91.54
means [b]	p-value	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Test by group of countries						
Highest SSP	Group	Group III	Group III	Group III	Group I	Group I
Test difference of	F-test	$F_{1,38550}$=116.89	$F_{1,9270}$=21.29	$F_{1,8916}$=6.37	$F_{1,6707}$=24.16	$F_{1,6452}$=48.89
means [c]	p-value	(0.0000)	(0.0000)	(0.0116)	(0.0000)	(0.0000)
Lowest SSP	Group	Group II	Group II	Group II	Group II	Group II
Test difference of	F-test	$F_{1,38550}$=39.66	$F_{1,9270}$=8.72	$F_{1,8916}$=3.03	$F_{1,6707}$=0.01	$F_{1,6452}$=10.64
means [d]	p-value	(0.0000)	(0.0039)	(0.0820)	(0.8044)	(0.0011)

[a] Ho: mean(other countries)-mean(country with highest expectancy)=0
Ha: mean(other countries) < mean(country with highest expectancy)

[b] Ho: mean(other countries)-mean(country with lowest expectancy)=0
Ha: mean(other countries) > mean(country with lowest expectancy)

[c] Ho: mean(other groups)-mean(group with the lowest expectancy)=0
Ha: mean(other groups) < mean(group with lowest expectancy)

[d] Ho: mean(other groups)-mean(group with the lowest expectancy)=0
Ha: mean(other groups) > mean(group with lowest expectancy)

Note: Using calibrated sampling weights. Target: T= 75 years if Age < 65; T= 80 years if 6 5≤ Age < 70; T= 85 years if 70 ≤ Age < 75; T= 90 years if 75 ≤ Age < 80; Individuals aged 80 or older have been collapsed at age 90. In this case, we summarize the expectations of living to age 95 or older.
Group I: Italy and Spain. Group II: Belgium and France. Group III: Austria and Denmark. Group IV: Germany, Sweden and Switzerland.

Table B5. Survival expectations by survival status and gender

	Target	T= 75	T= 80	T= 85	T= 90	T= +90
Survivors						
Total	Mean	70.79	64.07	58.40	48.56	38.47
	Std.Dev	(25.77)	(27.25)	(28.65)	(31.17)	(31.46)
	N	54,786	6,719	4,046	1,798	511
Men	Mean	70.58	64.32	58.79	50.01	40.79
	Std.Dev	(26.11)	(27.49)	(28.67)	(31.55)	(32.03)
	N	25,093	3,088	1,741	719	188
Women	Mean	70.98	63.84	58.07	47.52	37.13
	Std.Dev	(25.44)	(27.03)	(28.64)	(30.85)	(31.06)
	N	29,693	3,631	2,305	1,079	323
Test equality of means men-women	F-test	$F_{1,29547}$=0.65	$F_{1,6940}$=0.24	$F_{1,6567}$=0.45	$F_{1,4678}$=3.11	$F_{1,3979}$= 5.29
	p-value	(0.4192)	(0.6276)	(0.5034)	(0.0779)	(0.0215)
Deceased						
Total	Mean	57.23	47.09	44.01	44.11	29.80
	Std.Dev	(32.88)	(30.59)	(30.65)	(33.20)	(30.01)
	N	823	346	358	312	201
Men	Mean	56.06	46.53	47.49	47.34	28.69
	Std.Dev	(33.94)	(29.94)	(30.95)	(34.76)	(30.19)
	N	512	201	190	159	80
Women	Mean	59.90	47.95	39.39	40.23	30.60
	Std.Dev	(30.27)	(31.77)	(29.76)	(30.89)	(29.87)
	N	311	145	168	153	121
Test equality of means men-women	F-test	$F_{1,372}$=0.54	$F_{1,194}$=0.05	$F_{1,291}$=2.50	$F_{1,360}$=1.45	$F_{1,118}$= 0.36
	p-value	(0.4622)	(0.8272)	(0.1148)	(0.2296)	(0.5484)
Test equality of means survivors-deceased	F-test	F_{129920}=27.34	$F_{1,7135}$=28.39	$F_{1,6859}$=30.34	$F_{1,5039}$=1.92	$F_{1,4798}$= 22.84
	p-value	(0.0000)	(0.0000)	(0.0000)	(0.1664)	(0.0000)

Note: means and test of means have been computed using calibrated sampling weights.
Target: T= 75 years if Age <65; T= 80 years if 65≤ Age < 70; T= 85 years if 70 ≤ Age < 75; T= 90 years if 75 ≤ Age < 80; Individuals aged 80 or older have been collapsed at age 90. In this case, we summarize the expectations of living to age 95 or older.

Table B6. Descriptive statistics

	Do not report subjective survival probabilities	Report subjective survival probabilities			
		Not follow-up respondents	Final sample: Follow-up respondents		
			Total	Deceased sample	Survivor sample
N (all sample)	24,431	23,694	69,900	2,040	67,860
N (for the probability of sunny day)	-	-	69,315	1,956	67,359
N (respondents who participated in SHARELIFE)			33,269	708	32,561
Subjective survival probability (SSP)	-	61.05	62.06	40.63	63.21
	-	(30.55)	(29.07)	(32.87)	(29.48)
Objective survival probability (OSP)	-	-	44.07	17.18	47.99
	-	-	(28.97)	(24.54)	(29.35)
Biased survival expectations (SSP-OSP)	-	-	19.99	23.44	15.21
	-	-	36.00	40.43	35.86
Biased survival expectations >0 (SSP- OSP >0)	-	-	(24.26)	(27.44)	(24.15)
	-	-	-20.42	-12.02	-20.66
Biased survival expectations <0 (SSP- OSP <0)	-	-	(17.91)	(17.09)	(17.87)
	-	-	(34.04)	(34.82)	(34.96)
Subjective probability of sunny day			61.54	58.50	61.63
			(29.82)	(30.40)	(29.80)
Predicted meteorological probability of sunny day			40.72	42.65	40.67
			(9.78)	(10.79)	(9.74)
Biased meteorological expectations			20.82	15.85	20.96
			(29.78)	(30.67)	(29.74)
Biased meteorological expectations > 0			33.80	31.57	33.86
			(18.90)	(18.30)	(18.91)
Biased meteorological expectations < 0			-22.51	-23.93	-22.46
			(14.70)	(16.29)	(14.63)
Man	43.36	46.48	46.22	52.91	45.99
Woman	56.64	53.52	53.78	47.09	54.01
Age	69.21	65.75	65.47	76.68	65.09
	(10.84)	(11.06)	(10.36)	(10.65)	(10.13)
Marital status					
Single	7.30	8.29	7.27	8.23	7.23
Widow	20.99	17.93	16.83	37.01	16.15
Separated/divorced	8.06	10.05	9.20	5.49	9.32
Married/cohabiting	63.65	63.73	66.70	49.27	67.30
Education (ISCED 1997 levels)					
None	8.83	5.80	6.34	12.71	6.13
Primary education	24.88	20.78	24.52	40.30	23.99
Lower secondary	15.36	17.75	15.92	13.68	16.00
Upper secondary	31.21	35.57	31.51	22.70	31.80
Post-secondary non tertiary	2.06	2.06	2.40	1.51	2.43
Tertiary education	17.66	18.04	19.31	9.10	19.65
Lives alone	27.99	27.18	24.25	38.35	23.78
Rural area, village, small town	56.77	54.62	59.94	57.31	60.02
Relation with economic activity					
Employed	20.86	29.88	28.59	4.72	29.39
Unemployed	2.68	3.41	4.05	1.40	4.14
Retired	54.12	49.20	50.34	70.40	49.66
Disabled	3.58	2.99	2.70	4.53	2.64
Houseworking	13.61	12.74	12.67	13.87	12.63
Other	5.15	1.78	1.65	5.08	1.54
Adjusted wealth (1,000 PPP) [a]	160.15	158.19	167.31	127.85	168.63
	(254.10)	(336.06)	(286.63)	(191.16)	(289.19)
Adjusted income (1,000 PPP) [a]	18.00	22.62	19.99	15.43	20.15
	(21.25)	(74.04)	(25.60)	(21.45)	(25.72)
Body mass index					
Underweight	1.67	1.43	1.27	4.74	1.15
Normal	34.46	39.23	37.06	36.04	37.09
Obese	17.16	16.09	18.77	17.37	18.82
Overweight	39.04	40.81	40.60	35.74	40.77
Missing	7.67	2.44	2.30	6.11	2.17
Sedentary (never moderate or vigorous physical activity)	16.96	13.79	11.58	40.33	10.61
Smoking					
No, never	37.79	51.20	48.82	46.62	48.89
Not now	48.56	25.50	24.17	22.79	27.14
Yes	13.65	23.30	27.01	30.59	23.97
Drinking					
Everyday or 5/6 times per week	23.18	124.69	27.96	27.16	27.98
Not drunk during last 3 months or les than once per month	27.15	28.65	30.42	47.30	29.86
Chronic illness					
High blood pressure	39.16	33.26	36.06	42.94	35.83
Cancer	5.35	5.47	5.11	14.14	4.81
Stroke	4.40	3.50	3.18	9.62	2.96
Diabetes	14.15	11.68	11.48	22.09	11.13
Heart attack	12.56	11.27	11.33	24.18	10.90
Lung disease	7.39	5.74	6.17	13.35	5.93
Alzheimer	3.43	1.06	0.68	4.19	0.56
Days in hospital last year (surgery/medical tests)	2.37	2.07	1.66	5.67	1.53
	(10.63)	(9.79)	(7.32)	(14.55)	(6.91)
Days in hospital last year (mental health)	5.39	2.81	3.75	2.62	3.81
	(25.83)	(14.84)	(14.02)	(7.57)	(14.28)
Days in other institutions (last year)	26.10	46.33	27.44	54.16	25.42
	(28.60)	(81.87)	(31.63)	(67.43)	(26.06)

Visits to medical practitioner last year	4.85	4.04	3.26	5.02	3.20
	(6.89)	(6.98)	(6.17)	(8.74)	(6.06)
Blood test last year (participated in SHARELIFE)	.	.	68.65	75.14	68.51
Blood pressure checked last year (participated in SHARELIFE)	.	.	69.12	74.15	69.01
Depressed (last month)	41.64	39.58	42.22	51.09	41.92
Self-reported health status					
Excellent	4.51	6.96	7.53	2.37	7.70
Very good	12.10	16.12	16.52	5.88	16.88
Good	35.98	38.23	39.76	23.84	40.29
Fair	32.52	27.54	26.82	37.54	26.46
Poor	14.89	11.15	9.37	30.37	8.67
Social contacts [b]	13.18	14.31	15.72	9.91	15.90
Locus of control: Feels things are out of control					
Often	9.90	7.54	7.37	18.49	7.00
Sometimes	21.44	17.70	19.34	18.51	19.37
Rarely	22.22	19.05	21.44	16.96	21.60
Never	28.09	22.79	25.37	16.76	25.66
Cognitive skills					
Ten word listing (first recall)	4.69	4.91	4.99	3.59	5.04
	(1.96)	(1.95)	(1.84)	(2.00)	(1.81)
Ten word listing (second recall)	3.36	3.45	3.57	2.11	3.62
	(2.16)	(2.10)	(2.08)	(1.92)	(2.07)
Maximum grip strength	32.34	34.34	34.01	27.67	34.19
	(12.16)	(12.72)	(12.31)	(11.85)	(12.27)
Financial assets					
Bank accounts	94.70	94.89	93.45	89.46	93.58
Government or corporate bonds	4.54	3.64	4.51	6.24	4.32
Stocks or shares listed or unlisted in the stockmarket	6.73	4.66	6.07	3.04	6.17
Mutual funds or managed investment accounts	6.84	4.37	7.56	2.98	6.36
Mostly in stocks	31.85	30.25	34.10	30.09	34.17
Half in stocks and half in bonds	41.87	40.09	44.92	39.82	45.01
Mostly in bonds	17.83	16.34	20.98	30.09	20.83
Individual retirement accounts	5.17	6.24	7.29	1.69	7.48
Life insurance	10.97	9.99	12.07	5.58	12.28
Debts					
Mortage	7.54	8.86	10.81	3.31	11.06
Other debts	8.11	10.15	11.40	6.10	11.58
Attitudes towards financial risk					
Substantial risk expecting to earn substantial returns	13.49	12.95	8.62	24.3	0.42
Average fin. risk expecting to earn above average returns	27.88	28.95	31.12	27.37	1.14
Average financial risk expecting to earn average returns	23.85	23.97	24.94	23.43	10.16
Not willing to take any financial return	34.78	34.13	35.32	24.90	35.33
Countries					
Austria	0.96	3.16	3.37	3.17	3.38
Germany	34.56	34.81	25.21	21.29	25.34
Sweden	3.84	2.78	3.06	3.35	3.05
Spain	15.62	11.01	14.99	23.01	14.72
Italy	19.32	20.98	22.42	25.23	22.33
France	19.96	20.80	21.37	16.40	21.54
Denmark	1.96	1.25	2.00	2.17	1.99
Switzerland	1.27	2.00	3.34	2.18	3.37
Belgium	2.51	3.21	4.24	3.20	4.28

[a] Income and wealth are expressed in 1,000 units of Purchase Power of Parity and adjusted by household sized (dividing wealth and income by the square root of the number of household members)

[b] Respondent has participated in the last month in voluntary or charity work, gone to sport club or social club, taken part in political/community/religious organization or attended to educational or training courses.

Biased survival expectations: 50,058 observations for positive bias and 19,842 observations for negative bias

Biased meteorological expectations: 53,336 observations for positive bias and 15,979 observations for negative bias

Table B7. Descriptive statistics for reported and predicted parents' age of decease

	Father's age of decease			Mother's age of decease		
	Total	Men	Women	Total	Men	Women
Reported in SHARE						
Mean	78.58	78.73	78.46	81.97	81.93	82.01
Std.dev	(8.78)	(8.77)	(8.78)	(8.65)	(8.58)	(8.71)
N	49,423	22,801	26,622	42,823	19,768	23,055
Predicted using multiple imputation						
Mean	82.74	82.79	82.69	84.59	84.74	84.47
Std.dev	(5.19)	(4.98)	(5.36)	(6.21)	(6.19)	(6.23)
N	20,477	9,170	11,307	27,077	12,203	14,874

Multiple imputation has been used to predict father's or mother's age of decease for those fathers or mother who were still alive at the time of the survey.

Table B8. Weibull estimations for the discrete-time hazard model

	Total sample		Excluding focal points		Excluding erroneous responses to probabilistic question		Including only individuals who have answered SHARELIFE	
	Coef.	Hazard ratio	Coef.	Hazard ratio	Coef.	Hazard ratio	Coef.	Hazard ratio
Man	0.633***	1.884***	0.589***	1.802***	0.606***	1.833***	0.642***	1.895***
	(0.083)		(0.133)		(0.090)		(0.090)	
Age	-0.049	0.952	-0.012	0.988	-0.045	0.956	-0.057	0.956
	(0.045)		(0.075)		(0.051)		(0.050)	
Age^2	0.001***	1.001***	0.001	1.001	0.001**	1.001**	0.003***	1.002***
	(0.000)		(0.001)		(0.000)		(0.001)	
Employed	-0.653***	0.520***	-0.449*	0.638*	-0.578***	0.561***	-0.687***	0.529***
	(0.183)		(0.238)		(0.189)		(0.191)	
Lives alone	0.192**	1.211**	0.134	1.143	0.234**	1.263**	0.202**	1.217**
	(0.087)		(0.149)		(0.098)		(0.094)	
Rural area, village, small town	-0.028	0.972	-0.175	0.840	-0.046	0.955	-0.034	0.979
	(0.071)		(0.116)		(0.078)		(0.076)	
Normal weight	-0.246***	0.782***	-0.262**	0.712**	-0.219**	0.804**	-0.295***	0.801***
	(0.082)		(0.32)		(0.090)		(0.085)	
High blood pressure	-0.087**	0.916**	-0.225**	0.799**	-0.109**	0.896**	-0.091**	0.918**
	(0.036)		(0.107)		(0.043)		(0.037)	
Heart attack	0.253*	1.287*	0.250*	1.284*	0.241*	1.265*	0.260*	1.291*
	(0.127)		(0.128)		(0.119)		(0.129)	
Cancer	0.943***	2.566***	1.017***	2.765***	0.910***	2.484***	0.948***	2.568***
	(0.102)		(0.158)		(0.118)		(0.108)	
Stroke	0.434***	1.543***	0.300**	1.350**	0.575***	1.777***	0.440***	1.546***
	(0.122)		(0.123)		(0.143)		(0.126)	
Diabetes	0.346***	1.413***	0.533***	1.703***	0.375***	1.454***	0.340***	1.411***
	(0.089)		(0.156)		(0.101)		(0.088)	
Lung disease	0.248**	1.281**	0.364*	1.440*	0.284**	1.329**	0.240**	1.278**
	(0.109)		(0.193)		(0.121)		(0.101)	
Alzheimer	0.461***	1.585***	0.210***	1.234***	0.411*	1.508*	0.478***	1.592***
	(0.157)		(0.051)		(0.216)		(0.159)	
Days at hospital (last year)	0.012***	1.012***	0.015***	1.015***	0.014***	1.014***	0.014***	1.013***
	(0.001)		(0.002)		(0.002)		(0.001)	
Days in hospital last year (mental health)	0.0075***	1.276***	0.0077***	1.280***	0.0074***	1.274***	0.0079***	1.278***
	(0.0015)		(0.0016)		(0.0014)		(0.0016)	
Days in other institutions (last year)	0.0113***	1.011***	0.0110***	1.014***	0.0115***	1.017***	0.0121***	1.019***
	(0.0021)		(0.0019)		(0.0020)		(0.0023)	
Visits to general practitioner (last year)	-0.002	0.998	-0.002	0.998	0.002	1.002	-0.003	0.999
	(0.006)		(0.007)		(0.006)		(0.005)	
Sedentary lifestyle	0.858***	2.357***	0.841***	2.318***	0.787***	2.196***	0.865***	2.360***
	(0.080)		(0.145)		(0.089)		(0.083)	
Smokes now	0.422***	1.524***	0.407***	1.487***	0.360***	1.434***	0.431***	1.527***
	(0.109)		(0.170)		(0.114)		(0.111)	
Smoked before, not now	0.313***	1.366***	0.327**	1.387**	0.225*	1.253*	0.315***	1.367***
	(0.108)		(0.145)		(0.120)		(0.111)	
Drinks alcohol daily, 5-6 times/week	0.215**	1.234**	0.227	1.246**	0.240	1.267**	0.217**	1.235**
	(0.082)		(0.090)		(0.095)		(0.084)	
No education	0.426***	1.531***	0.536***	1.710***	0.398**	1.489**	0.430***	1.533***
	(0.159)		(0.183)		(0.168)		(0.161)	
Primary education	0.454***	1.575***	0.390**	1.477**	0.427***	1.533***	0.459***	1.577***
	(0.132)		(0.175)		(0.135)		(0.134)	
Lower secondary education	0.187	1.205	0.256	1.292	0.182	1.199	0.195	1.208
	(0.147)		(0.200)		(0.149)		(0.150)	
Upper secondary education	0.300**	1.349**	0.214**	1.239**	0.335***	1.398***	0.308**	1.351**
	(0.129)		(0.114)		(0.127)		(0.133)	
Post-secondary non tertiary	0.387	1.472	0.401	1.579	0.302	1.381	0.393	1.476
	(0.259)		(0.541)		(0.409)		(0.262)	
Adjusted wealth (1,000 PPP)	-0.411**	0.663**	-0.561*	0.571**	-0.494**	0.610**	-0.416**	0.664**
	(0.189)		(0.227)		(0.213)		(0.193)	
Adjusted income (1,000 PPP)	-0.118	1.889	-0.182	2.152	0.203	1.895	-0.121	1.890
	(1.346)		(1.152)		(1.331)		(1.352)	
Feeling depressed (last month)	0.167**	1.181**	0.160**	1.175**	0.147**	1.091**	0.170**	1.184**
	(0.072)		(0.078)		(0.050)		(0.071)	
Constant	-6.738***	0.001***	-8.799***	0.000***	-6.912***	0.001***	-6.777***	0.002***
	(1.678)		(2.725)		(1.883)		(1.685)	
N	69.900		40,893		30,183		33,269	
Hazard rate	1.429		1.615		1.461		1.477	
	(0.057)		(0.073)		(0.065)		(0.060)	
Wald chi2(38)	2385.24		1876.38		972.68		1792.35	
p-value	(0.0000)		(0.0000)		(0.0000)		(0.0000)	

Standard errors between parenthesis. All regressions include time fixed effects and country fixed effects and are weighted using calibrated sampling weights.

Table B9. Average daylight minutes per day ($DMD_{m,r}$)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	510	605	700	796	893	957	956	888	791	687	628	569
Belgium	488	593	698	803	910	982	980	904	797	683	618	553
Denmark	436	563	690	818	949	1,040	1,038	942	812	675	595	515
France	504	602	700	798	897	963	961	891	792	686	625	564
Germany	471	583	695	808	923	1,000	998	916	802	681	611	541
Italy	555	630	706	782	858	908	907	854	777	694	647	601
Spain	564	635	706	778	851	898	897	847	775	696	652	608
Sweden	382	532	682	833	986	1,101	1,098	978	825	668	572	477
Switzerland	520	611	702	793	885	946	944	880	787	688	632	576

Source: Gaisma

Table B10. Average sunlight minutes per day ($SMD_{m,y,r}$)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	142	197	268	322	385	405	442	412	347	280	161	127
Belgium	94	155	206	295	367	371	360	352	288	221	129	85
Denmark	73	133	215	350	463	453	443	412	284	183	112	66
France	172	219	309	384	437	503	551	492	406	294	203	165
Germany	100	156	229	319	403	419	423	402	313	225	121	90
Italy	221	248	310	374	452	516	584	535	432	336	243	204
Spain	269	296	363	407	493	560	618	571	453	366	293	252
Sweden	62	139	252	362	487	554	496	404	276	170	90	49
Switzerland	157	205	272	309	330	377	429	393	354	271	180	154

Source: World Meteorological Organization

Table B11. Average meteorological probability of sunny day ($MetSD_{m,y,r}$)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Austria	0.28	32.63	38.35	40.45	43.16	42.27	46.28	46.39	43.81	40.77	25.61	22.40
Belgium	19.28	26.14	29.48	36.69	40.30	37.76	36.70	38.99	36.14	32.42	20.91	15.43
Denmark	16.75	23.66	31.23	42.75	48.80	43.54	42.72	43.76	34.98	27.07	18.78	12.75
France	34.13	36.40	44.10	48.10	48.77	52.27	57.32	55.17	51.26	42.90	32.46	29.21
Germany	21.29	26.83	33.00	39.45	43.61	41.94	42.42	43.84	39.05	33.00	19.74	16.62
Italy	39.81	39.29	43.87	47.84	52.69	56.83	64.34	62.59	55.55	48.36	37.56	33.91
Spain	47.78	46.60	51.43	52.26	57.95	62.41	68.87	67.40	58.43	52.60	44.99	41.50
Sweden	16.10	26.19	36.99	43.46	49.36	50.30	45.17	41.30	33.40	25.47	15.73	10.28
Switzerland	30.26	33.51	38.72	38.98	37.28	39.83	45.40	44.71	45.01	39.36	28.54	26.71

Source: own estimations using Tables B7 and B8.

Table B12. Comparison of biased expectation indicators

- **By country**

	Biased survival expectations OSP-SSP		Meteorological expectations		Comparison between indicators of expectations %			
	Mean	Std.Dev.	Mean	Std.Dev.	LO > 0 &ME > 0	LO > 0 & ME < 0	LO < 0 & ME > 0	LO < 0 & ME < 0
Total	19.99	34.04	20.82	29.78	56.75	14.87	20.37	7.98
Men	27.62	33.93	21.18	29.76	61.74	16.37	15.46	6.37
Women	13.56	32.80	20.51	29.80	52.54	13.60	24.50	9.34
Survivors	19.81	34.03	20.96	29.74	56.84	14.75	20.42	7.98
Deceased	26.02	34.15	15.85	30.67	53.53	18.77	18.73	8.04
Austria	26.13	32.04	24.65	29.77	65.73	13.15	16.60	4.50
Belgium	10.96	32.43	22.91	28.66	49.03	12.87	27.57	10.52
Denmark	25.73	31.97	26.31	29.57	65.79	13.67	16.36	4.13
France	12.31	33.59	16.01	30.44	50.32	13.42	25.52	10.75
Germany	12.53	33.43	19.24	29.50	48.17	16.66	24.06	11.10
Italy	21.60	36.39	17.01	28.62	56.75	15.62	18.28	9.31
Spain	30.83	34.04	11.87	29.01	58.05	22.17	12.36	7.27
Sweden	23.63	33.13	26.38	29.94	61.55	13.57	18.28	6.52
Switzerland	20.55	32.69	24.91	29.09	60.76	12.58	21.09	5.53

Biased survival expectations: difference between objective survival probability and subjective survival probability
Biased meteorological expectations: difference between reported probability of sunny day and meteorological predicted probability of sunny day.

- **By age cohort**

Age at baseline	N	LO>0 & ME>00		LO>0 & ME<0		LO<0 & ME>0		LO<0 & ME<0	
		Mean LO	Mean ME	Mean LO	Mean ME	Mean LO	Mean ME	Mean LO	Mean ME
50-64	55,609	36,88	20,25	33,70	-22,78	-21,01	19,73	-21,00	-27,24
		(0,008)	(0,006)	(0,009)	(0,008)	(0,013)	(0,013)	(0,012)	(0,016)
65-69	7,065	34,68	40,14	31,14	-19,53	-20,77	36,50	-22,25	-21,86
		(0,006)	(0,007)	(0,013)	(0,011)	(0,010)	(0,015)	(0,016)	(0,018)
70-74	4,404	34,41	44,77	31,07	-20,23	-20,95	40,43	-22,59	-21,65
		(0,007)	(0,009)	(0,016)	(0,014)	(0,011)	(0,017)	(0,020)	(0,023)
75-79	2,110	32,55	47,04	31,97	-15,48	-21,34	41,15	-24,40	-16,35
		(0,008)	(0,011)	(0,018)	(0,014)	(0,013)	(0,021)	(0,021)	(0,021)
80-84	617	31,55	45,46	31,59	-10,45	-22,44	39,15	-23,06	-10,49
		(0,010)	(0,015)	(0,021)	(0,015)	(0,015)	(0,028)	(0,027)	(0,025)
85-94	83	29,74	42,81	30,74	-3,55	-21,85	38,26	-24,96	-5,47
		(0,015)	(0,023)	(0,031)	(0,011)	(0,024)	(0,044)	(0,353)	(0,077)
95-100	12	30,75	45,86	30,13	-0,42	-24,37	36,65	-19,22	-2,08
		(0,025)	(0,037)	(0,079)	(0,005)	(0,045)	(0,066)	(0,272)	(0,029)
All	69,900	30,13	34,52	28,56	-13,32	-19,59	30,89	-19,94	-15,29
		(0,008)	(0,011)	(0,016)	(0,011)	(0,013)	(0,021)	(0,059)	(0,027)

Table B13. Effect of biased survival expectations (LO) and biased meteorological expectation (ME) over lifestyle variables

	Using biased survival expectations (IV- First-stage Table D.1)			Using meterological expectations (OLS)		
	M1	M2	M3	M1	M2	M3
Smokes now						
Biased expectations indicator > 0	-0.6288***	-0.6186***	-0.5390***	-0.0117**	-0.0111**	-0.0102**
	(0.2291)	(0.1981)	(0.1924)	(0.0046)	(0.0046)	(0.0046)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.4556	0.4565	0.4568	0.1546	0.1600	0.1634
F	994.820	987.895	990.151	1,338.748	972.895	901.434
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	42.65	41.38	49.68			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.69	25.88	26.02			
Sargan test chi2	2.56	2.12	1.96			
Smokes now						
Biased expectations indicator < 0	0.8364***	0.8245***	0.8180***	0.0145***	0.0141**	0.0135**
	(0.2080)	(0.2007)	(0.2004)	(0.0048)	(0.0048)	(0.0048)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2331	0.2337	0.2349	0.1801	0.1846	0.1854
F	353.321	329.516	328.189	5,090.501	3,446.851	3,032.646
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	41.90	42.05	42.12			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.13	25.41	25.67			
Sargan test chi2	2.77	2.87	2.80			
Has never smoked						
Biased expectations indicator > 0	1.0967***	1.0443**	1.0282**	0.0068**	0.0063**	0.0062**
	(0.4531)	(0.4532)	(0.4415)	(0.0027)	(0.0027)	(0.0027)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2961	0.2968	0.2972	0.1003	0.1040	0.1061
F	250.651	273.376	246.077	2,583.187	1,767.512	1,581.170
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

	16.42	17.50	17.87			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.56	25.22	5.98			
Sargan test chi2	2.75	2.48	2.40			
Has never smoked						
Biased expectations indicator < 0	-1.8102***	-1.5526***	-1.4846***	-0.0232**	-0.0224**	-0.0222**
	(0.4609)	(0.4682)	(0.4661)	(0.0091)	(0.0090)	(0.0097)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1931	0.1937	0.1952	0.1650	0.1842	0.2061
F	310.832	377.704	377.398	4,581.661	3,439.539	1,581.170
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	15.14	14.67	16.01			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.26	25.18	26.48			
Sargan test chi2	2.32	2.27	2.16			
Drinks everyday or 5/6 times per week						
Biased expectations indicator > 0	-0.9172***	-0.8690***	-0.8205***	-0.0353***	-0.0344***	-0.0343***
	(0.2281)	(0.2104)	(0.2076)	(0.0065)	(0.0062)	(0.0062)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2461	0.2470	0.2580	0.0980	0.1769	0.1790
F	380.129	476.718	477.715	384.154	701.655	690.038
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	22.63	19.87	20.08			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	28.49	28.12	30.05			
Sargan test chi2	1.65	1.51	1.33			
Drinks everyday or 5/6 times per week						
Biased expectations indicator < 0	1.0217***	0.9397***	0.9042***	0.0292**	0.0272**	0.0267**
	(0.3048)	(0.3012)	(0.3093)	(0.0104)	(0.0104)	(0.0104)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4412	0.4424	0.4437	0.1705	0.1788	0.1814
F	438.442	442.966	443.865	526.345	389.475	353.242
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	23.41	22.87	22.65			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.61	24.89	25.91			
Sargan test chi2	1.71	1.68	1.67			
Has not drunk during last 3 months or less than once per month						
Biased expectations indicator > 0	1.2542**	1.2264**	1.1891**	0.0554**	0.0545**	0.0542**
	(0.5594)	(0.5553)	(0.5558)	(0.0222)	(0.0222)	(0.0222)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.4981	0.5009	0.5129	0.2011	0.2064	0.2077
F	166.635	173.916	171.262	1,746.392	1,184.407	1,044.660
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	17.91	15.43	13.92			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.45	28.50	30.10			
Sargan test chi2	1.14	1.05	0.98			
Has not drunk during last 3 months or less than once per month						
Biased expectations indicator < 0	-0.6053***	-0.4803**	-0.4761**	-0.0173**	-0.0172**	-0.0167**
	(0.1945)	(0.1822)	(0.1435)	(0.0087)	(0.0076)	(0.0076)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4740	0.4953	0.4979	0.1995	0.1043	0.1071
F	106.225	102.295	100.993	766.692	530.640	477.959
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	21.19	22.23	23.76			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	31.12	30.03	29.78			
Sargan test chi2	2.11	2.21	2.32			
Sedentary lifestyle						
Biased expectations indicator > 0	-1.0182**	-1.0135**	-1.0098**	-0.0495**	-0.0411*	-0.0381*
	(0.4146)	(0.4155)	(0.4062)	(0.0222)	(0.0219)	(0.0218)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2985	0.3001	0.3015	0.1997	0.2198	0.2258
F	118.610	148.655	148.567	1,730.474	1,283.449	1,162.097
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	13.26	13.95	17.57			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.58	25.87	27.49			
Sargan test chi2	1.06	0.87	0.75			
Sedentary lifestyle						
Biased expectations indicator < 0	0.9650**	0.8442**	0.8421**	0.0837***	0.0751***	0.0744***
	(0.3490)	(0.3345)	(0.3015)	(0.0175)	(0.0166)	(0.0165)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1410	0.1435	0.1463	0.1666	0.2596	0.2632
F	87.083	195.183	191.445	211.356	341.849	337.413
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	17.79	17.23	17.48			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.67	26.89	27.05			
Sargan test chi2	1.26	1.12	1.19			
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes

Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year, number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP). Bootstrap with 1,000 replications Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.

Table B14. Effect of biased survival expectations (LO) and biased meteorological expectation (ME) over health-related variables

	Using biased survival expectations (IV- First-stage Table D.1)			Using meterological expectations (OLS)		
	M1	M2	M3	M1	M2	M3
Normal weight						
Biased expectations indicator > 0	0.9028***	0.7616***	0.7374***	0.0046***	0.0033***	0.0021**
	(0.2279)	(0.2537)	(0.2315)	(0.0011)	(0.0009)	(0.0007)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2860	0.2864	0.2878	0.1416	0.1831	0.1837
F	205.480	229.937	218.262	1,006.442	1,380.582	1,217.093
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	22.65	19.88	21.43			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	35.69	35.89	37.04			
Sargan test chi2	1.19	1.08	1.01			
Normal weight						
Biased expectations indicator < 0	-1.0093***	-0.7323**	-0.6583**	-0.0057**	-0.0040**	-0.0033**
	(0.2987)	(0.2736)	(0.2633)	(0.0019)	(0.0017)	(0.0017)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2411	0.2416	0.2441	0.1218	0.1773	0.1778
F	152.947	218.386	207.788	516.924	1,275.193	1,124.469
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	27.86	26.81	26.50			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	33.51	32.90	32.12			
Sargan test chi2	1.32	1.28	1.11			
Obese or overweight						
Biased expectations indicator > 0	-1.2110**	-1.1909**	-1.1445**	-0.0691**	-0.0604**	-0.0592**
	(0.396)	(0.358)	(0.357)	(0.0251)	(0.0248)	(0.0247)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.3527	0.4086	0.4286	0.2877	0.3022	0.3039
F	796.522	948.510	934.043	9,361.692	6,594.199	5,816.475
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	24.80	25.88	24.33			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	31.58	35.56	38.98			
Sargan test chi2	1.28	1.12	1.00			
Obese or overweight						
Biased expectations indicator < 0	1.7996***	1.5021***	1.2238**	0.0636**	0.0590**	0.0582**
	(0.554)	(0.559)	(0.555)	(0.0223)	(0.0220)	(0.0247)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.3205	0.3221	0.3291	0.2685	0.2811	0.3039
F	595.790	694.857	688.146	8,506.316	5,955.134	5,816.475
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	29.56	28.75	28.21			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	30.41	28.61	28.19			
Sargan test chi2	1.42	1.37	1.31			
Ten word listing (first recall)						
Biased expectations indicator > 0	3.3305***	2.8702***	2.1547***	0.7293***	0.4736***	0.4465***
	(0.711)	(0.703)	(0.686)	(0.1136)	(0.1102)	(0.1098)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.6790	0.7183	0.7502	0.6596	0.6738	0.6754
F	2,583.271	3,144.535	3,236.081	6,518.774	6,417.712	6,267.699
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	40.87	47.56	45.31			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.14	25.68	27.48			
Sargan test chi2	1.43	1.26	1.17			
Ten word listing (first recall)						
Biased expectations indicator < 0	-0.6965***	-0.6801***	-0.6611***	-0.0156**	-0.0139***	-0.0137***
	(0.1586)	(0.1949)	(0.1853)	(0.0042)	(0.0042)	(0.0042)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4407	0.4558	0.4667	0.3424	0.3453	0.3455
F	966.729	966.972	899.419	1,840.370	1,721.758	1,670.683
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	43.31	41.12	40.98			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.89	26.89	26.40			
Sargan test chi2	1.89	1.88	1.80			
Ten Word listing (second recall)						
Biased expectations indicator > 0	2.7465***	2.2495***	2.2579***	0.0046***	0.0038***	0.0035***
	(0.7131)	(0.7081)	(0.7064)	(0.0006)	(0.0005)	(0.0005)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.4214	0.4503	0.4871	0.3404	0.3878	0.3885
F	32.152	54.933	53.322	292.132	438.188	387.022
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	55.21	53.24	57.88			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.89	25.67	27.89			
Sargan test chi2	1.62	1.53	1.35			
Ten Word listing (second recall)						
Biased expectations indicator < 0	-2.4732***	-1.8469**	-1.8767**	-0.0034**	-0.0027**	-0.0021**
	(0.7882)	(0.7348)	(0.6536)	(0.0012)	(0.0010)	(0.0009)

N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4811	0.4821	0.4832	0.3203	0.3822	0.3834
F	17.590	46.451	44.790	143.582	407.714	362.376
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	57.27	56.34	56.15			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.90	25.91	26.39			
Sargan test chi2	1.89	1.84	1.75			
Maximum grip strength measure						
Biased expectations indicator > 0	7.0176***	6.0616**	6.0572**	0.1120***	0.0828**	0.0778**
	(2.093)	(2.647)	(2.168)	(0.0352)	(0.0339)	(0.0338)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.5446	0.5446	0.5456	0.3205	0.3427	0.3446
F	226.097	243.278	236.869	3,272.160	2,375.145	2,095.338
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	47.12	46.49	45.43			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.04	2890	30.27			
Sargan test chi2	1.07	0.98	0.81			
Maximum grip strength measure						
Biased expectations indicator < 0	-7.8529**	-7.250**	-6.1280**	-0.0643***	-0.0551**	-0.0411**
	(2.626)	(2.535)	(2.214)	(0.0189)	(0.0179)	(0.0178)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4549	0.5121	0.5171	0.2947	0.3110	0.3135
F	261.062	266.289	260.737	2,899.058	2,056.523	1,819.981
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	43.14	42.25	41.36			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.56	26.57	26.13			
Sargan test chi2	1.15	1.09	1.03			
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year, number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP).

Table B15. Effect of biased survival expectations (LO) and biased meteorological expectation (ME) over investment behaviour

	Using biased survival expectations (IV- First-stage Table D.1)			Using meterological expectations (OLS)		
	M1	M2	M3	M1	M2	M3
Bank accounts						
Biased expectations indicator > 0	-0.7648***	-0.7531***	-0.7188***	-0.0101***	-0.0078**	-0.0080**
	(0.1925)	(0.2208)	(0.2139)	(0.0034)	(0.0034)	(0.0033)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1415	0.1463	0.1555	0.0933	0.0960	0.1000
F	472.601	458.540	439.838	2,385.473	1,617.503	1,481.197
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	20.87	20.78	20.93			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.05	24.93	25.56			
Sargan test chi2	1.98	1.90	2.01			
Bank accounts						
Biased expectations indicator < 0	0.9519***	0.9277***	0.9175***	0.0079***	0.0058**	0.0059**
	(0.1790)	(0.2059)	(0.2001)	(0.0021)	(0.0021)	(0.0021)
N	19,842	19,842	19,842.	15,979	15,979	15,979
R^2	0.1526	0.1544.	01605	0.0421	0.0439	0.0443
F	106.557	108.158	100.499	1,017.662	698.768	618.141
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	39.90	39.13	40.15			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	31.57	33.41	34.07			
Sargan test chi2	1.38	1.26	1.11			
Government or corporate bonds						
Biased expectations indicator > 0	0.0950**	0.0942**	0.0845**	0.0363***	0.0355***	0.0352***
	(0.0378)	(0.0392)	(0.0325)	(0.0066)	(0.0066)	(0.0066)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1890	0.2089	0.2080	0.1012	0.1043	0.1046
F	308.975	306.252	289.932	2,608.859	1,772.503	1,557.134
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	19.68	21.15	22.43			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.48	28.49	29.59			
Sargan test chi2	1.85	1.74	1.63			
Government or corporate bonds						
Biased expectations indicator < 0	-0.1690**	-0.1538**	-0.1506**	-0.0443***	0-.0401***	-0.0322***
	(0.0833)	(0.0776)	(0.0773)	(0.0107)	(0.0107)	(0.0066)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1844	0,1890	0.1904	0.0774	0.0807	0.1046
F	198.929	192.150	185.140	1,944.628	1,337.700	1,557.134
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	41.06	41.12	41.55			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	30.75	33.07	30.96			
Sargan test chi2	1.42	1.46	1.53			
Stocks or shares (listed or unlisted in stockmarket)						
Biased expectations indicator > 0	-0.0987**	-0.0951**	-0.0930**	-0.0021**	-0.0018**	0.0017**
	(0.0041)	(0.0037)	(0.0034)	(0.0007)	(0.0008)	(0.0008)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2451	0.2472	0.2497.	0.1721	0.1737	0.1747
F	52.101	44.870	44.399	79.600	73.689	71.668
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	14.89	16.56	17.25			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.89	28.12	30.15			
Sargan test chi2	1.33	1.21	1.17			
Stocks or shares (listed or unlisted in stockmarket)						
Biased expectations indicator < 0	0.1620***	0.1584***	0.1550***	0.0178***	0.0121**	0.0116**
	(0.0527)	(0.0510)	(0.0492)	(0.0050)	(0.0051)	(0.00351)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2003	0.2033	0. .2075	0.0941	0.0978	0.0989
F	127.306	124.511	125.508	39.764	38.007	37.154
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	15.78	17.42	18.16			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	34.13	35.63	35.99			
Sargan test chi2	0.71	0.68	0.57			
Mutual funds or managed investment accounts						
Biased expectations indicator > 0	0.1746***	0.1675***	0.1562***	0.0086***	0.0072***	0.0067***
	(0.0504)	(0.0490)	(0.0487)	(0.0021)	(0.0022)	(0.0022)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1835	0.1905	0.1990	0.1518	0.1566	0.1583
F	129.095	128.607	128.803	126.050	90.690	81.767
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	17.56	19.85	17.02			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	26.87	27.12	27.89			
Sargan test chi2	1.25	1.16	1.08			
Mutual funds or managed investment accounts						

Biased expectations indicator < 0	-0.2877****	-0.2812***	-0.2620***	-0.0029***	-0.0028***	-0.0022**
	(0.0884)	(0.0862)	(0.0830)	(0.0009)	(0.0009)	(0.0009)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2187	0.2261	0.2280	0.1292	0.1318	0.1439
F	268.113	261.238	283.621	3,439.609	2,312.261	2,240.060
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	19.12	21.10	23.95			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	35.52	36.41	37.14			
Sargan test chi2	0.93	0.95	1.07			
Mutual funds: mostly in stocks						
Biased expectations indicator > 0	-0.2659**	-0.2438**	-0.2280**	0.0077**	0.0060**	0.0056*
	(0.1266)	(0.1081)	(0.1007)	(0.0028)	(0.0028)	(0.0028)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2145	0.2054	0.2015	0.1099	0.1106	0.1142
F	321.422	316.970	290.943	2,862.599	1,894.342	1,717.918
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	23.05	23.12	23.23			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	20.45	21.07	20.88			
Sargan test chi2	0.89	0.83	0.85			
Mutual funds: mostly in stocks						
Biased expectations indicator < 0	0.2115***	0.1898***	0.1222**	0.0110**	0.0086**	0.0086**
	(0.0574)	(0.0583)	(0.0581)	(0.0039)	(0.0039)	(0.0038)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2587	0.2632	0.12730	0.1587	0.1600	0.1142
F	499.326	492.068	466.396	4,372.017	2,901.209	1,717.918
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	29.88	32.14	32.45			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	27.15	27.78	28.99			
Sargan test chi2	0.76	0.62	0.53			
Mutual funds: half in stocks, half in bonds						
Biased expectations indicator > 0	-0.3843***	-0.3430***	-0.3667***	-0.0192***	-0.0173**	-0.0176**
	(0.0992)	(0.0953)	(0.0886)	(0.0075)	(0.0075)	(0.0075)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2233	0.2422	0.2350	0.0915	0.0940	0.0952
F	243.503	245.547	231.024	355.720	338.892	332.992
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	18.45	18.70	18.23			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	26.58	26.90	26.05			
Sargan test chi2	1.22	1.18	1.27			
Mutual funds: half in stocks, half in bonds						
Biased expectations indicator < 0	1.2878***	1.2716***	1.1901**	0.0190***	0.0149**	0.0147**
	(0.3270)	(0.3706)	(0.3493)	(0.0064)	(0.0064)	(0.0064)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2487	0.2501	0.2516	0.1207	0.1254	0.1275
F	152.517	170.215	159.798	484.941	468.263	462.255
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	47.34	44.06	42.39			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	30.12	29.51	30.62			
Sargan test chi2	1.90	1.82	1.93			
Mutual funds: mostly in bonds						
Biased expectations indicator > 0	0.5507**	0.4990**	0.4524**	0.0908***	0.0889***	0.0890**
	(0.2064)	(0.2185)	(0.1908)	(0.0137)	(0.0137)	(0.0136)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1843	0.2053	0.2244	0.1193	0.1220	0.1295
F	161.446	153.819	156.363	939.418	633.141	592.782
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	29.25	29.32	28.41			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.25	22.72	23.75			
Sargan test chi2	1.87	1.80	1.90			
Mutual funds: mostly in bonds						
Biased expectations indicator < 0	-0.5231**	-0.5166**	-0.5154**	-0.0059**	-0.0039**	-0.0046**
	(0.2320)	(0.2246)	(0.2109)	(0.0014)	(0.0014)	(0.0014)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1723	0.1789	0.1801	0.0458	0.0491	0.0507
F	143.468	141.115	140.335	333.169	235.376	212.725
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	32.27	28.86	29.84			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	32.62	33.20	32.09			
Sargan test chi2	1.23	1.19	1.28			
Individual retirement accounts						
Biased expectations indicator > 0	0.2314***	0.2219***	0.2080***	0.0106**	0.0107**	0.0104**
	(0.0422)	(0.0475)	(0.0481)	(0.0046)	(0.0046)	(0.0046)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2541	0.2574	0.2614	0.1067	0.1097	0.1106
F	177.505	175.603	172.946	828.622	561.533	495.501
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	24.67	22.05	22.97			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			

Stock & Yogo's test (critical value at 5%: 19.93)	21.58	22.18	22.94			
Sargan test chi2	0.74	0.61	0.52			
Individual retirement accounts						
Biased expectations indicator < 0	-0.3414***	-0.371***	-0.3253***	-0.0034**	-0.0033**	-0.0029**
	(0.0989)	(0.0950)	(0.0917)	(0.0015)	(0.0015)	(0.0014)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1745	0.1781	0.1856	0.0946	0.0987	0.0995
F	144.797	146.473	144.632	724.619	498.811	440.278
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	36.35	36.46	35.36			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	26.56	27.42	27.35			
Sargan test chi2	0.90	0.84	0.86			
Life insurance						
Biased expectations indicator > 0	-0.2772***	-0.2369**	-0.2170***	-0.1599***	-0.1481***	-0.1440***
	(0.0726)	(0.0711)	(0.0647)	(0.0321)	(0.0330)	(0.0329)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.3414	0.4183	0.4537	0.2046	0.2100	0.2152
F	39.322	37.313	37.724	31.454	29.283	28.989
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	37.58	35.76	34.14			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	28.65	29.21	29.60			
Sargan test chi2	0.73	0.85	0.97			
Life insurance						
Biased expectations indicator < 0	0.3679**	0.3570**	0.3420**	0.1214**	0.1176**	0.1190**
	(0.1265)	(0.1210)	(0.1217)	(0.0396)	(0.0305)	(0.0305)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2561	0.2502	0.2531	0.1401	0.1472	0.1527
F	92.556	95.944	98.928	19.925	19.019	19.056
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	27.31	27.95	27.39			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	35.20	35.59	37.23			
Sargan test chi2	1.27	1.18	1.09			
Mortgage						
Biased expectations indicator > 0	0.1637***	0.1614***	0.1572***	0.2039**	0.2104**	0.2113**
	(0.0463)	(0.0458)	(0.0453)	(0.0835)	(0.0842)	(0.0843)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2012	0.2078	0.2112	0.1580	0.1637	0.1660
F	116.258	114.058	112.582	42.050	30.301	27.479
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	21.41	23.35	23.87			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.89	26.90	27.08			
Sargan test chi2	0.71	0.68	0.57			
Mortgage						
Biased expectations indicator < 0	-0.1504**	-0.1444**	-0.1305*	-0.0201***	-0.0208***	-0.0198***
	(0.0629)	(0.0599)	(0.0567)	(0.0056)	(0.0056)	(0.0055)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2341	0.2374	0.2463	0.1250	0.1291	0.1401
F	103.852	102.026	106.996	991.108	675.336	649.295
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	20.31	23.31	20.11			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	36.41	37.02	40.06			
Sargan test chi2	1.36	1.23	1.19			
Other debts (excluding mortgage)						
Biased expectations indicator > 0	0.1598**	0.1563**	0.1436**	0.0313***	0.0290***	0.0280***
	(0.0584)	(0.0520)	(0.0527)	(0.0081)	(0.0081)	(0.0081)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2150	0.2192	0.2280	0.1145	0.1162	0.1193
F	131.755	123.257	123.566	896.992	598.711	539.706
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	32.56	31.41	32.09			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.52	25.72	26.19			
Sargan test chi2	1.37	1.25	1.10			
Other debts (excluding mortgage)						
Biased expectations indicator < 0	-0.1640**	-0.1623**	-0.1593**	-0.0209**	-0.0198**	-0.0215**
	(0.0769)	(0.0712)	(0.0725)	(0.0076)	(0.0076)	(0.0076)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2298	0.2510	0.2827	0.1547	0.1572	0.1611
F	129.386	123.872	129.875	1,269.505	849.454	765.046
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	18.16	20.18	21.05			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	35.13	36.38	37.99			
Sargan test chi2	1.89	1.78	1.67			
Total wealth amount (1,000PPP)(*)						
Biased expectations indicator > 0	0.2386***	0.2235**	0.2145**	0.0135**	0.0128**	0.0128*
	(0.0938)	(0.0948)	(0.0942)	(0.0053)	(0.0052)	(0.0052)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2813	0.3033	0.3057	0.1041	0.1086	0.1098
F	90.151	90.373	89.569	122.836	118.830	116.445

p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	30.58	30.90	31.06			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.17	25.72	23.98			
Sargan test chi2	1.40	1.44	1.51			
Total wealth amount (1,000PPP)(*)						
Biased expectations indicator < 0	-0.7998***	-0.6911***	-0.6455**	-0.0017***	-0.0016***	-0.0015***
	(0.2261)	(0.2145)	(0.2106)	(0.0003)	(0.003)	(0.003)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2714	0.2789	0.3091	0.1396	0.1447	0.1485
F	99.040	99.842	100.873	171.540	164.994	164.732
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	25.89	25.76	25.98			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	32.02	31.84	32.82			
Sargan test chi2	2.02	1.94	2.05			
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year and number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP). Bootstrap with 1,000 replications Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%. (*) Wealth is not included as explanatory variable in this regression.

Table B16. Effect of biased survival expectations (LO) and biased meteorological expectation (ME) over the amount of financial risk that the respondent is willing to take when making investments

	Using biased survival expectations (IV- First-stage Table D.1)			Using meterological expectations (OLS)		
	M1	M2	M3	M1	M2	M3
Take substantial risk expecting to earn substantial returns						
Biased expectations indicator > 0	0.0277***	0.0251***	0.0248***	0.0060***	0.0059***	0.0059***
	(0.0035)	(0.0044)	(0.0022)	(0.0019)	(0.0019)	(0.0019)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2127	0.2153	0.2146	0.0782	0.0788	0.0791
F	40.102	40.371	38.379	191.685	134.615	121.816
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	30.75	32.44	33.70			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.14	25.70	24.18			
Sargan test chi2	1.16	1.09	0.91			
Take substantial risk expecting to earn substantial returns						
Biased expectations indicator < 0	-0.0387***	-0.0302***	-0.0282***	-0.0161***	-0.0155***	-0.0153***
	(0.0021)	(0.0020)	(0.0079)	(0.0034)	(0.0034)	(0.0034)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2486	0.2477	0.2487	0.1410	0.1415	0.1424
F	126.595	122.422	116.730	991.257	659.660	590.479
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	28.76	29.98	30.16			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	33.78	34.89	34.09			
Sargan test chi2	1.45	1.51	1.34			
Take above average financial risks expecting to earn above average returns						
Biased expectations indicator > 0	1.1210***	1.1031***	1.0661***	0.0319***	0.0285***	0.0277***
	(0.3544)	(0.4031)	(0.3880)	(0.0077)	(0.0077)	(0.0076)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1619	0.1870	0.1844	0.1619	0.1650	0.1659
F	328.700	331.612	315.922	4,477.045	3,009.245	2,650.989
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	27.50	26.43	27.12			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	21.85	22.64	23.67			
Sargan test chi2	2.31	2.28	2.11			
Take above average financial risks expecting to earn above average returns						
Biased expectations indicator < 0	-1.0475***	-0.9896**	-0.9596**	-0.0579***	-0.0540***	-0.0530***
	(0.3583)	(0.4037)	(0.3897)	(0.0080)	(0.0080)	(0.0080)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2888	0.3176	0.3294	0.5174	0.5190	0.5198

F	1,680.102	1,722.838	1,606.077	24,852.998	16,429.099	14,421.279
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	26.78	28.14	25.33			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	22.08	23.35	26.87			
Sargan test chi2	2.67	2.80	2.78			
Take average financial risks expecting to earn average returns						
Biased expectations indicator > 0	-0.0771***	-0.0685***	-0.0673***	-0.0043**	-0.0042*	-0.0040*
	(0.0211)	(0.0208)	(0.0205)	(0.0021)	(0.0021)	(0.0021)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.3052	0.3054	0.3066	0.02170	0.2182	0.2183
F	15.947	16.112	15.938	48.553	37.571	33.295
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	29.14	28.47	27.03			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.58	21.41	22.90			
Sargan test chi2	1.75	1.57	1.41			
Take average financial risks expecting to earn average returns						
Biased expectations indicator < 0	0.1080***	0.1060***	0.1015***	0.0130**	0.0129**	0.0125**
	(0.0065)	(0.0083)	(0.0017)	(0.0060)	(0.0050)	(0.0050)
N	19,842	19,842	19,842	15,979	15,979	15,979
F	0.3271	0.3274	0.3258	0.2305	0.2320	0.2327
p	36.641	35.324	34.572	217.999	150.787	134.715
R^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	32.14	33.79	35.51			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.78	22.02	21.98			
Sargan test chi2	1.80	1.62	1.48			
Not willing to take any financial risks						
Biased expectations indicator > 0	-0.6822***	-0.5752***	-0.5598***	-0.0116**	-0.0114**	-0.0107**
	(0.1410)	(0.1648)	(0.1724)	(0.0048)	(0.0047)	(0.0047)
N	50,058	50,058	50,058	53,336	53,336	53,336
F	0.1724	0.2097	0.2147	0.1608	0.1654	0.1676
p	158.385	155.737	152.498	1.329.275	902.858	802.377
R^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	43.78	42.53	45.87			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	28.02	26.43	25.51			
Sargan test chi2	0.64	0.58	0.53			
Not willing to take any financial risks						
Biased expectations indicator < 0	0.4028***	0.3802***	0.3507***	0.0176**	0.0172**	0.0166**
	(0.0492)	(0.0783)	(0.0861)	(0.0079)	(0.0078)	(0.0078)
N	19,842	19,842	19,842	15,979	15,979	15,979
F	0.6005	0.6085	0.6109	0.5709	0.5735	0.5747
p	1,255.924	1,184.734	1,155.490	9,229.947	6,126.153	5,384.768
R^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	41.36	41.79	43.80			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.75	25.78	24.89			
Sargan test chi2	0.60	0.55	0.31			
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year and number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP). Bootstrap with 1,000 replications Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.

Table B17. Effect of biased survival expectations (LO) and biased meteorological expectation (ME) over social contacts

	Using biased survival expectations (IV- First-stage Table D.1)			Using meterological expectations (OLS)		
	M1	M2	M3	M1	M2	M3
Social contacts						
Biased expectations indicator > 0	0.2814***	0.2790***	0.2509***	0.4052**	0.3136**	0.3085**
	(0.0788)	(0.0699)	(0.0613)	(0.1506)	(0.1395)	(0.1388)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.6525	0.6681	0.6662	0.6491	0.6669	0.6681
F	1,457.312	1,436.108	1,387.521	1,831.377	1,828.466	1,780.234
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	27.05	28.67	25.13			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.56	24.25	24.60			
Sargan test chi2	1.17	1.10	0.98			
Social contacts						
Biased expectations indicator < 0	-0.0579***	-0.0565***	-0.0562***	-0.0136**	-0.0122***	-0.0117***
	(0.0166)	(0.0121)	(0.0125)	(0.0042)	(0.0042)	(0.0041)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.4986	0.4043	0.4039	0.3178	0.3214	0.3224
F	348.214	328.724	318.509	492.488	461.813	449.429
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	44.24	43.25	43.19			
Durbin test chi2(1) /p-value	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	29.80	29.17	29.04			
Sargan test chi2	1.67	1.54	1.49			
Feels things are out of control: often						
Biased expectations indicator > 0	-0.4981**	-0.4892**	-0.4635**	-0.0195***	-0.0187***	-0.0101*
	(0.2086)	(0.1933)	(0.2090)	(0.0055)	(0.0055)	(0.0053)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1012	0.1078	0.1122	0.0361	0.0381	0.0897
F	125.170	131.952	265.282	1,329.886	918.184	1,500.742
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	22.15	21.41	24.01			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.50	25.01	26.48			
Sargan test chi2	1.48	1.37	1.22			
Feels things are out of control: often						
Biased expectations indicator < 0	0.9489**	-0.8213**	0.7994**	0.0278***	0.0275***	0.0245***
	(0.3339)	(0.3195)	(0.2984)	(0.0051)	(0.0051)	(0.0045)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1217	0.1228	0.1362	0.0461	0.0504	0.1237
F	55.947	59.448	128.050	513.889	368.423	642.820
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	20.18	21.05	23.15			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.44	23.78	24.10			
Sargan test chi2	1.59	1.45	1.36			
Feels things are out of control: sometimes						
Biased expectations indicator > 0	-0.5256***	-0.2848**	-0.2255**	-0.0777***	-0.0763***	-0.0633***
	(0.1129)	(0.1074)	(0.1075)	(0.0089)	(0.0089)	(0.0088)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1544	0.1578	0.1610	0.0767	0.0778	0.0972
F	266.697	253.100	312.104	2,951.259	1,954.878	1,640.135
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	23.58	23.47	23.60			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	22.71	22.18	23.05			
Sargan test chi2	1.59	1.44	1.29			
Feels things are out of control: sometimes						
Biased expectations indicator < 0	0.5291***	0.4425**	0.4328**	0.0503**	0.0498**	0.0481**
	(0.1695)	(0.1653)	(0.1522)	(0.0217)	(0.0217)	(0.0215)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.1605	0.1641	0.1718	0.0784	0.0791	0.0943
F	120.351	116.192	117.113	905.714	595.760	474.465
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	19.73	19.81	20.03			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	25.30	25.65	27.02			
Sargan test chi2	1.45	1.23	1.17			
Feels things are out of control: rarely						
Biased expectations indicator > 0	-0.2902***	-0.2788***	-0.1894***	0.0012	-0.0013	-0.0038
	(0.0442)	(0.0349)	(0.0831)	(0.0097)	(0.0097)	(0.0097)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.1923	0.1975	0.1984	0.1086	0.1102	0.1150
F	388.476	369.710	372.668	4,329.949	2,870.911	1,978.499
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	19.12	19.65	19.71			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	35.11	35.17	36.23			
Sargan test chi2	1.31	1.23	1.11			
Feels things are out of control: rarely						
Biased expectations indicator < 0	1.1085***	0.9103**	0.6532**	0.0367	0.0352	0.0317
	(0.3191)	(0.3018)	(0.3274)	(0.0225)	(0.0225)	(0.0224)
N	19,842	19,842	19,842	15,979	15,979	15,979

R^2	0.2016	0.2057	0.2091	0.0950	0.0966	0.1064
F	128.663	130.370	135.482	1,117.617	741.814	542.637
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	23.41	23.50	24.65			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	34.34	34.19	34.76			
Sargan test chi2	1.17	1.24	1.21			
Feels things are out of control: never						
Biased expectations indicator > 0	0.6580***	0.4500**	0.4430**	0.0946***	0.0948***	0.0755***
	(0.1656)	(0.1487)	(0.1405)	(0.0098)	(0.0098)	(0.0096)
N	50,058	50,058	50,058	53,336	53,336	53,336
R^2	0.2105	0.2133	0.2178	0.1322	0.1335	0.1650
F	565.285	546.860	629.164	5,414.361	3,572.653	3,009.816
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	33.57	33.80	34.81			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	23.61	23.90	23.98			
Sargan test chi2	1.45	1.67	1.89			
Feels things are out of control: never						
Biased expectations indicator < 0	-0.3644***	-0.3335***	-0.2608***	-0.0586**	-0.0570**	-0.0551**
	(0.0510)	(0.0493)	(0.0480)	(0.0230)	(0.0229)	(0.0225)
N	19,842	19,842	19,842	15,979	15,979	15,979
R^2	0.2256	0.2279	0.2380	0.1073	0.1095	0.1457
F	119.510	114.634	131.859	1,279.643	852.819	777.083
P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Durbin test chi2(1) /p-value	31.11	31.15	31.43			
	(0.0000)	(0.0000)	(0.0000)			
Stock & Yogo's test (critical value at 5%: 19.93)	24.78	24.87	24.50			
Sargan test chi2	1.89	1.69	1.82			
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year and number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP).

Table B18. Effect of one standard deviation increase (or decrease) of biased survival expectations (LO) and biased meteorological expectation (ME) over social contacts

	One standard deviation increase of LO>0	One standard deviation increase of LO<0	One standard deviation increase of ME>0	One standard deviation increase of ME<0
Social contacts				
Effect in percentual points	6.0873 pp	-1.0060 pp	5.8276 pp	-0.1719 pp
With respect to the mean probability	38.7234 %	-6.3994 %	37.0710 %	-1.0933 %
Feels things are out of control: often				
Effect in percentual points	-11.2445 pp	14.3093 pp	-0.1908 pp	0.3599 pp
With respect to the mean probability	-152.5714 %	194.1555 %	-2.5887 %	4.8834 %
Feels things are out of control: sometimes				
Effect in percentual points	-5.4706 pp	7.7471 pp	-1.1957 pp	0.7066 pp
With respect to the mean probability	-28.2866 %	40.0575 %	-6.1827 %	3.6535 %
Feels things are out of control: rarely				
Effect in percentual points	-4.5948 pp	11.6923 pp	No signif	No signif
With respect to the mean probability	-21.4312 %	54.5349 %	-	-
Feels things are out of control: never				
Effect in percentual points	10.7472 pp	-4.6683 pp	1.4262 pp	-0.8094 pp
With respect to the mean probability	42.3618 %	-18.4009 %	5.6216 %	-3.1905 %

The effects for LO are obtained after estimating equation (4) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B17 (and on Table D.1 for first-stage regression). The effects for ME are obtained after estimating equation (8) with the explanatory variables included in specification M3. Estimated coefficients are reported on Table B17. Mean values for the dependent variables are reported on Table B6.

Appendix C. Discrete time-hazard model

Estimating biased survival expectations. The departure point of our analysis is the duration model of Jenkins (1995). He estimated a discrete-time hazard model to explain the effect of different covariates over the transition to retirement. The key point of his model is to use as unit of analysis the time of risk of an event, so that time periods prior to selection into the sample can be ignored. In this way, the estimation of the discrete-time hazard model is simplified to the estimation of a binary outcome (retired vs. not retired in the case of Jenkins (1995), or live vs. died, in our case). We create our sample of interest selecting alive individuals at each wave of SHARE following them through the next waves, until they are observed to decease or they are censored. Transition to death is estimated using a discrete-time hazard model which allows us to analyze the impact of socioeconomic characteristic and health indicators over the probability of not surviving.

To understand how the stock-sampling works, consider first individuals who are alive at wave 1. In the following waves, they may be still alive or have died. Using Jenkins' (1995) notation $t = \tau$ is the first observation of the stock sample, that is, the first period at which the individual is at risk of decease. By the time of the second interview (for the subsample of follow-up respondents), each individual may be still living (censored duration data $\delta_i = 0$) or have died (complete duration data $\delta_i = 1$). $t = \tau + s_i$ is the year of the decease if $\delta_i = 0$, and is the final year of our observation period if $\delta_i = 0$. Therefore, each respondent i contributes to s_i of life spell data. Given that the probability of dying at each time period *t* provides information on the duration distribution, the discrete-time hazard (h_{it}) is defined as:

$$h_{it} = P[T_i = t \,|T_i \geq t, \Omega_{it}] \qquad (C.1)$$

where Ω_{it} is a vector of explanatory variables[52] that varies with time and T_i is a random variable representing the time at which the decease is observed. Then, upon the restriction of being alive at the beginning of the spell, the conditional probability of observing an uncompleted spell (i.e., being alive at the next interview) is the following:

$$Pr[T_i > t | T_i > \tau - 1] = \prod_{t=\tau}^{\tau+s_i} (1 - h_{it}) \qquad (C.2)$$

The probability of dying between the initial observation (τ) and next interview is:

[52] Age, gender, level of education, body mass index, chronic illness, smoking and drinking habits, feeling depressed, days stayed at hospital during last year for surgery or medical tests, days stayed at hospital during last year due to mental health problems, number of days stayed in other institutions other than a hospital or a nursing home during last year (i.e., institutions for rehabilitation, convalescence), visits to general practitioner during last year, sedentary lifestyle, living alone, living in a rural area, being employed, adjusted income and wealth, country and time fixed effects. The definition of each one is shown on Table A1.

$$Pr[T_i > t|T_i = \tau - 1] = h_{i\tau+s_i} \prod_{t=\tau}^{\tau+s_i-1} (1 - h_{it}) = \frac{h_{i\tau+s_i}}{1 - h_{i\tau+s_i}} \prod_{t=\tau}^{\tau+s_i} (1 - h_{it}) \qquad (C.3)$$

And the log-likelihood function for the complete sample is:

$$\log L = \sum_{i=1}^{N} \delta_i log \left(\frac{h_{i\tau+s_i}}{1 - h_{i\tau+s_i}} \right) + \sum_{i=1}^{N} \sum_{t=\tau}^{\tau+s_i} log\,(1 - h_{it}) \qquad (C.4)$$

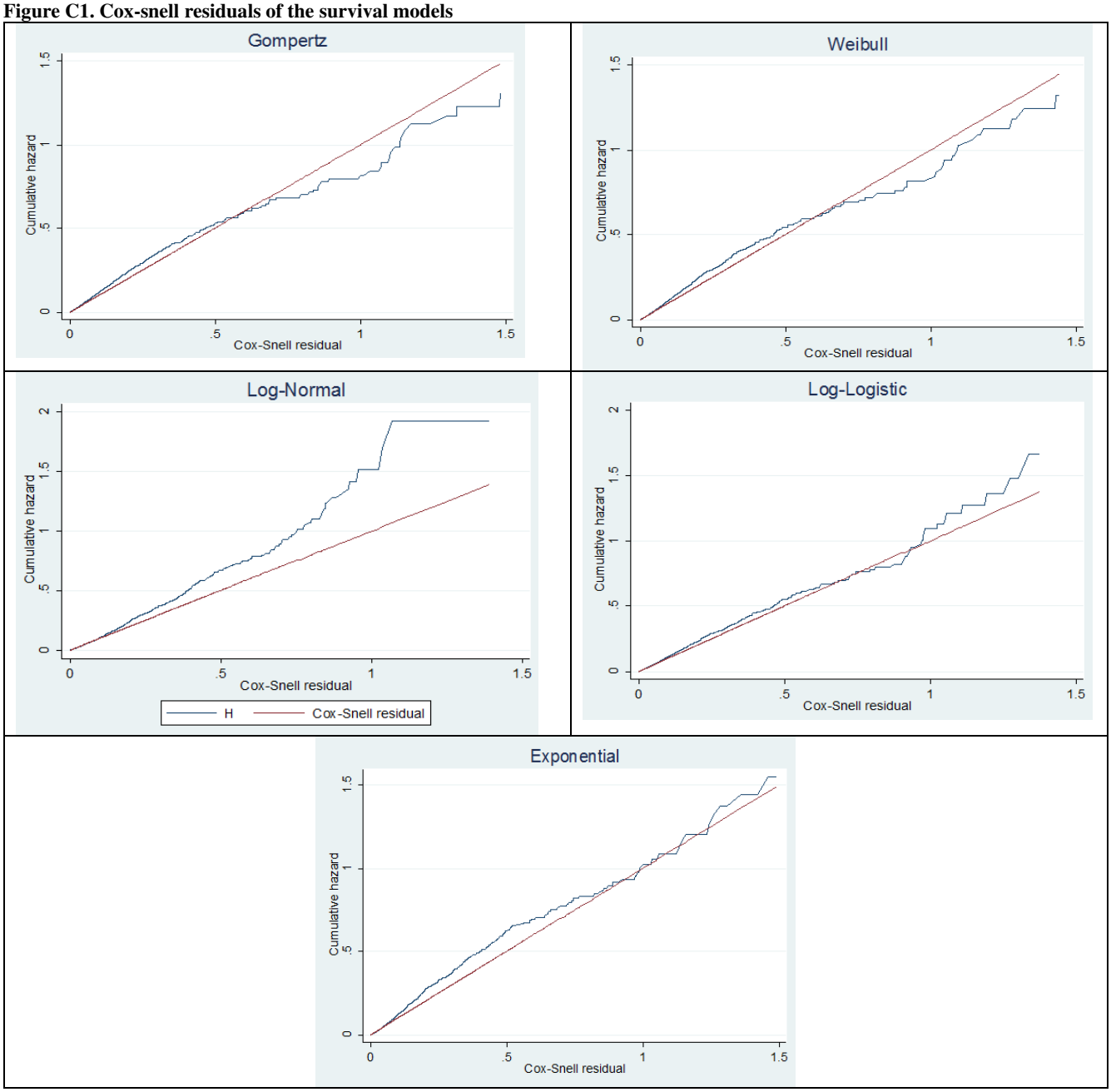
As we only observe individuals who are alive by the time of the first interview, we can simplify the log-likelihood by defining a binary indicator. For those who are alive at the end of the observation period: $y_{it} = 0$, for all periods. For those who die: $y_{it} = 0$ for all periods, except the last one in which case $y_{it} = 1$. It can also be expressed as: $y_{it} = 1$ if $t = \tau + s_i$ and $\delta_i = 1$ (for decease-observation) and $y_{it} = 0$ otherwise (for alive-observation). After introducing this binary indicator in the log-likelihood function we get:

$$\log L = \sum_{i=1}^{N} \sum_{t=\tau}^{\tau+s_i} y_i log \left(\frac{h_{i\tau+s_i}}{1 - h_{i\tau+s_i}} \right) + \sum_{i=1}^{N} \sum_{t=\tau}^{\tau+s_i} log\,(1 - h_{it}) \qquad (C.5)$$

Consequently, (C.5) seems like the log-likelihood function of a binary variable, where the unit of analysis is the spell period.

In the estimation of the discrete time hazard model, we have adjusted five different functional forms: exponential, Gompertz, Weibull, log-normal and log-logistic. To determine which one fits better to the data we have obtained the cox-snell residuals and two information criteria (AIC y BIC). Figure C1 shows the cox-snell residuals for all the functional forms. As the model fits better to the data, the cox-snell residuals seem like an exponential distribution with scale parameter equal to 1. For this purpose, we have estimated the Kaplan-Meier cumulative hazard function using the cox-snell residuals as the time variable and plotted them against the cox-snell residuals. We observe that the cox-snell residuals are nearer to the bisector of the first quadrant for the Weibull function. Additionally, the AIC and BIC attain the lowest values for the Weibull model (Table C1).

Figure C1. Cox-snell residuals of the survival models



All models include the same explanatory variables: age age-squared, gender, level of education, obese, overweight, chronic illness (high blood pressure, cancer, stroke, diabetes, heart attack, lung disease, Alzheimer), number of days stayed at hospital during last year (not due to mental health problems), number of days stayed in hospital due to mental health problems, number of days stayed in other institutions during last year, number of visits to general practitioner during last year, feeling depressed, drinking alcohol every day or 5-6 days per week, sedentary lifestyle, smokes now, has smoked before (not now), being employed, living alone, living in rural area/village/small town, adjusted income, adjusted wealth, country fixed effects, time fixed effects..

Table C1. Comparison of AIC and BIC statistics

	Gompertz	Weibull	Log-normal	Log-logistic	Exponential
Baseline model (N=69,900)					
AIC	64,248.669	61,098.945	65,622.216	65,032.539	61,974.631
BIC	64,249.044	61,099.320	65,622.591	65,032.915	61,974.997
Excluding focal responses					
AIC	67,462.102	64,154.892	68,904.327	68,285.166	65,074.363
BIC	67,462.496	64,155.286	68,904.721	68,285.561	65,074.747
Excluding respondents with erroneous responses to probabilistic question					
AIC	72,185.450	68,646.735	73,728.630	73,066.128	69,630.568
BIC	72,185.871	68,647.156	73,729.051	73,066.550	69,630.979
Including parental characteristics as explanatory variables in the baseline model					
AIC	60,120.778	57,365.864	61,315.941	60,803.308	58,133.776
BIC	60,121.104	57,366.193	61,316.267	60,803.635	58,134.097

All models include the same explanatory variables: age age-squared, gender, level of education, obese, overweight, chronic illness (high blood pressure, cancer, stroke, diabetes, heart attack, lung disease, Alzheimer), number of days stayed at hospital during last year (not due to mental health problems), number of days stayed in hospital due to mental health problems, number of days stayed in other institutions during last year, number of visits to general practitioner during last year, feeling depressed, drinking alcohol every day or 5-6 days per week, sedentary lifestyle, smokes now, has smoked before (not now), being employed, living alone, living in rural area/village/small town, adjusted income, adjusted wealth, country fixed effects, time fixed effects..

Table C2. Comparison of subjective survival probability and objective survival probability gender

	N	SSP (%)	OSP (%)	LO Difference SSP-OSP	Optimistic SSP>OSP (%)	Pesimistic SSP<OSP (%)
Deceased						
Men	1,142	43.01	16.17	26.84	74.33	25.67
		(33.75)	(23.10)	(34.42)		
Women	898	37.96	18.33	19.63	65.24	34.76
		(31.65)	26.03)	(34.89)		
All	2,040	40.63	17.18	23.44	70.04	29.96
		(32.87)	(24.54)	(34.82)		
Survivor						
Men	30,829	64.51	42.51	22.00	72.89	27.11
		(28.97)	(28.15)	(35.03)		
Women	37,031	62.10	52.67	9.43	60.90	39.10
		(29.87)	(29.55)	(33.85)		
All	67,860	63.21	47.99	15.21	63.41	36.59
		(29.48)	(29.35)	(34.96)		

SSP: subjective survival probability. OSP: objective survival probability
Standard errors between parenthesis. Using calibrated sampling weights

Table C3. Comparison of subjective survival probability and objective survival probability by country

Deceased subsample (by country)

	N	SSP (%)	OSP (%)	LO Difference SSP-OSP	Optimistic SSP>OSP (%)	Pesimistic SSP<OSP (%)
Austria	223	43.71	19.28	24.43	73.30	26.70
		(31.11)	(25.07)	(34.34)		
Belgium	260	38.54	18.29	20.26	66.85	33.15
		(31.64)	(25.13)	(33.74)		
Denmark	210	43.97	16.91	27.06	71.80	28.20
		(33.96)	(23.49)	(33.54)		
France	199	42.45	22.84	19.61	64.93	35.07
		(33.71)	(27.81)	(36.31)		
Germany	165	36.63	21.95	14.68	63.55	36.45
		(32.88)	(28.21)	(31.43)		
Italy	237	45.38	13.64	31.74	78.27	21.73
		(32.06)	(19.93)	(34.62)		
Spain	414	38.53	12.67	25.86	72.08	27.92
		(32.73)	(21.59)	(35.42)		
Sweden	211	31.64	12.62	19.02	60.45	39.55
		(34.34)	(21.10)	(31.74)		
Switzerland	121	42.20	19.46	22.74	68.30	31.70
		(30.98)	(26.29)	(36.25)		
Group I	651	42.11	13.18	28.94	75.32	24.68
		(32.53)	(20.72)	(35.10)		
Group II	459	41.82	22.10	19.72	65.24	34.76
		(33.37)	(27.41)	(35.86)		
Group III	433	43.82	18.31	25.50	72.69	27.31
		(32.27)	(24.44)	(34.01)		
Group IV	497	36.46	20.58	15.88	63.55	36.45
		(32.94)	(27.39)	(31.92)		
All countries	2,040	40.63	17.18	23.44	70.04	29.96
		(32.87)	(24.54)	(34.82)		

SSP: subjective survival probability. OSP: objective survival probability
Standard errors between parenthesis. Using calibrated sampling weights
Group I: Italy and Spain. Group II: Belgium and France. Group III: Austria and Denmark. Group IV: Germany, Sweden and Switzerland.

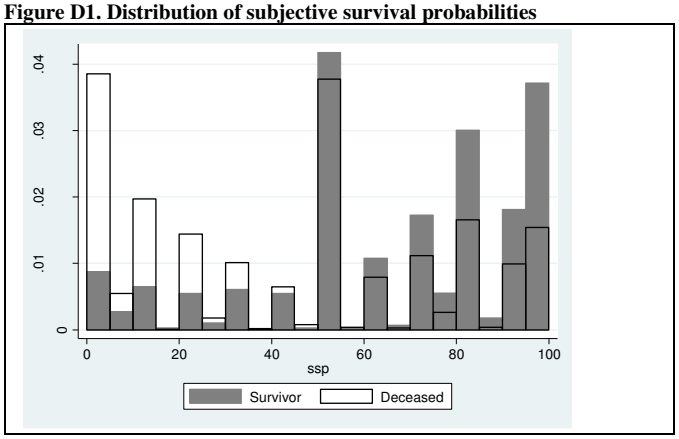
Survivors subsample (by country)

	N	SSP (%)	OSP (%)	LO Difference SSP-OSP	Optimistic SSP>OSP (%)	Pesimistic SSP<OSP (%)
Austria	7,680	64.48	45.24	19.24	71.23	28.77
		(29.36)	(28.32)	(33.13)		
Belgium	10,531	59.76	50.81	8.96	59.18	40.82
		(27.42)	(29.27)	(32.67)		
Denmark	6,227	71.26	46.98	24.28	77.92	22.08
		(27.89)	(28.45)	(32.19)		
France	8,231	61.48	51.94	9.53	60.38	39.62
		(28.99)	(29.28)	(33.64)		
Germany	6,997	60.91	51.71	9.20	60.85	39.15
		(29.80)	(28.94)	(34.04)		
Italy	7,516	65.56	46.29	19.27	70.29	29.71
		(30.13)	(29.38)	(36.40)		
Spain	7,751	64.57	38.39	26.19	76.82	23.18
		(29.19)	(28.26)	(34.42)		
Sweden	6,921	63.62	43.92	19.71	71.25	28.74
		(30.48)	(29.13)	(33.26)		
Switzerland	6,006	68.05	51.68	16.37	68.84	31.16
		(26.66)	(27.89)	(32.65)		
Group I	15,267	65.17	43.15	22.02	72.88	27.12
		(29.76)	(29.20)	(35.79)		
Group II	18,762	61.19	51.75	9.44	60.18	39.82
		(28.74)	(29.28)	(33.48)		
Group III	13,907	67.00	45.88	21.11	73.71	26.29
		(29.01)	(28.38)	(32.87)		
Group IV	19,924	61.93	50.96	10.97	62.70	37.30
		(29.64)	(28.94)	(34.01)		
All countries	67,860	63.21	47.99	15.21	63.41	36.59
		(29.48)	(29.35)	(34.96)		

SSP: subjective survival probability. OSP: objective survival probability
Standard errors between parenthesis. Using calibrated sampling weights
Group I: Italy and Spain. Group II: Belgium and France. Group III: Austria and Denmark. Group IV: Germany, Sweden and Switzerland.

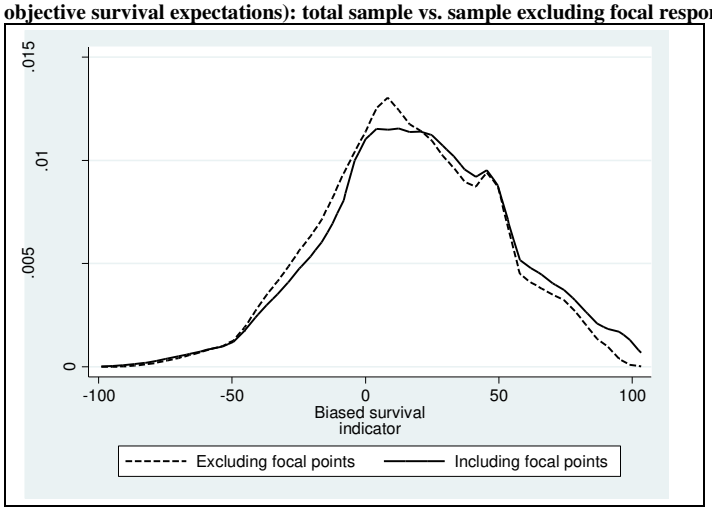
Appendix D. First-stage regressions and robustness checks

Figure D1. Distribution of subjective survival probabilities



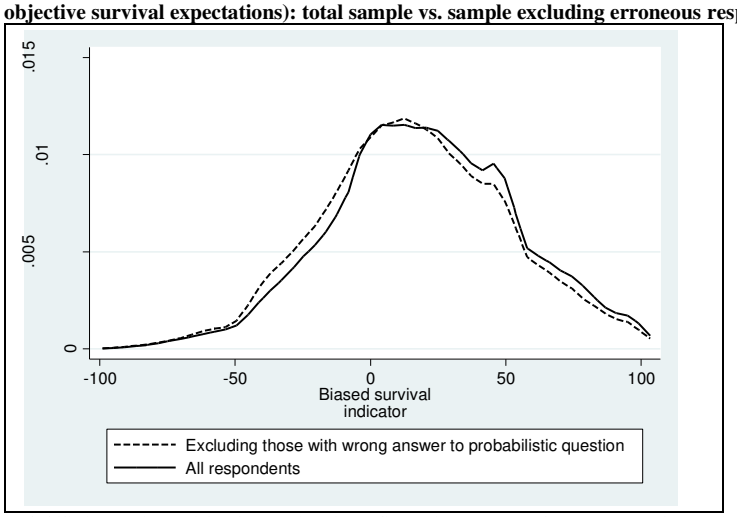
Note: 2,040 observations for the deceased subsample; 67,860 observations for the survivors subsample.

Figure D2. Kernel density function for the "biased survival indicator" (difference between subjective survival expectations and objective survival expectations): total sample vs. sample excluding focal responses



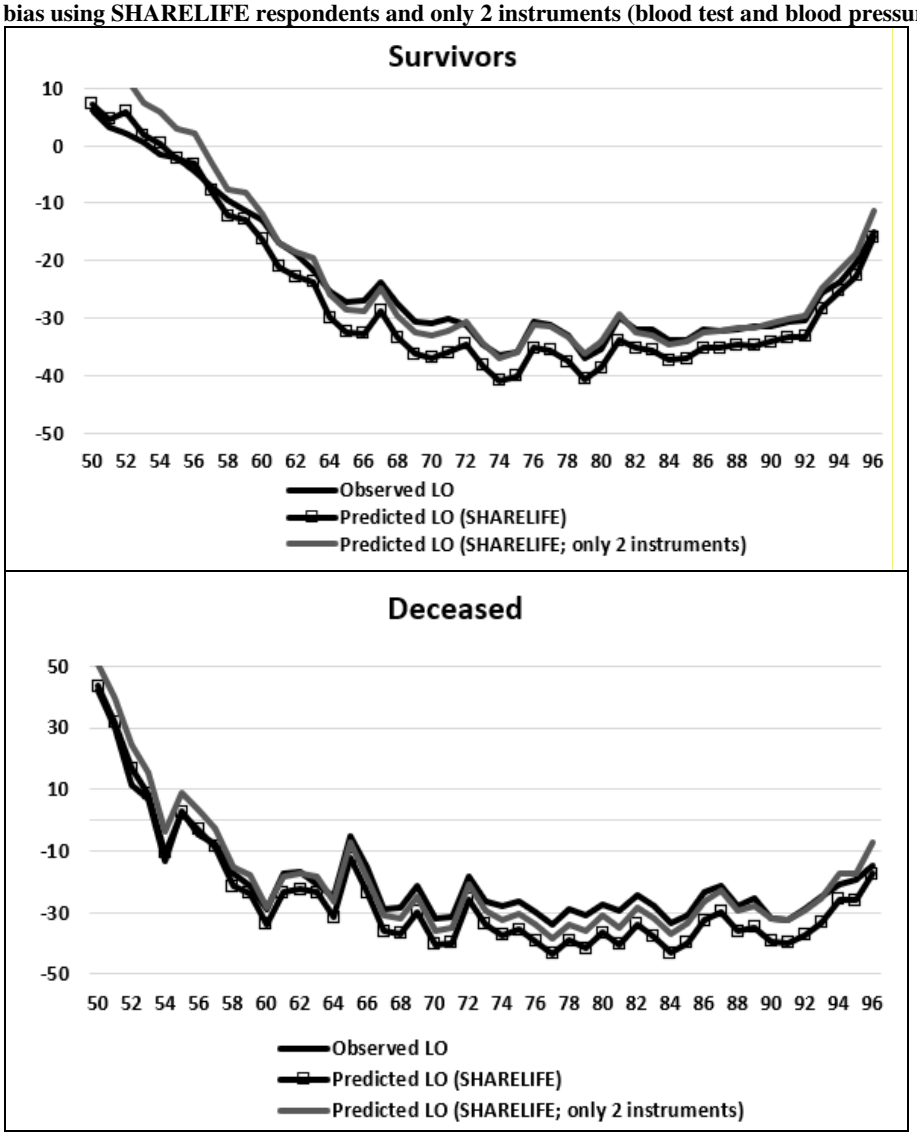
Including focal responses: N=69,900. Excluding focal responses (0, 50, 100): N=40,893.

Figure D3. Kernel density function for the "biased survival indicator" (difference between subjective survival expectations and objective survival expectations): total sample vs. sample excluding erroneous responses to probabilistic question.



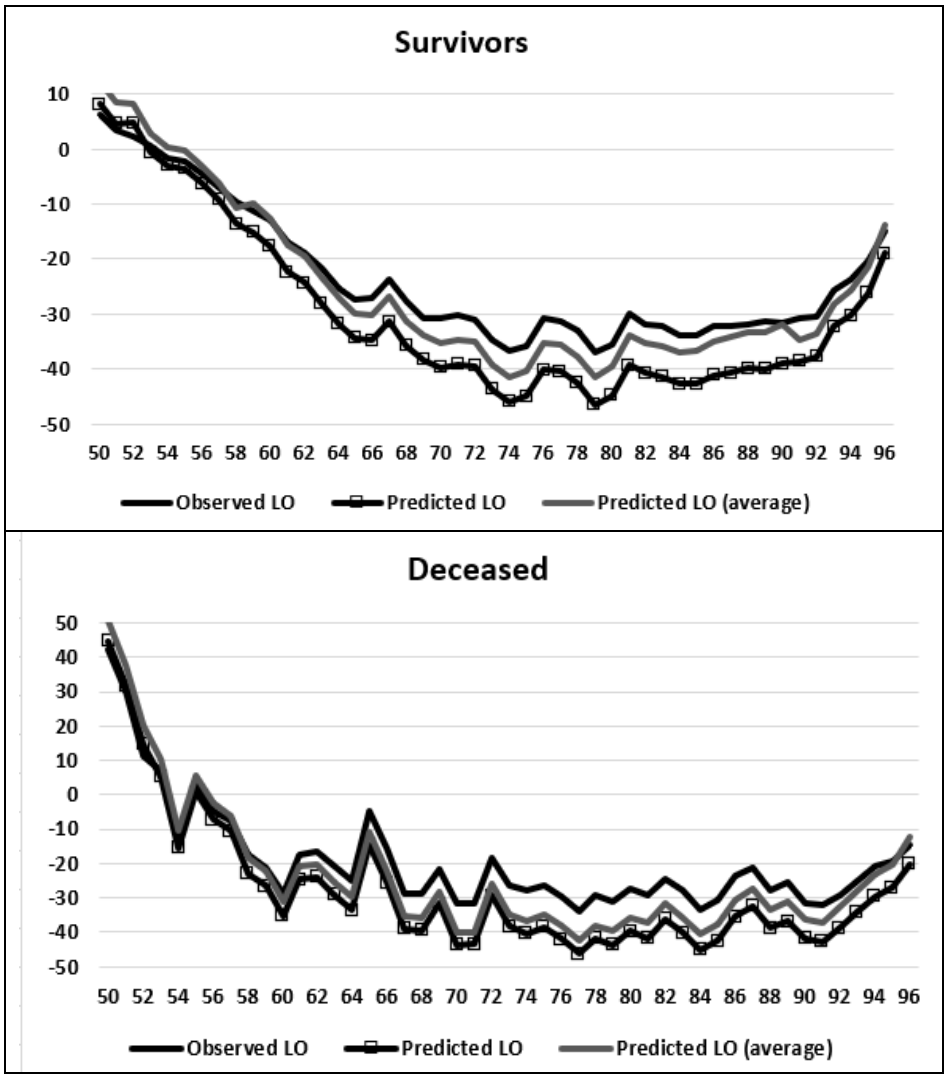
Probabilistic question: "If the chance of getting a disease is 10 per cent, how many people out of 1000 (one thousand) would be expected to get the disease?"
Total sample: N=69,900. Excluding erroneous responses to probabilistic question: N=30,183.

Figure D4. Comparison between observed bias, predicted bias using SHARELIFE respondents and all instruments and predicted bias using SHARELIFE respondents and only 2 instruments (blood test and blood pressure).



Note: Black straight line corresponds to observed LO (difference between objective and subjective survival expectations represented on Figure 1). Black line with squares corresponds to predicted LO using only SHARELIFE respondents and all instruments (parent´s age of deceased, blood test and blood pressure) (4th column of Table D1). Parent`s age of decease has been imputed for those fathers/mothers alive at the time of the survey. Grey straight line corresponds to predicted LO using only SHARELIFE respondents, but using only two instruments (blood test and blood pressure) (5th column of Table D1).

Figure D5. Comparison between observed bias, predicted bias and predicted bias taking the average for each respondent.



Note: Black straight line corresponds to observed LO (difference between objective and subjective survival expectations represented on Figure 1). Black line with squares corresponds to predicted LO using the whole sample of respondents (Table D1). Grey straight line corresponds to predicted LO using the whole sample of respondents (Table D1) and taking the mean for each individual.

Table D1. First stage regressions for the "biased survival" indicator (difference between SSP and OSP)

	Using the whole sample of respondents			Sample of respondents who have answered SHARELIFE	
	M1	M2	M3	M4	M5
Mother's age at decease [a]	0.0011***	0.0012***	0.0012***	0.0010***	-
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	-
Father's age at decease [b]	0.0015***	0.0017***	0.0017***	0.0014***	-
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	-
Mother alive	0.0111**	0.0114**	0.0114**	0.0107**	-
	(0.0051)	(0.0050)	(0.0050)	(0.0048)	-
Father alive	0.0242***	0.0248***	0.0248***	0.0235***	-
	(0.0047)	(0.0046)	(0.0046)	(0.0043)	-
Blood pressure checked last year	-	-	-	-11.6010***	-11.6511***
	-	-	-	(0.0034)	(0.0031)
Blood test last year	-	-	-	-8.09870**	-8.09865**
	-	-	-	(0.0030)	(0.0030)
Man	13.3946***	12.6625***	12.4184***	13.4264***	13.1261***
	(0.2152)	(0.2139)	(0.2215)	(0.2325)	(0.2322)
Age	7.8840***	7.7335***	7.6209***	8.5209***	8.2209***
	(0.1381)	(0.1354)	(0.1505)	(0.1775)	(0.1662)
Age^2	-0.0495***	-0.0480***	-0.0473***	-0.0494***	-0.0491***
	(0.0010)	(0.0010)	(0.0011)	(0.0022)	(0.0022)
Austria	8.2871***	8.3152***	8.3762***	7.4952***	7.1922***
	(0.4195)	(0.4093)	(0.4138)	(0.4246)	(0.1216)
Germany	0.9488**	2.0698***	2.1708***	2.2906***	2.2906***
	(0.4315)	(0.4223)	(0.4249)	(0.4139)	(0.1139)
Sweden	10.0911***	8.1773***	8.3323***	7.4424***	7.1121***
	(0.4284)	(0.4218)	(0.4486)	(0.4765)	(0.1662)
Spain	14.2872***	15.2159***	15.0797***	16.0999***	16.0999***
	(0.4305)	(0.4203)	(0.4282)	(0.4162)	(0.1162)
Italy	8.2729***	9.3606***	9.3638***	9.4546***	9.1216***
	(0.4241)	(0.4138)	(0.4176)	(0.4095)	(0.1092)
France	-1.0237**	-0.3794	-0.4362	-0.4570	-0.4265
	(0.4081)	(0.3981)	(0.4006)	(0.4126)	(0.1126)
Denmark	18.1013***	16.1364***	16.4724***	15.4967***	14.1966***
	(0.4402)	(0.4333)	(0.4563)	(0.4580)	(0.1280)
Switzerland	4.8486***	3.7264***	3.7549***	4.0549***	4.0219***
	(0.4574)	(0.4472)	(0.4498)	(0.4599)	(0.1299)
Wave 1-2	-1.9374***	-1.9344***	-2.0010***	-2.3420***	-2.3120***
	(0.2873)	(0.2995)	(0.3004)	(0.3713)	(0.3613)
Wave 2-4	-30.9290***	-30.2121***	-30.2523***	-32.6520***	-31.6120***
	(0.2878)	(0.2979)	(0.2982)	(0.3089)	(0.3089)
Wave 4-5	3.1023***	3.0839***	3.0392***	3.1402***	3.1102***
	(0.3235)	(0.3301)	(0.3303)	(0.4204)	(0.1201)
No education	6.3875***	9.5475***	10.0616***	11.1721***	11.1621***
	(0.5754)	(0.5662)	(0.5731)	(0.6042)	(0.6512)
Primary education	8.3876***	10.9498***	11.4072***	12.5561***	12.2261***
	(0.3472)	(0.3432)	(0.3523)	(0.3624)	(0.3621)
Lower secondary education	3.3884***	4.9869***	5.3111***	5.4222***	5.1272***
	(0.3547)	(0.3475)	(0.3527)	(0.4020)	(0.1020)
Upper secondary education	7.4730***	8.6269***	8.8285***	7.6266***	6.6266***
	(0.2889)	(0.2827)	(0.2856)	(0.2970)	(0.2965)
Post-secondary non-tertiary	10.9202***	11.3085***	11.4665***	12.4666***	12.1666***
	(0.6141)	(0.5975)	(0.5977)	(0.6045)	(0.6512)
Married/cohabiting	1.2261***	0.6770**	-1.0799**	-1.2003**	-1.2003**
	(0.3484)	(0.3400)	(0.4435)	(0.5046)	(0.2016)
Single	-0.2741	-0.4163	-0.7104	-0.7704	-0.7651
	(0.5362)	(0.5221)	(0.5236)	(0.5246)	(0.2216)
Separated/Divorced	2.2170***	2.0405***	1.7195***	2.0206***	2.0211***
	(0.4726)	(0.4601)	(0.4628)	(0.456)	(0.126)
Days in hospital (surgery/medical tests)		-0.1780***	-0.1797***	-0.2107***	-0.2106***
		(0.0138)	(0.0138)	(0.0146)	(0.0116)
Days in hospital (mental health)		-0.1118***	-0.1120***	-0.1220***	-0.1320***
		(0.0546)	(0.0541)	(0.0142)	(0.0112)
Days in other institutions		0.0645***	0.0642***	0.0682***	0.0690***
		(0.0215)	(0.0209)	(0.0222)	(0.0222)
Vistis to GP		-0.0903***	-0.0864***	-0.0891***	-0.0875***
		(0.0223)	(0.0223)	(0.0244)	(0.0211)
Employed			0.7910**	0.8020**	0.8033**
			(0.3805)	(0.4006)	(0.1006)
Unemployed			1.1400*	1.2400*	1.2100*
			(0.6498)	(0.6506)	(0.6206)
Retired			1.3713***	1.4024***	1.1221***
			(0.3353)	(0.3464)	(0.3161)
Lives alone			-2.4425***	-2.4711***	-2.4611***
			(0.3972)	(0.4002)	(0.1002)
Adjusted income (1,000 PPP)			66.417**	66.420**	66.390**
			(30.565)	(32.666)	(32.676)
Adjusted wealth (1,000 PPP)			1.1664***	1.2651***	1.2621***
			(0.3838)	(0.3646)	(0.3716)
Rural área, small village			-0.8729***	-0.9020***	-0.9110***
			(0.2135)	(0.2246)	(0.116)
Constant	-29.6850***	-29.8698***	-29.6701***	-12.6002***	-12.65102***
	(4.006)	(4.172)	(5.532)	(5.781)	(5.681)
N	69,990	69,990	69,990	33,269	33,269
R^2	0.3466	0.3818	0.3825	0.3712	0.3612

F	1,441.622	1,354.597	916.898	854.023	821.671
p	0.0000	0.0000	0.0000	0.0000	0.0000

Omitted variables: women, tertiary education, widow, relation with economic activity: houseworking and other situations, Belgium, waves 5-6. Bootstrap with 1,000 replications. Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%. Income and wealth are expressed in 1,000 units of Purchase Power of Parity and adjusted by household sized (dividing wealth and income by the square root of the number of household members).

[a] Recorded father's age at decease if father has died at the time of the survey. Predicted father's age at decease if father is alive at the time of the survey.

[a] Recorded mother's age at decease if mother has died at the time of the survey. Predicted mother's age at decease if mother is alive at the time of the survey.

Table D2. Effect of the instruments over the dependent variables. Reduced form equations.

	Smokes now	**Has never smoked**	**Drinks every day or 5/6 times per week**	**Has not drunk during last 3 months or less than once per month**
Father's age at decease	-0.0006	0.0039	0.0005	-0.0006
	(0.0006)	(0.0027)	(0.0007)	(0.0007)
Mother's age at decease	0.0003	-0.0040	-0.0000	-0.0002
	(0.0006)	(0.0037)	(0.0007)	(0.0007)
Father alive	-0.0230**	-0.0105	-0.0167	-0.0023
	(0.0105)	(0.0121)	(0.0122)	(0.0116)
Mother alive	-0.0229	0.1216	0.0261*	-0.0087
	(0.0182)	(0.0741)	(0.0141)	(0.0134)
N	69,990	69,990	69,990	69,990
r2	0.0754	0.2568	0.1241	0.2198
F	215.858	914.221	374.888	745.457
p	0.0000	0.0000	0.0000	0.0000
	Sedentary lifestyle	**Normal weight**	**Obese or overweight**	**Ten-word listing (first recall)**
Father's age at decease	0.0007	-0.0008	0.0010	-0.0007
	(0.0005)	(0.0008)	(0.0006)	(0.0026)
Mother's age at decease	-0.0011**	0.0008	-0.0009	0.0038
	(0.0005)	(0.0008)	(0.0006)	(0.0026)
Father alive	-0.0079	0.0026	-0.0051	0.0503
	(0.0082)	(0.0138)	(0.0110)	(0.0443)
Mother alive	0.0034	0.0095	-0.0166	-0.0561
	(0.0095)	(0.0161)	(0.0128)	(0.0515)
N	69,990	69,990	69,990	69,990
r2	0.2198	0.0839	0.0838	0.3328
F	745.374	242.317	242.057	1.319.381
p	0.0000	0.0000	0.0000	0.0000
	Ten word listing (second recall)	**Maximum grip strength measure**		
Father's age at decease	-0.0059*	0.0053		
	(0.0031)	(0.0120)		
Mother's age at decease	0.0086	0.0030		
	(0.0061)	(0.0120)		
Father alive	0.1507	0.2193		
	(0.0927)	(0.2076)		
Mother alive	-0.1097*	-0.0897		
	(0.0613)	(0.2414)		
N	69,990	69,990		
r2	0.3030	0.6691		
F	1,150.028	5,027.791		
p	0.0000	0.0000		
	Bank accounts	**Stocks or shares (listed or unlisted in stockmarket)**	**Government or corporate bonds**	**Mutual funds**
Father's age at decease	-0.0003	-0.0009**	-0.0002	-0.0004
	(0.0004)	(0.0005)	(0.0003)	(0.0005)
Mother's age at decease	0.0006	0.0001	0.0004	0.0007
	(0.0004)	(0.0005)	(0.0003)	(0.0005)
Father alive	-0.0056	0.0023	0.0032	0.0120
	(0.0068)	(0.0077)	(0.0057)	(0.0085)
Mother alive	0.0100	-0.0112	-0.0087	-0.0149
	(0.0079)	(0.0090)	(0.0067)	(0.0099)
N	69,990	69,990	69,990	69,990
r2	0.1812	0.1150	0.0541	0.1008
F	585.315	343.805	151.300	296.596
p	0.0000	0.0000	0.0000	0.0000
	Mutual funds: mostly in stocks	**Mutual funds: half in stocks, half in bonds**	**Mutual funds: mostly in bonds**	**Individual retirement accounts**
Father's age at decease	-0.0013	-0.0038	0.0025	0.0005
	(0.0026)	(0.0028)	(0.0033)	(0.0005)
Mother's age at decease	0.0004	0.0038	-0.0034	-0.0002
	(0.0026)	(0.0028)	(0.0022)	(0.0005)
Father alive	0.0186	-0.0027	-0.0160	0.0011
	(0.0388)	(0.0421)	(0.0345)	(0.0080)
Mother alive	0.0334	0.0258	-0.0591	-0.0159*
	(0.0448)	(0.0487)	(0.0399)	(0.0094)
N	69,990	69,990	69,990	69,990
r2	0.1698	0.1026	0.0954	0.1379
F	58.897	32.929	30.375	423.097
p	0.0000	0.0000	0.0000	0.0000
	Life insurance	**Mortgage**	**Other debts**	**Total wealth**
Father's age at decease	-0.0002	0.0003	0.0011	0.0004

	(0.0005)	(0.0005)	(0.0007)	(0.0004)
Mother's age at decease	0.0004	-0.0001	-0.0012	0.0000
	(0.0005)	(0.0005)	(0.0008)	(0.0004)
Father alive	-0.0009	0.0153	-0.0143*	-0.0052
	(0.0091)	(0.0094)	(0.0086)	(0.0075)
Mother alive	-0.0082	-0.0161	0.0136	-0.0199
	(0.0106)	(0.0109)	(0.0100)	(0.0108)
N	69,990	69,990	69,990	69,990
r2	0.1182	0.1711	0.0970	0.1306
F	354.477	546.123	284.024	397.560
p	0.0000	0.0000	0.0000	0.0000
	Take substantial risk expecting to earn substantial returns	**Take above average financial risks expecting to earn above average returns**	**Take average financial risks expecting to earn average returns**	**Not willing to take any financial risks**
Father's age at decease	0.0000	-0.0003	0.0004	0.0000
	(0.0001)	(0.0002)	(0.0006)	(0.0001)
Mother's age at decease	-0.0001	0.0003	-0.0002	-0.0001
	(0.0001)	(0.0002)	(0.0006)	(0.0001)
Father alive	-0.0017	0.0047	0.0091	-0.0017
	(0.0024)	(0.0042)	(0.0096)	(0.0024)
Mother alive	0.0019	-0.0007	-0.0175	0.0019
	(0.0028)	(0.0049)	(0.0111)	(0.0028)
N	69,990	69,990	69,990	69,990
r2	0.0126	0.0449	0.1680	0.0126
F	33.628	124.255	534.321	33.628
p	0.0000	0.0000	0.0000	0.0000

All regressions include gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year, number of visits to general practitioner during last year, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP), country fixed effects and wave fixed effects.

Table D3. Comparison of cognitive and economic related variables between focal respondents and non-focal respondents

	Focal response =0	Focal response =50	Focal response =100	No focal response
Deceased subsample				
Cognitive skills				
Ten word listing (first recall)	2.87	3.56	3.70	3.81
	(2.01)	(2.04)	(2.08)	(1.91)
Ten word listing (second recall)	1.60	2.00	1.98	2.33
	(1.77)	(1.89)	(1.91)	(1.94
Education (ISCED 1997 levels)				
None	15.18	14.59	12.79	11.24
Primary education	40.44	42.60	35.89	40.01
Lower secondary	14.69	12.43	6.44	14.77
Upper secondary	19.52	19.84	30.38	23.71
Post-secondary non tertiary	1.94	1.00	3.22	1.34
Tertiary education	8.22	9.54	11.28	8.94
Adjusted income (1,000 PPP) [a]	14.03	15.73	20.40	15.09
	(15.93)	(19.51)	(26.24	(22.81)
Adjusted wealth (1,000 PPP) [a]	112.87	138.14	128.63	128.72
	(161.91)	(172.22)	(183.44	(206.44)
N	350	385	139	1,166
Survivors subsample				
Cognitive skills				
Ten word listing (first recall)	4.01	4.99	5.30	5.05
	(1.88)	(1.80)	(1.73)	(1.81)
Ten word listing (second recall)	2.53	3.54	3.91	3.64
	(1.92)	(2.05)	(2.05)	(2.06)
Education (ISCED 1997 levels)				
None	10.09	6.30	4.35	6.30
Primary education	32.28	24.27	21.68	23.96
Lower secondary	16.43	15.34	16.34	16.11
Upper secondary	28.16	32.69	34.76	30.86
Post-secondary non tertiary	1.32	2.40	3.10	2.33
Tertiary education	11.72	19.00	19.78	20.44
Adjusted income (1,000 PPP) [a]	15.73	20.54	20.43	20.24
	(16.68)	(26.91)	(22.32)	(26.72)
Adjusted wealth (1,000 PPP) [a]	126.49	163.95	178.94	170.41
	(224.37)	(246.44)	(309.62)	(301.22)
N	2,420	14,152	11,561	39,727

[a] Income and wealth are expressed in 1,000 units of Purchase Power of Parity and adjusted by household sized (dividing wealth and income by the square root of the number of household members).Standard deviation between parenthesis.

For the deceased subsample and compared to non-focal respondents we show that: (i) focal respondents at zero attain lower scores for both ten-word listing recalls, have a higher percentage without primary education and lower wealth, (ii) focal respondents at 100 attain a lower score for the second ten-word listing recall, have a higher percentage with post-secondary education, higher income and higher wealth. For the survivors' subsample, and compared to non-focal respondents: (i) focal respondents at 100 achieve higher scores for both ten-word listing recalls and show similar levels of income and wealth; (ii) the opposite is true for focal respondents at 0. For both subsamples, ten-word listing scores, income and wealth of focal-respondents at 50 resemble to those of non-focal respondents. However, the distribution of educational levels is more akin to that of focal respondents at 0 for the deceased subsample and more similar to that of non-focal respondents for the survivors' subsample.

Table D4. Subsample of respondents who have answered SHARELIFE. Replication of regressions shown on Tables B.13 to B.17.
Regressions after instrumenting the "biased survival" indicator" (difference between subjective survival probability and objective survival probability) introducing as instruments blood pressure checked last year and blood test done last year.
Reported coefficients correspond to the variable "Biased survival expectations" after IV regression.

	LO > 0			LO < 0		
Dependent variable	M1	M2	M3	M1	M2	M3
Smokes now	-0.6090**	-0.5995**	-0.5245**	0.8714***	0.8585***	0.8515***
	(0.2317)	(0.2001)	(0.1943)	(0.2102)	(0.2027)	(0.2024)
Has never smoked	1.1568**	1.0988**	1.0811**	-1.6464***	-1.4321***	-1.3744***
	(0.4634)	(0.4635)	(0.4512)	(0.4715)	(0.4792)	(0.4770)
Drinks every day or 5/6 times per week	-0.8751***	-0.8312***	-0.7868***	1.0739***	0.9839***	0.9451***
	(0.2307)	(0.2126)	(0.2098)	(0.3094)	(0.3057)	(0.3141)
Has not drunk during last 3 months or less than once per month	1.3329**	1.3016**	1.2598**	-0.5870**	-0.4688**	-0.4648**
	(0.5750)	(0.5707)	(0.5712)	(0.1964)	(0.1839)	(0.1445)
Sedentary lifestyle	-0.9664**	-0.9621**	-0.9588**	1.0116**	0.8798**	0.8776**
	(0.4232)	(0.4241)	(0.4144)	(0.3551)	(0.3401)	(0.3060)
Normal weight	0.9436***	0.7906***	0.7646***	-0.9584**	-0.7055**	-0.6366**
	(0.2305)	(0.2569)	(0.2342)	(0.3032)	(0.2773)	(0.2668)
Obese	-1.1377**	-1.1200*	-1.0790**	1.9615***	1.6149**	1.2987**
	(0.4038)	(0.3644)	(0.3634)	(0.5693)	(0.5746)	(0.5704)
Ten word listing first recall	3.8851***	3.2821***	2.3868***	-0.6722***	-0.6570***	-0.6392***
	(0.7363)	(0.7277)	(0.7095)	(0.1599)	(0.1968)	(0.1870)
Ten word listing second recall	3.1237***	2.5025***	2.5128***	-2.1674**	-1.6763**	-1.7006**
	(0.7385)	(0.7332)	(0.7314)	(0.8193)	(0.7618)	(0.6750)
Maximum grip strength measure	7.4799***	5.8987**	5.8917**	-6.7695**	-6.6219**	-6.2504**
	(2.3120)	(2.9973)	(2.4030)	(2.9708)	(2.8563)	(2.4591)
Social contacts	0.2854***	0.2829***	0.2540***	0.0581**	-0.0563***	-0.0560***
	(0.0791)	(0.0701)	(0.0615)	(0.0166)	(0.0121)	(0.0125)
Bank accounts	-0.7356***	-0.7247***	-0.6930***	0.9972***	0.9707***	0.9596***
	(0.1944)	(0.2232)	(0.2162)	(0.1806)	(0.2080)	(0.2021)
Government or corporate bonds	0.0955**	0.0946**	0.0849**	-0.1676**	-0.1526**	-0.1495**
	(0.0379)	(0.0393)	(0.0326)	(0.0836)	(0.0779)	(0.0776)
Stocks or shares listed or unlisted in stockmarket	-0.0982**	-0.0946**	-0.0926**	0.1633***	0.1597***	0.1562**
	(0.0041)	(0.0037)	(0.0034)	(0.0528)	(0.0511)	(0.0493)
Mutual funds or managed investment accounts	0.1761***	0.1689***	0.1574***	-0.2836***	-0.2772***	-0.2586***
	(0.0505)	(0.0491)	(0.0488)	(0.0888)	(0.0866)	((0.0833)
Mutual funds: mostly in stocks	-0.2624**	-0.2408**	-0.2254**	0.2137***	0.1916***	0.1229***
	(0.1274)	(0.1087)	(0.1012)	(0.0576)	(0.0585)	(0.0583)
Mutual funds: half in stocks. half in bonds	-0.3769***	-0.3371***	-0.3600***	1.3707***	1.3524***	1.2609***
	(0.0997)	(0.0958)	(0.0890)	(0.3323)	(0.3775)	(0.3554)
Mutual funds: mostly in bonds	0.5659**	0.5115**	0.4626**	-0.5094**	-0.5033**	-0.5021**
	(0.2085)	(0.2209)	(0.1926)	(0.2347)	(0.2271)	(0.2131)
Individual retirement accounts	0.2341***	0.2244***	0.2102***	-0.3356***	-0.3641***	-0.3200***
	(0.0423)	(0.0476)	(0.0482)	(0.0994)	(0.0955)	(0.0921)
Life insurance	-0.2734***	-0.2341***	-0.2146***	0.3747**	0.3634**	0.3478**
	(0.0729)	(0.0714)	(0.0649)	(0.1273)	(0.1217)	(0.1224)
Mortgage	0.1650***	0.1627***	0.1584***	-0.1493***	-0.1434**	-0.1296*
	(0.0464)	(0.0459)	(0.0454)	(0.0632)	(0.0629)	(0.0570)
Other debts	0.1611**	0.1575**	0.1446**	-0.1627**	-0.1610**	-0.1580**
	(0.0586)	(0.0521)	(0.0528)	(0.0772)	(0.0715)	(0.0728)
Total wealth amount 1.000PPP	0.2362***	0.2158**	0.2168***	-0.7678**	-0.6672**	-0.6247**
	(0.0942)	(0.0952)	(0.0946)	(0.2287)	(0.2168)	(0.2128)
Take substantial risk expecting to earn substantial returns	0.0277***	0.0251***	0.0248***	-0.0386***	-0.0302***	-0.0282***
	(0.0035)	(0.0044)	(0.0022)	(0.0021)	(0.0020)	(0.0079)
Take above average financial risks expecting to earn above average returns	1.1838***	1.1639***	1.1229***	-0.9926**	-0.9406**	-0.9136**
	(0.3607)	(0.4112)	(0.3955)	(0.3647)	(0.4118)	(0.3973)
Take average financial risks expecting to earn average returns	-0.0768***	-0.0683***	-0.0671***	0.1086***	0.1066***	0.1020***
	(0.0211)	(0.0208)	(0.0205)	(0.0065)	(0.0083)	(0.0017)
Not willing to take any financial risks	-0.6589***	-0.5587***	-0.5441***	0.4109***	0.3874***	0.3568***
	(0.1420)	(0.1662)	(0.1739)	(0.0493)	(0.0786)	(0.0865)
Education, marital status	Yes	Yes	Yes	Yes	Yes	Yes
Days at hospital for surgery/tests, due to mental problems, days at other institutions, visits to GP	No	Yes	Yes	No	Yes	Yes
Relation with economic activity, lives alone, lives in rural area, income and wealth	No	No	Yes	No	No	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

M1 includes optimistic indicator (after first-stage regression), gender, age, age squared, level of education (no education, primary education, lower secondary education, higher secondary education, post-secondary non-tertiary education and tertiary education (omitted)), marital status (married/cohabiting, separated/divorced, single and widow (omitted)), country fixed effects and wave fixed effects. M2 includes the same explanatory variables than M1, and additionally, number of days stayed at hospital during last year (surgery or medical tests), number of days stayed at hospital during last year (mental health), number of days stayed at other institutions during last year and number of visits to general practitioner during last year. M3 includes the same explanatory variables than M2, an additionally, relation with economic activity (employed, unemployed, retired, houseworking and other situations (omitted)), living in a rural area/village/small town, living alone, wealth and income (adjusted by household size and in 1,000 PPP). Bootstrap with 1,000 replications Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%.
Results of the Durbin test, Stock and Yogo test and Sargan test are not shown due to space constraints but are available upon request. Results indicate that OLS estimations are not consistent and confirm the validity of the instruments used.
N=33,269; 21,313 for the sample with LO>0 and 11,956 for the sample with LO <0.

Table D5. Comparison between current and lagged instruments in first-stage regression for "biased survival"

	Using the whole sample of respondents	Sample of respondents who have a lagged observations	
		With current instruments	With lagged instruments
Mother's age at decease [a]	0.0012***	0.0013***	
	(0.0001)	(0.0001)	
Father's age at decease [b]	0.0017***	0.0019***	
	(0.0001)	(0.0001)	
Mother alive	0.0114**	0.0127**	
	(0.0050)	(0.0056)	
Father alive	0.0248***	0.0275***	
	(0.0046)	(0.0051)	
Mother's age at decease (lagged) [a]			0.0017***
			(0.0001)
Father's age at decease (lagged) [b]			0.0024***
			(0.0001)
Mother alive (lagged)			0.0118**
			(0.0052)
Father alive (lagged)			0.0256***
			(0.0047)
Man	12.4184***	13.7844***	12.8195***
	(0.2215)	(0.2459)	(0.2287)
Age	7.6209***	8.4592***	7.8671***
	(0.1505)	(0.1671)	(0.1554)
Age^2	-0.0473***	-0.0525***	-0.0488***
	(0.0011)	(0.0012)	(0.0011)
Austria	8.3762***	9.2976***	8.6468***
	(0.4138)	(0.4593)	(0.4272)
Germany	2.1708***	2.4096***	2.2409***
	(0.4249)	(0.4716)	(0.4386)
Sweden	8.3323***	9.2489***	8.6014***
	(0.4486)	(0.4979)	(0.4631)
Spain	15.0797***	16.7385***	15.5668***
	(0.4282)	(0.4753)	(0.4420)
Italy	9.3638***	10.3938***	9.6663***
	(0.4176)	(0.4635)	(0.4311)
France	-0.4362	-0.4842	-0.4503
	(0.4006)	(0.4447)	(0.4135)
Denmark	16.4724***	18.2844***	17.0045***
	(0.4563)	(0.5065)	(0.4710)
Switzerland	3.7549***	4.1679***	3.8762***
	(0.4498)	(0.4993)	(0.4643)
Wave 1-2	-2.0010***	-2.2211***	-2.0656***
	(0.3004)	(0.3334)	(0.3101)
Wave 2-4	-30.2523***	-33.5801***	-31.2294***
	(0.2982)	(0.3310)	(0.3078)
Wave 4-5	3.0392***	3.3735***	3.1374***
	(0.3303)	(0.3666)	(0.3410)
No education	10.0616***	11.1684***	10.3866***
	(0.5731)	(0.6361)	(0.5916)
Primary education	11.4072***	12.6620***	11.7757***
	(0.3523)	(0.3911)	(0.3637)
Lower secondary education	5.3111***	5.8953***	5.4826***
	(0.3527)	(0.3915)	(0.3641)
Upper secondary education	8.8285***	9.7996***	9.1137***
	(0.2856)	(0.3170)	(0.2948)
Post-secondary non-tertiary	11.4665***	12.7278***	11.8369***
	(0.5977)	(0.6634)	(0.6170)
Married/cohabiting	-1.0799**	-1.1987***	-1.1148***
	(0.4435)	(0.4923)	(0.4578)
Single	-0.7104	-0.7885	-0.7333
	(0.5236)	(0.5812)	(0.5405)
Separated/Divorced	1.7195***	1.9086***	1.7750***
	(0.4628)	(0.5137)	(0.4777)
Days in hospital (surgery/medical tests)	-0.1797***	-0.1995***	-0.1855***
	(0.0138)	(0.0153)	(0.0142)
Days in hospital (mental health)	-0.1120***	-0.1243***	-0.1156***
	(0.0541)	(0.0601)	(0.0558)
Days in other institutions	0.0642***	0.0713***	0.0663***
	(0.0209)	(0.0232)	(0.0216)
Vistis to GP	-0.0864***	-0.0959***	-0.0892***
	(0.0223)	(0.0248)	(0.0230)
Employed	0.7910**	0.8780**	0.8165**
	(0.3805)	(0.4224)	(0.3928)
Unemployed	1.1400*	1.2654*	1.1768*
	(0.6498)	(0.7213)	(0.6708)
Retired	1.3713***	1.5221***	1.4156***
	(0.3353)	(0.3722)	(0.3461)
Lives alone	-2.4425***	-2.7112***	-2.5214***
	(0.3972)	(0.4409)	(0.4100)
Adjusted income (1,000 PPP)	66.417**	73.7229**	68.5623**
	(30.565)	(33.9272)	(31.5522)
Adjusted wealth (1,000 PPP)	1.1664***	1.2947***	1.2041***
	(0.3838)	(0.4260)	(0.3962)

Rural área, small village	-0.8729***	-0.9689***	-0.9011***
	(0.2135)	(0.2370)	(0.2204)
Constant	-29.6701***	-32.9338***	-30.6284***
	(5.532)	(6.1405)	(5.7107
N	69,990	17,223	17,223
R^2	0.3825	0.175	0.176
F	916.898	129.828	130.924
p	0.0000	0.000	0.000

Omitted variables: women, tertiary education, widow, relation with economic activity: houseworking and other situations, Belgium, waves 5-6. Bootstrap with 1,000 replications. Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%. Income and wealth are expressed in 1,000 units of Purchase Power of Parity and adjusted by household sized (dividing wealth and income by the square root of the number of household members).

[a] Recorded father's age at decease if father has died at the time of the survey. Predicted father's age at decease if father is alive at the time of the survey.

[a] Recorded mother's age at decease if mother has died at the time of the survey. Predicted mother's age at decease if mother is alive at the time of the survey.

Appendix E

Plausible exogeneity of the instruments:

The departure point is equation (2) in which we explicitly distinguish between the potential endogenous variable (BSE_{ict}) and the other explanatory variables:

$$IND_{ict} = \alpha_0 + \alpha_1 BSE_{ict} + \alpha_2 X_{ict} + T_t + C_c + \epsilon_{ict} \qquad (C.1)$$

The first method is the γ-Local-to-Zero (LTZ) approximation bounds method, which introduces some bias term (or exogeneity error) in the approximate distribution of $\widehat{\alpha_1}$. In other words, it relaxes the exclusion restriction requirement by allowing for uncertainty in the priors about γ. According to Conley et al., (2012) this method provides robustness with respect to 2SLS approach under the assumption that the priors are correct.

$$\widehat{\alpha_1} \sim N(\lambda, \Sigma_{2SLS}) + \Pi\gamma \qquad (C.2)$$
$$\gamma \sim \Upsilon$$
$$\Pi = (X'Z(Z'Z)^{-1}Z'X)^{-1}X'Z$$

where Υ is the distribution of γ, Σ_{2SLS} is the variance-covariance matrix for the estimation 2SLS and Z is the vector of instrumental variables. The distribution of the exogeneity error ($\widehat{\Pi\gamma}$) depends on the sample moments of the matrix Π, which shows a negative relationship between the strength of the instrumental variable and the exogeneity error, and the distribution Υ. This exogeneity error is an indicator of the deviations of $\widehat{\alpha_1}$ from the asymptotic standard distribution of the 2SLS estimator due to non-fulfilment of the exclusion restriction assumption.

It is assumed that γ follows a normal distribution with mean μ_γ and variance-covariance matrix Ω_γ. Then, the asymptotic distribution $\widehat{\alpha_1}$ of can be expressed as:

$$\widehat{\alpha_1} \sim N\left(\lambda + \Pi\mu_\gamma, \Sigma_{2SLS} + \Pi\Omega_\gamma\Pi'\right) \qquad (C.3)$$

Following Conley et al. (2012), we implement the simples form of priors for γ, that is, $\gamma \sim N(0, \delta^2)$ and computed the 95% confidence intervals for α_1 for different values of δ. Under the assumption that priors are correct, this approach provides valid inference and robustness with respect to normal 2SLS approach.

The second method is the Union Confidence Interval (UCI), which allows us to analyse the robustness of the estimations in case of a direct relationship between the instrumental variables (for notation simplicity, parent's age of decease and parent's living status have been collapsed in the variable, $PAD\&LS_{it}$) and the outcome variables. Following Conley et al. (2012) equation (C.1) can be modified as follows:

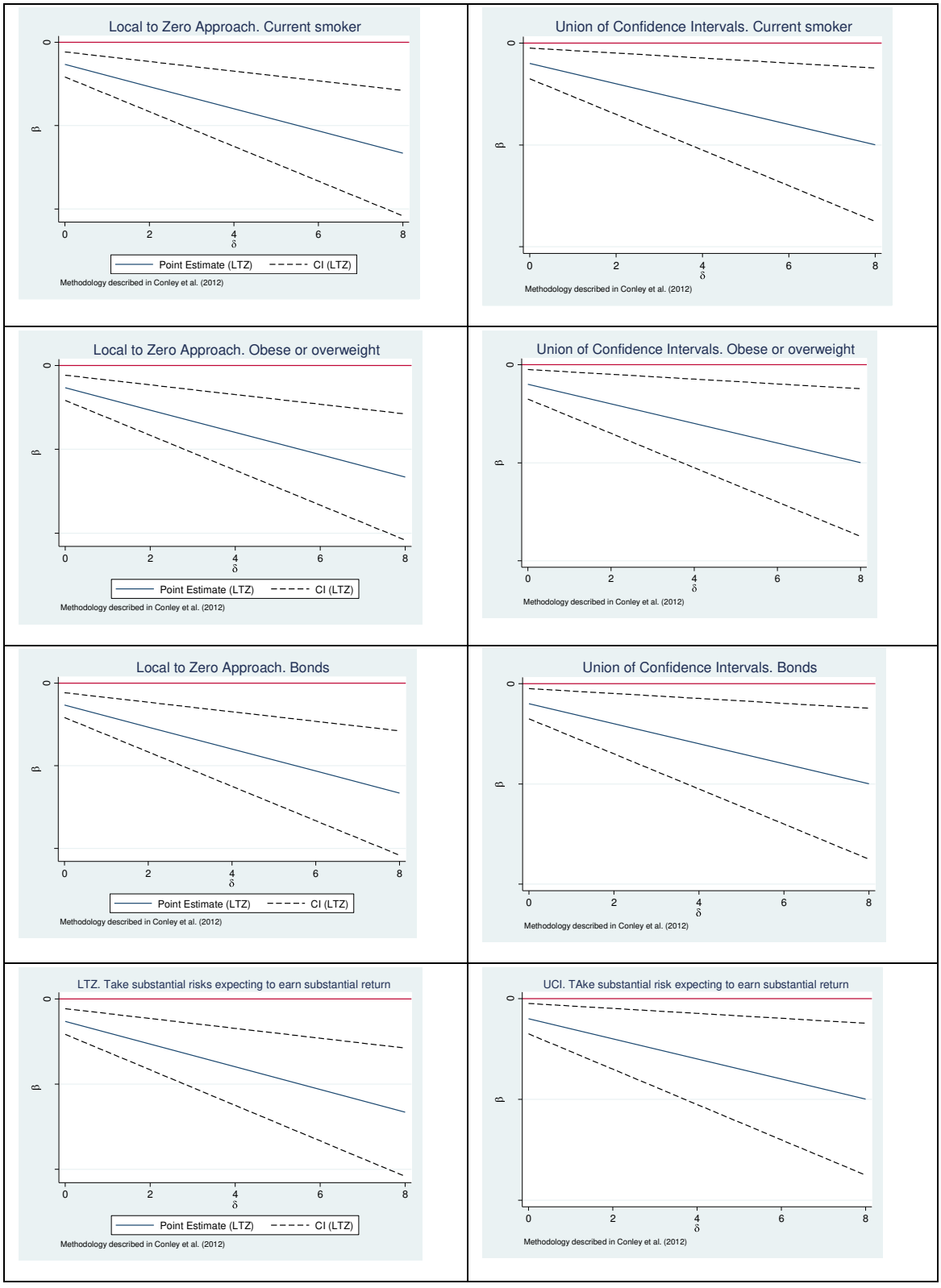
$$IND_{ict} = \alpha_0 + \alpha_1 BSE_{ict} + \alpha_2 X_{ict} + \alpha_3 PAD\&LS_{ict} + T_t + C_c + \epsilon_{ict} \qquad (C.4)$$
$$BSE_{ict} = \beta_0 + \alpha_3 PAD\&LS_{ict} + + \beta_5 X_{ict} + T_t + C_c + \varepsilon_{ict}$$

In a normal 2SLS estimation the term ($\alpha_3 PAD_{ict}$) would not be present in equation (C.4). If the strict exogeneity assumption is satisfied, parents' age of decease does not have any effect over outcome variables and thus $\alpha_3 = 0$. The innovation proposed by Conley et a. (2012) consist in relaxing the strict exogeneity assumption ($\alpha_3 \neq 0$) and checking its significance in the outcome equation. Then, allowing for non-zero γ, equation (C.4) can be expressed as (C.5)

$$IND_{ict} - \alpha_3 PAD\&LS_{ict} = \alpha_0 + \alpha_1 BSE_{ict} + \alpha_2 X_{ict} + + T_t + C_c + \epsilon_{ict} \qquad (C.5)$$

Considering that the outcome variable is now ($IND_{ict} - \alpha_3 PAD\&LS_{ict}$), then α_1 can be consistently estimated using PAD as an instrument for BSE. Under the UCI approach, α_1 is estimated given any α_3 belonging to the specific support interval for α_3: $\alpha_3 \in [-\delta, +\delta]$. Conley et al. (2012) notes that given that γ belongs to that interval, the union will contain the true parameter value for α_1 at least 95% of the time (if using a 95% confidence interval).

Figure E1. Local-to-Zero approximation and Union of Confidence Intervals. Test for instrument validity for the instrument "father's age of decease". [53]



[53] These figures have been obtained using the command *plausexog* proposed by Clarke (2014) for STATA.

Table E1. Effect of lagged BSE and of the death of a brother, sister or child between the current wave and the previous one

	M1	M2	M3	M4	M5	M6	M7	M8
BSE (lagged)	0.3048***	0.2962***	0.2719***	0.2714***	0.2714***	0.2714***	0.2713***	0.2714***
	(0.0073)	(0.0073)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)	(0.0072)
Brother dies between waves					-0.2758			0.0055
					(0.6714)			(0.6947)
Sister dies between waves						-0.1086*		-0.0842
						(0.0615)		(0.0666)
Child dies between waves							0.3828	0.4084
							(1.555)	(1.556)
Man	8.4185***	8.7439***	8.1307***	7.8798***	7.8813***	7.8722***	7.8773***	7.8695***
	(0.4157)	(0.4266)	(0.4273)	(0.4429)	(0.4429)	(0.4429)	(0.4429)	(0.4430)
Age	2.3918***	2.3516***	2.4590***	2.1123***	2.1132***	2.1090***	2.1145***	2.1114***
	(0.3104)	(0.3106)	(0.3070)	(0.3472)	(0.3472)	(0.3472)	(0.3473)	(0.3473)
Age^2	-0.0136***	-0.0135***	-0.0138***	-0.0116***	-0.0116***	-0.0115***	-0.0116***	-0.0115***
	(0.0022)	(0.0022)	(0.0022)	(0.0024)	(0.0024)	(0.0024)	(0.0024)	(0.0024)
Austria	6.1510***	5.4431***	5.6171***	5.4256***	5.4319***	5.4321***	5.4187***	5.4247***
	(0.9568)	(0.9603)	(0.9441)	(0.9459)	(0.9461)	(0.9459)	(0.9462)	(0.9463)
Germany	0.2639	0.5996	1.4964*	1.4155*	1.4199*	1.4396*	1.4133*	1.4373*
	(0.7875)	(0.7993)	(0.7898)	(0.7928)	(0.7929)	(0.7929)	(0.7928)	(0.7930)
Sweden	5.9098***	5.5205***	4.3033***	4.0283***	4.0290***	4.0295***	4.0212***	4.0220***
	(0.7524)	(0.7578)	(0.7504)	(0.7695)	(0.7696)	(0.7695)	(0.7698)	(0.7698)
Spain	9.9827***	8.5335***	9.7920***	9.6527***	9.6686***	9.7147***	9.6555***	9.7177***
	(0.8187)	(0.8651)	(0.8539)	(0.8643)	(0.8652)	(0.8651)	(0.8644)	(0.8657)
Italy	8.4141***	6.5027***	7.9287***	7.7671***	7.7712***	7.7835***	7.7722***	7.7889***
	(0.7087)	(0.7320)	(0.7253)	(0.7268)	(0.7269)	(0.7268)	(0.7269)	(0.7270)
France	1.2744*	0.8496	11.326	0.8813	0.8820	0.8932	0.8798	0.8917
	(0.7710)	(0.7810)	(0.7687)	(0.7739)	(0.7739)	(0.7739)	(0.7739)	(0.7739)
Denmark	11.2501***	11.5870***	10.4852***	10.3882***	10.3900***	10.4066***	10.3844***	10.4026***
	(0.7640)	(0.7703)	(0.7658)	(0.7707)	(0.7707)	(0.7707)	(0.7708)	(0.7708)
Switzerland	5.0121***	3.8189***	2.8765***	3.0333***	3.0397***	3.0357***	3.0309***	3.0331***
	(0.8835)	(0.9137)	(0.9016)	(0.9088)	(0.9089)	(0.9087)	(0.9088)	(0.9089)
Wave 2-4	-42.2337***	-42.3502***	-41.4680***	-41.5568***	-41.5692***	-41.5806***	-41.5539***	-41.5773***
	(0.4844)	(0.4848)	(0.4782)	(0.4794)	(0.4803)	(0.4796)	(0.4794)	(0.4804)
Wave 4-5	-0.9282	-0.4881	-0.7728	-0.5758	-0.5134	-0.3422	-0.6065	-0.3751
	(33.982)	(33.825)	(33.224)	(33.254)	(33.290)	(33.283)	(33.266)	(33.316)
No education		4.1719***	6.6472***	6.9881***	7.0027***	7.0241***	6.9881***	7.0241***
		(1.913)	(1.834)	(1.920)	(1.926)	(1.921)	(1.920)	(1.926)
Primary education		7.6616***	9.4152***	9.6512***	9.6626***	9.6973***	9.6509***	9.6969***
		(0.6513)	(0.6514)	(0.6610)	(0.6616)	(0.6615)	(0.6610)	(0.6619)
Lower secondary education		2.6195***	3.6567***	3.7777***	3.7816***	3.7905***	3.7764***	3.7891***
		(0.6775)	(0.6701)	(0.6747)	(0.6748)	(0.6747)	(0.6747)	(0.6748)
Upper secondary education		5.2170***	6.2601***	6.3199***	6.3218***	6.3302***	6.3202***	6.3305***
		(0.5697)	(0.5638)	(0.5661)	(0.5662)	(0.5661)	(0.5661)	(0.5662)
Post-secondary non-tertiary		7.1224***	7.3119***	7.4809***	7.4795***	7.4893***	7.4763***	7.4845***
		(1.176)	(1.964)	(1.971)	(1.971)	(1.970)	(1.972)	(1.972)
Married/cohabiting		0.3161	-0.0428	-1.5270*	-1.5268*	-1.5156*	-1.5197*	-1.5078*
		(0.6284)	(0.6194)	(0.8232)	(0.8232)	(0.8232)	(0.8235)	(0.8235)
Single		0.5703	0.4080	0.1976	0.2069	0.2223	0.2101	0.2355
		(10.376)	(10.205)	(10.222)	(10.225)	(10.223)	(10.228)	(10.231)
Separated/Divorced		0.9825	0.8896	0.6562	0.6582	0.6682	0.6592	0.6713
		(0.9035)	(0.8879)	(0.8908)	(0.8909)	(0.8908)	(0.8909)	(0.8909)
Depressed			-1.8669***	-1.8393***	-1.8384***	-1.8281***	-1.8444***	-1.8334***
			(0.4308)	(0.4310)	(0.4310)	(0.4310)	(0.4312)	(0.4313)
Self-reported health: excellent			13.6700***	13.5664***	13.5670***	13.5518***	13.5679***	13.5533***
			(1.726)	(1.771)	(1.771)	(1.771)	(1.772)	(1.772)
Self-reported health: very good			9.8517***	9.7131***	9.7122***	9.6850***	9.7178***	9.6899***
			(0.9481)	(0.9521)	(0.9522)	(0.9522)	(0.9523)	(0.9524)
Self-reported health: good			6.4866***	6.3695***	6.3686***	6.3553***	6.3740***	6.3600***
			(0.8493)	(0.8524)	(0.8524)	(0.8524)	(0.8525)	(0.8525)
Self-reported health: fair			3.1174***	3.0339***	3.0343***	3.0203***	3.0381***	3.0247***
			(0.8369)	(0.8379)	(0.8379)	(0.8379)	(0.8380)	(0.8380)
Hypertension			-3.2354***	-3.2456***	-3.2460***	-3.2568***	-3.2441***	-3.2553***
			(0.4243)	(0.4241)	(0.4241)	(0.4242)	(0.4242)	(0.4242)
Cancer			15.7267***	15.6632***	15.6615***	15.6336***	15.6688***	15.6394***
			(1.575)	(1.572)	(1.573)	(1.573)	(1.574)	(1.575)
Stroke			7.3373***	7.3578***	7.3594***	7.3499***	7.3634***	7.3558***
			(1.756)	(1.755)	(1.755)	(1.754)	(1.756)	(1.756)
Diabetes			6.2485***	6.2237***	6.2264***	6.2188***	6.2181***	6.2128***
			(0.6390)	(0.6389)	(0.6390)	(0.6389)	(0.6391)	(0.6392)
Heart attack			-1.7856***	-1.8176***	-1.8155***	-1.8086***	-1.8175***	-1.8085***
			(0.6515)	(0.6513)	(0.6514)	(0.6513)	(0.6514)	(0.6514)
Lung disease			3.9353***	3.9327***	3.9377***	3.9428***	3.9310***	3.9410***
			(0.8428)	(0.8425)	(0.8427)	(0.8425)	(0.8426)	(0.8427)
Alzheimer			31.840	29.371	29.475	29.806	29.369	29.804
			(21.000)	(21.008)	(21.010)	(21.009)	(21.009)	(21.011)
Employed				0.1741	0.1724	0.1687	0.1706	0.1650
				(0.7814)	(0.7815)	(0.7814)	(0.7815)	(0.7815)
Unemployed				-0.5352	-0.5327	-0.5288	-0.5360	-0.5298
				-14.468	-14.469	-14.468	-14.469	-14.469
Retired				1.5448**	1.5473**	1.5352**	1.5459**	1.5363**
				(0.6274)	(0.6275)	(0.6274)	(0.6275)	(0.6275)
Lives alone				-2.0935***	-2.0951***	-2.0902***	-2.0887***	-2.0851***
				(0.7622)	(0.7623)	(0.7622)	(0.7624)	(0.7624)
Rural área, small village				-0.8875**	-0.8865**	-0.8815**	-0.8869**	-0.8808**
				(0.4149)	(0.4150)	(0.4149)	(0.4150)	(0.4150)

Constant	-76.6230***	-78.0149***	-91.1640***	-76.6743***	-76.7010***	-76.6039***	-76.7646***	-76.6994***
	(10.130)	(10.910)	(10.990)	(12.464)	(12.468)	(12.458)	(12.492)	(12.492)
N	69,990	69,990	69,990	69,990	69,990	69,990	69,990	69,990
R^2	0.4519	0.4575	0.4773	0.4779	0.4779	0.4780	0.4779	0.4780
F	979.283	492.569	545.935	971.620	872.181	873.400	872.164	688.585
p	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Omitted variables: women, tertiary education, widow, relation with economic activity: houseworking and other situations, Belgium, waves 5-6. Bootstrap with 1,000 replications. Robust standard errors between parenthesis. * statistically significant at 10%; ** statistically significant at 5%; *** statistically significant at 1%. All regressions include income and wealth are expressed in 1,000 units of Purchase Power of Parity and adjusted by household sized (dividing wealth and income by the square root of the number of household members).

Table E2. Weibull estimations for the discrete-time hazard model including parental characteristics as explanatory variables

	Total sample		Excluding focal points		Excluding erroneous responses to probabilistic question		Including only individuals who have answered SHARELIFE	
	Coef.	Hazard ratio	Coef.	Hazard ratio	Coef.	Hazard ratio	Coef.	Hazard ratio
Father alive	-0.359	0.693	-0.357	0.688	-0.356	0.683	-0.355	0.679
	(0.331)		(0.319)		(0.308)		(0.297)	
Mother alive	0.020	1.009	0.020	0.999	0.020	0.989	0.019	0.979
	(0.194)		(0.190)		(0.186)		(0.182)	
Father's age at decease	-0.060**	0.970**	-0.060**	0.972**	-0.061**	0.970**	-0.061**	0.973**
	(0.027)		(0.028)		(0.028)		(0.0281)	
Mother's age at decease	-0.037**	0.990**	-0.036**	0.991**	-0.036**	0.992**	-0.037**	0.992**
	(0.017)		(0.017)		(0.017)		(0.017)	
Man	0.629***	1.849***	0.586***	1.770***	0.602***	1.799***	0.638***	1.859***
	(0.082)		(0.131)		(0.089)		(0.089)	
Age	-0.049	0.943	-0.012	0.978	-0.045	0.947	-0.057	0.947
	(0.045)		(0.074)		(0.051)		(0.050)	
Age^2	0.001***	0.991***	0.001	0.991	0.001**	0.991**	0.003***	0.992***
	(0.000)		(0.001)		(0.000)		(0.001)	
Employed	-0.649***	0.517***	-0.447*	0.634*	-0.575***	0.558***	-0.682***	0.526***
	(0.179)		(0.232)		(0.185)		(0.187)	
Lives alone	0.192**	1.19**	0.134	1.130	0.233**	1.247**	0.202**	1.202**
	(0.086)		(0.147)		(0.097)		(0.093)	
Rural area, village, small town	-0.028	0.963	-0.175	0.833	-0.046	0.946	-0.034	0.969
	(0.070)		(0.115)		(0.077)		(0.075)	
Normal weight	-0.245***	0.776***	-0.261**	0.707**	-0.219**	0.798**	-0.294***	0.795***
	(0.081)		(0.309)		(0.089)		(0.084)	
High blood pressure	-0.087**	0.908**	-0.224**	0.793**	-0.109**	0.888**	-0.091**	0.910**
	(0.036)		(0.106)		(0.043)		(0.037)	
Heart attack	0.252*	1.270	0.249*	1.268	0.240*	1.249*	0.259*	1.274*
	(0.125)		(0.126)		(0.117)		(0.127)	
Cancer	0.934***	2.500***	1.007***	2.689***	0.902***	2.422***	0.939***	2.502***
	(0.101)		(0.155)		(0.116)		(0.107)	
Stroke	0.432***	1.519***	0.299**	1.332**	0.572***	1.745***	0.438***	1.522***
	(0.120)		(0.121)		(0.141)		(0.124)	
Diabetes	0.345***	1.393***	0.530***	1.674***	0.374***	1.433***	0.339***	1.391***
	(0.088)		(0.153)		(0.100)		(0.087)	
Lung disease	0.247**	1.265**	0.363*	1.419*	0.283**	1.311**	0.239**	1.262**
	(0.108)		(0.189)		(0.119)		(0.100)	
Alzheimer	0.459***	1.560***	0.210***	1.219***	0.409*	1.485*	0.476***	1.567***
	(0.154)		(0.051)		(0.211)		(0.156)	
Days at hospital (last year)	0.012***	1.002***	0.015***	1.005***	0.014***	1.004***	0.014***	1.003***
	(0.001)		(0.002)		(0.002)		(0.001)	
Days in hospital last year (mental health)	0.007***	1.260***	0.008***	1.264***	0.007***	1.258***	0.008***	1.262***
	(0.001)		(0.002)		(0.001)		(0.002)	
Days in other institutions (last year)	0.011***	1.001***	0.011***	1.004***	0.011***	1.007***	0.012***	1.009***
	(0.002)		(0.002)		(0.002)		(0.002)	
Visits to general practitioner (last year)	-0.002	0.988	-0.002	0.988	0.002	0.992	-0.003	0.989
	(0.006)		(0.007)		(0.006)		(0.005)	
Sedentary lifestyle	0.851***	2.301***	0.834***	2.264***	0.781***	2.148***	0.858***	2.304***
	(0.079)		(0.143)		(0.088)		(0.082)	
Smokes now	0.420***	1.501***	0.405***	1.465***	0.359***	1.413***	0.429***	1.504***
	(0.108)		(0.167)		(0.113)		(0.110)	
Smoked before, not now	0.312***	1.347***	0.326**	1.368**	0.224*	1.237*	0.314***	1.348***
	(0.107)		(0.143)		(0.118)		(0.110)	
Drinks alcohol daily, 5-6 times/week	0.215**	1.219**	0.226	1.230	0.239**	1.251**	0.217**	1.220**
	(0.081)		(0.089)		(0.094)		(0.083)	
No education	0.424***	1.508***	0.533***	1.681***	0.396**	1.467**	0.428***	1.509***
	(0.156)		(0.179)		(0.165)		(0.158)	
Primary education	0.452***	1.550***	0.388**	1.455**	0.425***	1.509***	0.457***	1.552***
	(0.130)		(0.172)		(0.133)		(0.132)	
Lower secondary education	0.187	1.190	0.255	1.275	0.182	1.185	0.195	1.193

	(0.145)		(0.196)		(0.147)		(0.148)	
Upper secondary education	0.299**	1.331**	0.214**	1.224**	0.334***	1.378***	0.307**	1.333**
	(0.127)		(0.113)		(0.125)		(0.131)	
Post-secondary non tertiary	0.386	1.450	0.399	1.554	0.301	1.362	0.391	1.454
	(0.252)		(0.508)		(0.390)		(0.254)	
Adjusted wealth (1,000 PPP)	-0.409**	0.659***	-0.558*	0.568*	-0.492**	0.606**	-0.414**	0.660**
	(0.185)		(0.221)		(0.208)		(0.189)	
Adjusted income (1,000 PPP)	-0.118	1.853	-0.182	2.106	0.203	1.859	-0.121	1.854
	(1.145)		(1.005)		(1.134)		(1.149)	
Feeling depressed (last month)	0.167**	1.167**	0.160**	1.161**	0.147**	1.079**	0.170**	1.170**
	(0.071)		(0.077)		(0.050)		(0.070)	
Constant	-6.284***	0.001***	-8.025***	0.000***	-6.434***	0.001***	-6.318***	0.002***
	(1.365)		(1.900)		(1.489)		(1.370)	
N	69.900		40,893		30,183		33,269	
Hazard rate	1.202		1.325		1.224		1.235	
	(0.057)		(0.072)		(0.065)		(0.060)	
Wald chi2(42)	2,322.025		1,837.260		962.168		1,756.655	
p-value	0.000		0.000		0.000		0.000	

Standard errors between parenthesis. All regressions include time fixed effects and country fixed effects and are weighted using calibrated sampling weights.