

When money matters. Why the Easterlin paradox does not work for (large part of) the elders

Abstract

We compare life satisfaction levels for individuals aged 50 and above reporting/not reporting long term illnesses. Our econometric findings show that the positive income/life satisfaction relationship is steeper for individuals with at least one long-term illness (and, among them, for those reporting unmet needs for medical examination above median, or lacking of private insurance). Our empirical analysis therefore shows that the Easterlin paradox does not work for almost one half of our entire representative sample of the population of European countries. We as well show with the compensating variation approach that, for the long term ill, the marginal utility of income (net of absolute and relative income effects) is significantly larger than the average marginal income in the sample. The analysis on the economic significance of our findings can be considered as a benchmark for the value of complimentary health care or of private health insurance.

Keywords: health and life satisfaction, Easterlin paradox, value of health.

JEL numbers: I10, I18, I31.

1.Introduction

The literature on subjective wellbeing has considerably grown in the last decades due to several concurring factors. First, policymakers are becoming increasingly interested to these indicators since they capture information, unobservable with traditional objective indicators, related to the public appraisal of their action. They have therefore started looking with increased interest at life satisfaction and life sense surveys, exactly as corporations do with customer satisfaction surveys and employers with job satisfaction surveys, in order to monitor respectively consumers' appraisal and the work climate in their companies. Second, with the compensating variation approach, economists have started using econometric findings on the determinants of subjective wellbeing in multivariate analysis as a basis for calculating the value of non-market goods, an information of great relevance for cost-benefit analysis and, more generally, policymakers' choices. This approach has been used, among others, to calculate the value of air pollution (Welsch, 2002 and Luechinger,

2009), noise nuisance (van Praag and Baarsma, 2005), terrorist activity (Frey et al., 2009) and flood disasters (Luechinger and Raschky, 2009). Third, subjective wellbeing indicators have been demonstrated to matter since they influence people choices along their lives and, consequently, objective indicators. Along this line, poor job satisfaction has been shown to be a good predictor of employment status, productivity, likelihood of job change and job quit (see among others Judge, 1992; Staw and Barsade, 1993 and Judge et al., 2001). In the same direction, poor sense of life (low eudaimonic wellbeing) has been shown to be a significant mortality risk factor (Becchetti et al., 2017), while low self-assessed health a good predictor of mortality (Idler and Kasl, 1995; McCallum et al., 1994; Benjamins et al., 2004; Idler and Angel, 1990 and Appels et al., 1996) and insurgence of chronical illnesses (Bachelet and Becchetti, 2017).

Our paper contributes originally to this literature by investigating the relationship between income and life satisfaction, conditionally to the long term illness status. Our descriptive findings show, as expected, that reporting at least one long term illness modifies significantly and negatively the distribution of life satisfaction in the population. Based on this first descriptive evidence we test econometrically the income/life satisfaction nexus and find that the interaction of the long term illness status with being in the top 30 percent income group has significant effects on life satisfaction, net of the stand-alone impact of the two interacted variables. In order to inspect more in depth the effect of income on happiness along all the income distribution we use income deciles. We find that the income-happiness slope is significantly steeper for individuals with at least one long term illness and, within this group, for those reporting unmet needs of medical examination due to travel costs, costs of medical treatment or waiting queues. As well, within the long term ill subsample, the relationship is steeper for respondents not having a complementary private insurance.

Our findings contribute significantly to the Easterlin's paradox literature. As is well known, the debate starts when Easterlin (1974) illustrates the decoupling between per capita GDP growth and

the share of happy people in the second post-war period in the US. Even though the result relates to aggregate changes over time of the two variables, it has been more generally interpreted as implying a concave relationship between income and life satisfaction also at individual level. Frey and Stutzer (2002) find evidence confirming the paradox for a large sample of countries on data sources such as the World Database of Happiness and the U.S. Bureau of Census data. Similar evidence is provided by Blanchflower and Oswald (2004) for the United States, United Kingdom, Belgium and Japan, in the period going from the early 1970s to the late 1990s, and by Veenhoven (1993) for Japan in the 1958-1987 period. Stevenson and Wolfers (2008) however find no evidence of the Easterlin paradox using various datasets and looking at both per capita GDP and individual income. Easterlin and Angelescu (2009) reply to this last study arguing that the paradox exists if we look at the long term relationship between per capita GDP and happiness at cross-country level. Bartolini et al. (2008) find that the decline in social capital accounts for part of the Easterlin paradox in the US.

Our results add to this literature by finding an important driver of heterogeneity in aggregate data used so far in this debate, since we show that the relationship between income and life satisfaction is significantly more step (and definitely not concave) when individuals record at least one long term illness. We argue that the observed heterogeneity in the income/happiness gradient has quite relevant effects on the aggregate overall population gradient usually investigated in the Easterlin paradox literature, given that the long term illness group accounts for almost one half of respondents in our representative samples of 19 EU countries and given progressive population ageing in high income countries.

From a different angle our paper provides a contribution to the literature estimating the demand for health-related insurance products where the standard assumption is generally that of state independence (ie. independence from health conditions) (e.g., Feldstein 1973, Feldman and Dowd 1991; Brown and Finkelstein 2008; Mitchell et al. 1999, Davidoff et al. 2005; Golosov and Tsyvinski 2006). Empirical analysis on this point is still at its origin and very relevant given that the

impact of poor health on the marginal utility of consumption is theoretically ambiguous (Finkelstein et al., 2009). On the one side, individuals with poor health have reduced possibilities of access to some consumption goods (ie. travelling) and reduced time horizon and therefore their utility of consumption may fall. On the other side, they require expensive care and therefore the utility of consumption (and of income) may grow. The few past empirical contributions have used approaches such as survey measures of self-reported compensating income differentials to hypothetical health risks (Sloan et al., 1988; Viscusi and Evans, 1990 and Evans and Viscusi, 1990). The problem with these approaches is that they require that respondents are able to forecast the shape of their utility function in an unbiased manner (Finkelstein et al. 2009), while they may presumably underestimate their income needs when ill. To avoid this problem Finkelstein et al. (2008) use subjective wellbeing measures as we will do in our paper and focus on UK individuals aged above 50 having health insurance. Our approach is original and complements these valuable findings described above in several respects. We focus on a cross-country panel including respondents from 19 European countries and look health-dependent income-life satisfaction gradients for individuals having/not having long term illness with/without health insurance. Note as well that by discriminating within the subsample of individuals reporting long term illness between those having/not having private insurance (or unmet needs of medical treatment due to high costs) we are discriminating between the two possible effects envisaged in the theoretical literature since arguments for the prevalence of the positive on the negative effect (due to higher income needs due to expensive care) should apply to the former.

Our findings have relevant policy implications. We use the compensating variation approach and calculate the magnitude of the significant coefficient of the interaction between the chronic disease status and being in the top 30 percent income group to calculate the monetary value of being in the top income centiles, conditional to the chronic illness status. We find that the additional impact of being in the top 30 percent income group for those reporting at least one chronic illness implies that

the value/utility of money needed to reach that threshold is worth several times the average value/utility of money in the sample. This last finding can be used as a reference for the value of a private health insurance, or of full coverage of the NHS, if we assume that the calculated compensating surplus proxies the value of availability of extra income when individuals have long term illnesses.

2. Research hypothesis

Our research hypothesis can be formulated as follows

H_{0A}: the value of being in the top income centiles for individuals reporting at least one long term illness is higher than for those not reporting it.

The rationale for our hypothesis is that progress in medical treatments and health care services for individuals with long term illnesses that may more or less impair their functionalities offers today an extremely rich and articulated range of opportunities. Treated individuals can therefore significantly improve quality and length of their lives if they have access to these treatments and services. New vintages of more advanced treatments however come with high costs since pharmaceutical companies willing to take part to the innovation race need to know that they can recover research costs with patent protection. This is the case, for instance, of the new vintage of cancer therapies based on immuno-molecules or therapies against hepatitis C just to make two examples.¹ National Health Services can cover only part of these costs and, in almost all countries

¹ The new generation of drugs against multiple myeloma (blood cancer) such as Revlimid and Pomalyst, average survival time has almost tripled in less than a

included in the SHARE survey, full coverage is almost impossible and out-of-pocket private health expenditure attains high levels.² As well, even in cases in which full coverage exists, NHSs have incentives to use parsimoniously drugs given their cost for the government budget and, additionally, long waiting lists for treatments can significantly reduce the effectiveness of the latter on patients. In these cases patients know that, with extra money or private health insurance, they can get in most cases anticipated treatment in private structures or in public structures where doctors can also can privately operate (*intra moenia*). Health care services not directly related to medical treatments (ie., invalidity assistance and caregiving) are as well expensive and far from being fully covered by NHSs. Their quality can therefore be significantly improved if individuals have higher purchasing power.

For all these reasons we reasonably expect that the marginal utility of being in the top income centiles for individuals aged above 50 reporting at least one chronic illness is significantly higher than that for those not reporting illnesses.

The empirical analysis that follows will test whether our hypothesis holds taking into account the opposite argument discussed in our introduction (Finkelstein et al. 2009) where health problems reduce time horizons and consequently also the utility of consumption and income.

3. Database and descriptive findings

decade. The cost of these drugs however is extremely high, not fully covered by NHSs and also subject to abrupt market changes. It has been calculated that US patients on Medicare paid 11,538 out-of-pocket each year for such drugs. In the United Kingdom, the National Institute for Health and Care Excellence delayed for several years the approval of these new drugs due to their costs for the NHS. In 2014 the US Medicare system declared that it could not ensure to all the 3,3 million patients with Hepatitis C the cure of Harvoni, a new powerful drug capable of leading to full recovery.

² According to Eurostat data the share of private out-of-pocket expenditure on total health expenditure ranges from relatively lower levels in North European countries (12.53% in Germany, 12.25% in the Netherlands, 15.79% in Sweden) to higher levels in South and East European countries (27.65% in Portugal, 22.83% in Italy, 24.23% in Spain, 29.04% in Hungary).

We test our hypothesis on the last three waves of the SHARE (the Survey of Health, Ageing and Retirement in Europe) cross national panel database recording data on health and socio-economic status of representative samples of individuals aged above 50 in 20 countries.³

The SHARE database records extremely accurate data on respondents' health conditions. Survey participants are asked whether they have received a diagnosis from a doctor on a list including the following 17 chronic diseases: (1) heart attack (heart attack, including myocardial infarction or coronary thrombosis or any other heart problems, including congestive heart failure); (2) high blood pressure or hypertension; (3) high blood cholesterol; (4) stroke or cerebral vascular disease; (5) diabetes; (6) chronic lung diseases; (7) asthma; (8) arthritis or rheumatism; (9) osteoporosis; (10) cancer or malignant tumor; (11) ulcer (stomach or duodenal ulcer, peptic ulcer); (12) Parkinson disease; (13) cataracts; (14) hip fracture or femoral fracture; (15) other fracture; (16) Alzheimer's and (17) benign tumor.

In addition to this base information the survey also measures SAH (self-assessed health), and a wide range of functionalities measured through the standard ADLA (Activities of Daily Living)⁴ and IADLA (Instrumental Activities of Daily Living) indicators together with three indexes of cognitive functions,⁵ mobility,⁶ and numeracy skills. Participants to the survey are finally asked about a wide range of symptoms and, more specifically: fear of falling down, falling down, heart trouble, swollen

³ Austria, Germany, Sweden, Netherlands, Spain, Italy, France, Denmark, Greece, Switzerland, Belgium, Israel, Czech Republic, Poland, Ireland, Hungary, Portugal, Slovenia and Estonia.

⁴ The Activities of Daily Living (ADLA) index measures self-assessed respondent's skills in performing the following tasks: dressing, bathing or showering, eating and cutting up food, walking across a room and getting in or out of bed. A higher value of the index (ranging from 0 to 5) indicates higher difficulties in performing these tasks due to the reduced respondent's mobility.

⁵ The cognitive function index is the result of a test performed when administering the questionnaire: a list of ten words is communicated to the respondent and, after a fixed time, the respondent is asked which of them she/he remembers. The number of words recalled is then reported.

⁶ Mobility is calculated in terms of self-assessed respondent's ability of performing the following tasks: walking across a room, walking 100 metres, climbing one flight of stairs and climbing several flights of stairs.

legs, breathlessness, persistent cough, dizziness, joint pain, sleeping problems, stomach or intestine, incontinence.

The problem with diagnosis of the 17 chronic disease variables is that they do not measure intensity, severity or persistence of the illness. We therefore use for our analysis an additional variable that measures respondents' evaluation on whether they have a long-term illness. This variable is more relevant to our analysis since it is the only one including an information on time persistence of the illness, that is crucial to evaluate impact on respondent's health expenditure. The variable is the answer to the following survey question: *Some people suffer from chronic or long-term health problems. By chronic or long-term we mean it has troubled you over a period of time or is likely to affect you over a period of time. Do you have any such health problems, illness, disability or infirmity?*

Based on the answer to this question we build our *LongTermIll* variable: a dummy taking value one if the individual answers positively to the above question. Note that the share of individuals with at least one long term illness is quite high in our sample and equal to 51.24 percent of the overall sample .

We start by inspecting whether our hypothesis holds with descriptive findings and, specifically, by comparing life satisfaction distributions between the two groups of those reporting/not reporting at least one long term illness. Within the group of those reporting chronic illnesses we use as a threshold for a reasonably high-income level the 70th centile household income value of the living country. Specifically, the selected income variable is the household income⁷ equivalised using the

⁷ The problem of missing data is solved by SHARE, for income as for other variables, with a standard approach in the literature, that is, the use of imputed variables. More in detail, missing values are imputed using the Fully Conditional Specification method (FCS) (Van Buuren et al., 2006) as suggested by Christelis (2011) conditionally on the non-missing variable of other variable that are significantly correlated with the omitted one. Using this approach SHARE produces 5 imputed datasets corresponding to the 5 iterations used in the procedure. An approach suggested for research on this data is to use the average of these iterations and produce robustness checks with individual imputations (<http://www.share-project.org/group-faq/faqs.html>). We follow the first approach (average of the five imputed values). Findings obtained when using individually each the

standard OECD formula.⁸ Histograms in Figure 1 clearly show that the diagnosis of at least one long term illness reduces the share of individuals reporting life satisfaction levels of 8 and above. Specifically, among those not reporting chronic illnesses, 18.97 percent declare the highest level of life satisfaction (10), 19.85 percent a level of 9 and 33.81 percent a level of 8. The three shares fall respectively to 14.18, 13.81 and 30.06 among those reporting at least one long term illness. However, when we look at the subsample of those with at least one long term illness that are above the 30th domestic household income centile we are back up to 15.48, 17.78 and 33.80.⁹ The above mentioned descriptive evidence indicates that the availability of higher income is correlated with higher wellbeing of respondents reporting long term illness. One interpretation of these descriptive findings could be that the utility of high income is higher when being ill, that is, our theoretical hypothesis that will be directly tested in the econometric analysis that follows.

4. Econometric findings

In order to check whether enjoying high income levels has a specific positive and significant effect when reporting a long term illness we estimate different (more or less simplified) versions of the following fully augmented specification

5 different imputed series in a robustness check do not change our main findings and are omitted for reasons of space.

⁸ To equalise income we use the well-know “OECD equivalence scale” (also called “Oxford scale”) assigning a value of 1 to the first household member, of 0.7 to each additional adult and of 0.5 to each child. Robustness checks using different equivalence scales do not change our descriptive findings and the econometric findings that follow. They are omitted for reasons of space and available upon request.

⁹ In a robustness check (available upon request) we find very similar results when using as threshold the 20th or the 40th centile of the household income distribution. Results are omitted for reasons of space and available upon request.

$$\begin{aligned}
LifeSat_{ij} = & \alpha_0 + \alpha_1 Female_{ij} \\
& + \sum_k \beta_k AgeClass_{kij} + \sum_l \gamma_l EducationClass_{lij} + \alpha_2 Unemployed_{ij} \\
& + \alpha_3 Retired_{ij} + \alpha_4 Ln(Income)_{ij} + \alpha_5 HighIncome_{ij} + \alpha_6 LongTermIll_{ij} \\
& + \alpha_7 LongTermIll * HighIncome_{ij} + \alpha_8 NHouseMembers_{ij} \\
& + \alpha_9 PartnerInH_{ij} + \alpha_{10} SiblingLivingClose_{ij} + \alpha_{11} IADLA_{ij} + \alpha_{12} HighPain_{ij} \\
& + \alpha_{13} IADLA * LongTermIll_{ij} + \alpha_{14} HighPain * LongTermIll_{ij} \\
& + \sum_m \delta_m Country_{mij} + \sum_n \vartheta_n Waves_{nij} + \varepsilon_{ij}
\end{aligned}$$

(1)

where the dependent variable, the self-assessed level of life satisfaction of the i -th individual in wave j (*LifeSat*), is the usual cognitive subjective wellbeing variable measured with the standard life satisfaction question.¹⁰ Our main variable of interest is the product between the long term ill status and the dummy capturing household income above the top 30 percent income threshold (*LongTermIll* High_Income*). In order to test the effect of the interaction variable we introduce as controls the two dummies separately considered (*LongTermIll* and *HighIncome*). Their meaning is obvious, with the second variable measuring relative income effects¹¹ when used together with a standard income regressor. Right hand side variables include standard controls such as seven five-year age classes (*AgeClass*),¹² a female dummy, separate dummies for each ISCED education level

¹⁰ To this purpose we use the standard question on cognitive subjective wellbeing included in the SHARE survey “On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?”

¹¹ The relative income literature tests the impact on life satisfaction of the average income level of variously conceived reference groups combining in general geographical location, gender, age cohorts and professional characteristics (Ferrer-i-Carbonell, 2005; Dorn, Fischer, Kirchgassner and Sousa-Poza, 2008; Clark and Senik, 2010). In our estimate we implicitly consider for simplicity the overall sample country population as reference group.

¹² Specifically, we introduce age as regressors by including dummies for the following five year age intervals 60-64, 65-69, 70-74, 75-79, 80-84, 85-89, above 90 year old, while using the 50-59 age class as omitted benchmark.

(lack of formal education being the omitted benchmark) (*EducationClass*),¹³ the number of household members (*NHouseMembers*), the log of household income (*Ln(Income)*) equivalised using the standard OECD formula (see footnote 8), retired and unemployed dummies (*Retired* and *Unemployed*) and two dummies measuring “relational variables” and, specifically, whether the respondent lives with a partner and has siblings living within 1 km distance (*WithPartner* and *SiblingsLivingClose*). Country and wave dummies are finally added as controls.¹⁴

Econometric findings for a first (non fully augmented) specification estimated with pooled OLS and heteroskedasticity robust standard errors are shown in Table 1, column 1. The effect of our main variable of interest (*LongTermIll* High_Income*) is positive and strongly significant. In terms of magnitude, it allows the respondent to recover almost half of the negative effect of the chronic illness status. Other controls have the expected effects. Education affects positively life satisfaction, women are significantly more satisfied than men, while age remains significant and increasingly positive (vis-à-vis the omitted benchmark of the 50-59 age cohort) as far as the respondent gets older, thereby showing that age contributes positively to life satisfaction when controlling for health.¹⁵ Relationships matter since living with a partner and having a son/daughter living within 1km distance are both positive and significant. The unemployment status is negative as expected, while the retired status is positive, likely capturing the positive impact of retirement on leisure satisfaction and, in turn, on life satisfaction.

¹³ More specifically on this point, we use the ISCED (International Standard Classification of Education) 1997 classification that has six levels. The first level is primary education or first stage basic education; the second includes lower secondary or second stage of basic education; the third (upper) secondary education, the fourth post-secondary non tertiary education, while the fifth and sixth pick respectively the first and second stage of tertiary education.

¹⁴ Descriptive statistics for the variables used in the econometric analysis are shown in Table A1 in the online Appendix.

¹⁵ This finding is in line with empirical evidence on the U-shaped effect of age on life satisfaction where the lowest age effect is generally concentrated in the fifties (see among others Frijters and Beaton, 2012). Our sample size including only individuals aged 50 and above measures just one side of the U-shape.

In a second specification we want to disentangle the effect of higher economic support from the relational effect when being ill (Table 1, column 2). We therefore add to variables interacting the long term illness condition with the presence of the partner or the proximity of son/daughter respectively. We further add the dummy capturing individuals with household income above the top 30th domestic income threshold. This is to see whether our main variable of interest remains significant after controlling for the presence of a relative income effect related to the same income threshold. The (*LongTermIll*HighIncome*) remains strongly positive and significant, while the relative income dummy and the chronic illness interaction with the presence of a partner are also positive and significant (Table 1, column 2). In a third fully augmented specification we add the IADLA index of functionalities and a dummy measuring experience of high pain (*HighPain*), interact both variable with the top 30 percent income threshold and test whether our main variable remains significant. We find that this is the case (Table 1, column 3). We then repeat our base estimate separately for the three different waves we find that our main result holds in all of them (Table 1, columns 4-6)

In Table A2 we estimate the same specifications of Table 1 while removing the ad hoc assumption of continuity of the life satisfaction variable using an ordered logit model. Results are unchanged in terms of significance and sign. The interpretation of coefficients however changes since it now measures the marginal effect of the regressor on the probability of declaring the highest level of life satisfaction. The economic significance in this case tells us that being above the own's country top 30 percent income threshold for individuals reporting at least one long term illness raises by around 3 percent the likelihood of declaring the highest level of life satisfaction (10) in the specification of column 1, and by around 1 percent in the specification of column 3, Table A2.

In a robustness check we test in how many countries results presented in Table 1, column 1 are significant. We find that the positive effect of the interacted long term illness/income above the top

30 percent income threshold variable is significant in 12 out of 19 countries (see Tables A3.1-A3.19 in the online Appendix).

3. Revisiting the Easterlin paradox by considering the ill/not ill status

In order to have clean specification allowing us to estimate whether the life satisfaction/income slope is significantly different for those reporting versus those not reporting a chronic disease, we replace the household income variables with dummies capturing participation to one of the ten income deciles (*Decile* variables) in a given country and augmenting the specification by interacting each of these dummies with the chronical ill status (*Decile*LongTermIll*HighIncome*).

The estimated model therefore becomes

$$\begin{aligned}
 Life_Sat_{ij} = & \alpha_0 + \alpha_1 Female_{ij} \\
 & + \sum_k \beta_k AgeClass_{kij} + \sum_l \gamma_l EducationClass_{lij} + \alpha_2 Unemployed_{ij} \\
 & + \alpha_3 Retired_{ij} + \sum_p \chi_p Decile_{pij} + \sum_r \eta_r Decile * LongTermIll_{rij} \\
 & + \alpha_4 NHouseMembers_{ij} + \alpha_5 PartnerInH_{ij} + \alpha_6 SiblingLivingClose_{ij} + \\
 & + \sum_m \delta_m Country_{mij} + \sum_n \vartheta_n Waves_{nij} + \varepsilon_{ij}
 \end{aligned}$$

(2)

The advantage of this specification is that of not imposing a unique (linear/concave) functional form to the income/life satisfaction relationship. Note as well that non interacted income deciles capture

here both absolute and relative income effects. In Table 2, column 1 we report results for the pooled OLS estimate on the overall sample and find that all the long term illness interacted income deciles are significant and positive as expected, while their magnitudes grow as far as income grows (ie., the interacted term of the second income decile is .12, while that of the last income decile is around .44, with the first income decile being the omitted benchmark). This finding is robust in the three cross-sectional estimates for each wave separately considered (Table 2, columns 2-4). This implies that the income/life satisfaction slope is significantly steeper for individuals reporting at least one long term illness, or that the marginal utility of income for these individuals is significantly higher than for the rest of the sample.

Another way of testing our hypothesis is to estimate the model (without the income/long term illness condition interaction terms) separately for the subgroup of the not long term ill/long term ill individuals. In doing so we can compare coefficients and confidence intervals of the income deciles for the two subgroups without imposing the restriction that the effect of other regressors on the dependent variable is the same for the two subgroups (as we implicitly did for estimates reported in Table 2). The plotted coefficients of the nine income centiles provide us a clear view of the slope of the income/life satisfaction nexus for the two groups and confirm our main findings.¹⁶ The income/happiness slope is significantly higher for individuals with at least one long term illness. The result holds both in the overall sample estimate (Figure 2.1) and in the cross-sectional estimates of the three waves separately considered (Figures 2.2-2.4).

In a further robustness check we use the variable in which the respondents declare the degree of unmet needs for medical examination related to three reasons: too expensive treatments, too far to travel, or due to a waiting list. In all of the three cases, we assume that the economic problem is more relevant for long term illness respondents reporting than for those not reporting unmet needs. We therefore use the median value of this variable to split our sample between long term illness

¹⁶ Full estimates findings are omitted and available in an online Appendix upon request.

respondents with above/below median unmet needs for medical examination. When estimating the model for the two subsamples we find that the income decile coefficients are higher for the above median subsample as expected (Figure 2.5). In order to test the econometric significance of this difference we estimate specification (2) for respondents with long term illness only, using income deciles and interacted income deciles with the above median unmet needs condition. We find that the interacted variables are all positive and significant (Table 2, column 4).

In order to have a clearer idea of the economic significance of our findings in a single specification we calculate in Table 3 ratios between decile coefficients in the samples with respondents reporting/not reporting long term illnesses, hence using magnitudes shown in Figure 2.1. Reported results show that the impact on life satisfaction of being in a given income decile is around 40 percent higher for those reporting long term illnesses and unmet needs for medical treatment below median, while around 100 percent higher for the long term ill with unmet needs below median.

4. Robustness checks: quadratic approximation and fixed effects

In a robustness check we want to see whether, when we approximate the income-life satisfaction nexus to a quadratic relationship (as it is often done in the life satisfaction and in the Easterlin literature) we exactly get a result close to the Easterlin paradox when considering the sample of individuals not reporting long term illnesses, with the paradox disappearing when considering the other half of our SHARE sample (individuals with long term illness). The specification in (1) is therefore modified introducing OECD equivalised household income in levels and squares and adding two dummies for levels and squares interacted with the long term illness condition. Findings are reported in Table 4 for the different specifications in the overall sample and for single waves, while the implied income-life satisfaction shape from estimated regression coefficients drawn from coefficients reported in column 1 is reported in Figure 2.6. The Figure clearly shows that the

income/happiness concavity obtained for the subsample of respondents not reporting a long term illness disappears when we consider the complementary sample. The same estimate is proposed for the subsample of the long term ill by interacting the income variables with a dummy taking value one when individuals have complementary private insurance (Table 4.2). We find as expected that not having private insurance significantly raises the effect of income on life satisfaction. A similar robustness check is performed using information on long term care insurance (Table 4.3). Again, we find a significant difference between individuals having/not having insurance with the latter having a significantly steeper income-life satisfaction gradient.

In a further robustness check we estimate the model in (1) with fixed effects. Our main findings remain significant, even though they get weaker. This last result suggests that the positive effect of the interaction between the long term illness status and the income above the top 30th centile threshold is more a between than a within effect (Table 5, column 1). When we split the sample between individuals with above/below median unmet needs for medical treatment we find that the impact of the variable is significantly higher in the above median unmet needs subsample, consistently with what found in the Easterlin estimates (Table 5, columns 2-3).

5. The value of extra income: the compensating variation approach

Following, among others, Luechinger (2009), and in order to calculate the shadow value of being in the top 30 percent of the income distribution when reporting a chronic disease, we use the following compensating variation approach

$$CS_{i,t} = Income_i(1 - \exp(\hat{\beta}_s * \hat{\delta}^{-1} * \Delta DTop30IncomeLongTermIll_i))$$

(3)

where \hat{b}_s is the estimated coefficient of the dummy measuring the impact of being in the top 30 percent of the income distribution when ill and, \hat{d} is the coefficient of \ln_Income , $Income$ is the level of income (averaged across the three waves) and $\Delta Top30Income_i LongTermIll$ is a variable taking value one when the individual enters in the top 30 percent income group conditional to the long term ill status.

The fact that income is on both sides of the analysis (even though combined with the long term ill condition in one case) does not make the calculation of the compensating variation trivial. This is because CS_{it} measures the value of the income needed to move from the average income level to the top 30 percent income bracket when ill. If the distance between the average income and the top 30 percent income bracket is $GapIncome$, and if the estimated $CS_{it} > GapIncome$, hence the $CS_{it}/GapIncome$ ratio measures the extra marginal utility that income bringing into the top 30 percent income group has for individuals reporting at least one chronic illness when they are below that threshold.

If we reasonably assume that the individual above that threshold has lower problems in health assistance (see our research hypothesis in section 3) we can consider $Z = CS_{it} * p(LongTermIll)$ (where $p(LongTermIll)$ is the yearly probability of becoming ill) as the approximation of the value of a full coverage health insurance (or of full coverage from the NHS) for a risk neutral individual. By reasonably assuming that most of the population is risk averse, Z can be considered the lower bound of the value of health insurance (or of full coverage from the NHS) for the population. If $Z > GapIncome$ any euro of taxes used to finance the NHS in order to get full coverage is well spent.

In order to calculate the compensating variation we use coefficients of our country specific life satisfaction estimates in Table 5, together with the overall sample average value of income from our base estimate in Table 1, column 1.

In Table 6 we present our findings. Estimates ratios measure the average utility of one euro for a long term ill respondent when moving from the individual's median income level to the median income level of the top 30 percent income group, divided for the average utility of one euro in the sample. Since our ratio (and, specifically, the denominator) is highly sensitive to the coefficient of OECD equivalised income in the life satisfaction estimates we use a macroregional area income coefficient dividing our countries into Center-North, South and Eastern Europe.¹⁷

Our results show the existence of three groups. A first group of countries have insignificant long term illness coefficients depending from the lack of significance of the *LongTermIll*HighIncome* variable in country estimates (Sweden, Netherlands, Luxembourg and Belgium). Other countries have significant but relatively low ratios and are all in Northern Europe (Germany, Denmark, Austria, Switzerland), with the exception of Estonia. A third group of countries have very high ratios and are all located in South and Eastern Europe (Italy, Spain, Portugal, Croatia, Poland and Hungary). France remains in the middle between these last two groups. Israel stands apart both as a region (we use as denominator his own income coefficient) and for its very high coefficient that presumably reflects high quality of top treatments, the high inequality of income within the country and the extreme difference between the high quality of treatments for the rich and the poor in it.

In terms of general interpretation of our results, high ratios imply that the value of extra income for the long term ill is very important, consistently with the idea that the difference of treatment for the rich and the non rich is highly relevant. This difference may depend, in turn, from a very poor basic treatment or from the high quality of the extra treatment that can be received beyond basic NHS coverage.

As a caveat to these last calculations we remember that country level findings measured with this approach remain sensitive to measurement errors of the estimated coefficients. an alternative view

¹⁷ North-Center Europe: Sweden, Denmark, Belgium, Luxembourg, the Netherlands, Germany, Austria and France. South Europe: Italy, Portugal, Spain, Greece. Eastern Europe: Croatia, Slovenia, Poland, Hungary, Czech Republic, Estonia. Israel is considered separately as a stand-alone region.

on the economic significance of our effect remains that given by the approach used in Table 3 calculating ratios between income decile coefficients and the same decile interacted coefficients. These ratios are more stable and less subject to measurement errors in the coefficient of income on life satisfaction.

6. Our findings and the literature

Our findings on the positive effect of long term illness on the income-life satisfaction gradient apparently contradict those of Finkelstein et al. (2009). A deeper look at the difference of focus between the two studies may however reconcile this apparent contrast. We focus on long term illness and not on the number of reported pathologies, or on specific pathologies, and therefore our variable is a shaper measure of permanent income requirement necessary to tackle a long term health problem. Our sample includes 19 European countries and not UK only, respondents are individuals having/not having health insurance and not only those with health insurance as in Finkelstein et al. (2009). We also observe that the positive effect tends to be significant especially in countries with higher out-of-pocket health expenditure and for individuals not having private insurance, or for those reporting difficulties of access to care for queues or high costs of them. By discriminating within the subsample of individual reporting long term illness between those having/not having private insurance (or difficulties of access due to high costs) we are discriminating among the two possible effects envisaged in the theoretical literature since arguments for the prevalence of the positive on the negative effect should apply to the former. This is what we find in our empirical estimates.

7. Conclusions

The new technological advancements leading to the creation of a new vintage of powerful drugs that can extend life expectancy, coupled with the reduction of coverage of health needs in the reformed new welfare systems, opened an era where the provision of health services is, at the same time, always more precious and less universal.

Our research hypothesis is that, in this modified framework, the importance of income for life satisfaction is much higher for the elders who experience long term illnesses and, among them, even more so, for those facing access barriers (in terms of money, queues or expensive migration toward regions with higher health quality)

Our findings find support for this hypothesis. Econometric results on the determinants of life satisfaction on the SHARE sample including three waves and 19 countries show that equivalised household income has a stronger positive effect on subjective wellbeing for individuals reporting at least one long term illness and, among them, significantly higher effect for those declaring above median unmet needs for medical treatment. In the paper we examine the difference in the income/life satisfaction relationship between (long term) ill and not ill from different angles, ie. focusing on a high income (above top 30 percent income threshold) dummy, using a quadratic approximation of the income/life satisfaction nexus or, alternatively, not imposing a parametric function and looking at the impact of dummies for each income decile for those reporting/not reporting long term illnesses. Our findings provide original evidence that helps to qualify further the debate on the Easterlin paradox. Given that the share of individuals aged above 50 with at least one long term illness is around half of our representative samples of population in the 19 considered countries, we argue that the observed heterogeneity in the income-life satisfaction nexus should be taken into account when evaluating whether the Easterlin paradox holds or not.

Results presented in this paper have relevant policy implications. The fact that money worth more for people having at least one long term illness, than it does for those not having it, implies that individuals give high value to health insurance and that, for instance, health insurance coverage in

work contracts may be a win-win alternative to wage rises, since it improves workers wellbeing without implying a one-to-one effect on employer costs. Our findings document that this is more important for individuals with above median unmet needs for medical treatments (and, in some countries, more than in others).

Appendix B: the SHARE dataset

SHARE (the Survey of Health, Ageing and Retirement in Europe) is the most important cross-national survey with repeated waves from several EU countries (plus Israel) containing information related to socio-economic status, health, and family and social networks micro data on around 123,000 individuals aged 50 or older. The project originated from the European Commission calling with a Communication to "examine the possibility of establishing, in co-operation with Member States, a European Longitudinal Ageing Survey". The importance of the Survey has grown over time since SHARE has become a major pillar in the European Research Area and has been selected in 2008 by the European Strategy Forum on Research Infrastructures (ESFRI) as one of the key projects to be implemented. SHARE data are harmonized with those of the other main world surveys on similar topics such as the U.S. Health and Retirement Study (HRS) and the English Longitudinal Study of Ageing (ELSA). A rigorous approach is followed to harmonize ex ante cross-sectional design in the different survey countries. A common questionnaire is elaborated to the purpose and translated into the 31 national languages spoken in survey countries. The questionnaire is processed automatically using a common computer-assisted personal interviewing CAPI approach.

Wave 4 includes 2011 samples, wave 5 2013 samples and wave 6 2015 samples.

Respondents are aged 50 and above and must be domicile in one of the SHARE countries at the time of their interview. When they enter into a given wave they are automatically part of the following one in order to create a panel with repeated observations for the same individuals over time.

In order to measure accurately health variables respondents are assisted by a so called proxy respondent in all cases in which their health prevents them to do it autonomously (typically when they have Alzheimer's disease, difficulties of concentration, suffer from speaking problems or hearing loss). Proxy respondents also perform end-of-life interviews in case of death of the original respondent. Sample refreshment in presence of non response of previous wave participants and calibrated weights help to minimize selectivity bias given that attrition is not necessarily random.

The approach followed to solve missing value problems is based on the Fully Conditional Specification method (FCS) (Van Buuren et al., 2006).the explained in footnote 7.

More information on SHARE methodology and history and references for methodological paper or research papers can be found on the official SHARE website at <http://www.share-project.org/>.

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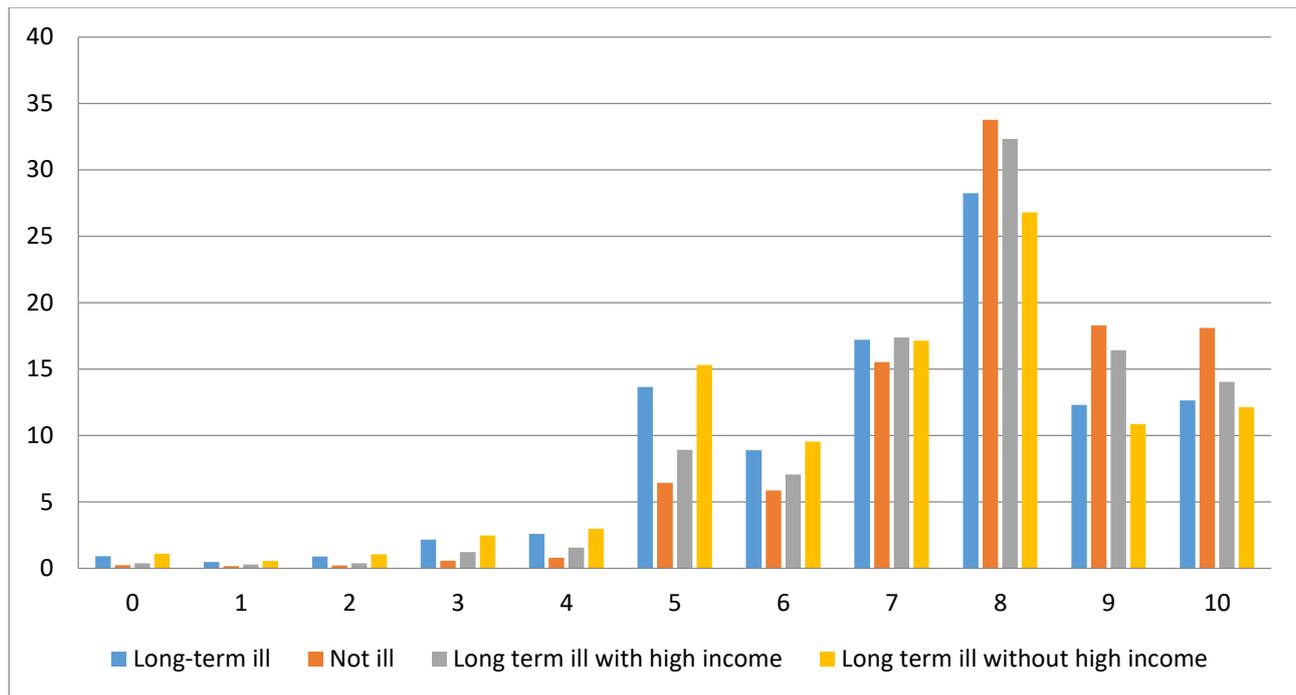
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Figure 1. High-income, long-term illness and life satisfaction



Horizontal axis: answer to the following question: *On a scale from 0 to 10 where 0 means completely dissatisfied and 10 means completely satisfied, how satisfied are you with your life?*. Vertical axis: percent of answers in the relative group (i.e. Long-term ill, Not ill, Long-term ill with high income, long-term ill without high income). Long-term ill. Answer to the following question: *some people suffer from chronic or long-term health problems. By chronic or long-term we mean it has troubled you over a period of time or is likely to affect you over a period of time. Do you have any such health problems, illness, disability or infirmity?*. High-income: income above the 30th centile of the domestic income distribution.

Table 1. The effect of high income on life satisfaction when having a long term illness

	(1)	(2)	(3)	(4)	(5)	(6)
	Waves 4, 5 and 6			Wave 4	Wave 5	Wave 6
Female	0.048*** (0.008)	0.051*** (0.008)	0.098*** (0.008)	0.034** (0.015)	0.054*** (0.014)	0.061*** (0.013)
AgeClass 60-64	0.112*** (0.012)	0.116*** (0.012)	0.135*** (0.012)	0.129*** (0.023)	0.110*** (0.021)	0.109*** (0.021)
AgeClass 65-69	0.138*** (0.015)	0.145*** (0.015)	0.179*** (0.015)	0.158*** (0.027)	0.166*** (0.026)	0.109*** (0.025)
AgeClass 70-74	0.173*** (0.016)	0.182*** (0.016)	0.244*** (0.016)	0.228*** (0.030)	0.157*** (0.028)	0.165*** (0.027)
AgeClass 75-79	0.153*** (0.018)	0.162*** (0.018)	0.281*** (0.018)	0.208*** (0.033)	0.127*** (0.031)	0.157*** (0.029)
AgeClass 80-84	0.216*** (0.021)	0.227*** (0.021)	0.418*** (0.020)	0.305*** (0.038)	0.180*** (0.035)	0.204*** (0.034)
AgeClass 85-89	0.219*** (0.027)	0.230*** (0.027)	0.512*** (0.027)	0.346*** (0.051)	0.160*** (0.046)	0.207*** (0.044)
AgeClass 90+	0.235***	0.244***	0.633***	0.342***	0.226***	0.185***

	(0.043)	(0.043)	(0.044)	(0.089)	(0.072)	(0.069)
Primary	0.124***	0.125***	0.093***	0.068	0.129***	0.163***
	(0.022)	(0.022)	(0.021)	(0.045)	(0.037)	(0.034)
Primary	0.195***	0.194***	0.140***	0.162***	0.214***	0.192***
	(0.022)	(0.022)	(0.022)	(0.045)	(0.037)	(0.034)
LowerSecondary	0.309***	0.304***	0.225***	0.264***	0.314***	0.315***
	(0.021)	(0.021)	(0.021)	(0.044)	(0.036)	(0.033)
UpperSecondary	0.372***	0.363***	0.275***	0.378***	0.360***	0.339***
	(0.028)	(0.028)	(0.027)	(0.054)	(0.047)	(0.044)
PostSecondaryNonTertiary	0.464***	0.445***	0.343***	0.440***	0.445***	0.435***
	(0.022)	(0.022)	(0.021)	(0.045)	(0.037)	(0.034)
LowerTertiary	0.659***	0.630***	0.494***	0.669***	0.593***	0.610***
	(0.043)	(0.043)	(0.043)	(0.082)	(0.073)	(0.071)
NHouseMembers	-0.009*	-0.013**	-0.011**	-0.007	-0.010	-0.021**
	(0.006)	(0.006)	(0.006)	(0.010)	(0.010)	(0.009)
Ln(Income)	0.062***	0.051***	0.046***	0.061***	0.066***	0.036***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.006)
HighIncome		0.150***	0.163***	0.118***	0.179***	0.143***
		(0.012)	(0.012)	(0.022)	(0.020)	(0.019)
LongTermIII	-0.694***	-0.742***	-0.526***	-0.767***	-0.772***	-0.692***
	(0.009)	(0.018)	(0.018)	(0.032)	(0.030)	(0.029)
LongTermIII*PartnerInH		0.134***	0.099***	0.131***	0.161***	0.112***
		(0.020)	(0.020)	(0.036)	(0.034)	(0.033)
LongTermIII*HighIncome	0.308***	0.165***	0.105***	0.185***	0.160***	0.155***
	(0.014)	(0.017)	(0.017)	(0.031)	(0.028)	(0.028)
Unemployed	-0.614***	-0.607***	-0.621***	-0.726***	-0.589***	-0.503***
	(0.028)	(0.028)	(0.028)	(0.049)	(0.048)	(0.047)
Retired	0.044***	0.049***	0.022*	0.019	0.051**	0.072***
	(0.012)	(0.012)	(0.011)	(0.021)	(0.020)	(0.019)
PartnerInH	0.525***	0.439***	0.435***	0.464***	0.376***	0.477***
	(0.012)	(0.015)	(0.015)	(0.027)	(0.025)	(0.024)
IADL			-0.667***			
			(0.023)			
HighPain			-0.608***			
			(0.037)			
IADL*HighIncome			-0.003			
			(0.034)			
IADL*PartnerInH			-0.090***			
			(0.029)			
HighPain*HighIncome			-0.011			
			(0.047)			
HighPainPartnerInH			0.135***			
			(0.045)			
SiblingLivingClose	0.055***	0.060***	0.063***	0.024	0.047**	0.106***
	(0.009)	(0.011)	(0.011)	(0.021)	(0.019)	(0.018)
LongTermIII*SiblingLivingClose		-0.011	-0.003	0.022	-0.035	-0.027
		(0.016)	(0.016)	(0.029)	(0.028)	(0.027)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	No	No	No

Constant	7.109*** (0.046)	7.237*** (0.047)	7.304*** (0.046)	7.190*** (0.090)	6.955*** (0.086)	7.376*** (0.074)
Observations	184,977	184,977	184,977	56,257	63,925	64,795
R-squared	0.162	0.162	0.185	0.166	0.176	0.149

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Table 2. The effect of high income on life satisfaction when having a long term illness – income deciles

VARIABLES	(1) All sample	(2) Wave 4	(3) Wave 5	(4) Wave 6	(5) Long Term Ill only
Female	0.054*** (0.008)	0.035** (0.015)	0.057*** (0.014)	0.065*** (0.013)	0.069*** (0.012)
AgeClass 60-64	0.121*** (0.012)	0.127*** (0.023)	0.114*** (0.021)	0.108*** (0.021)	0.154*** (0.020)
AgeClass 65-69	0.152*** (0.015)	0.158*** (0.027)	0.171*** (0.026)	0.107*** (0.025)	0.215*** (0.023)
AgeClass 70-74	0.193*** (0.016)	0.228*** (0.030)	0.171*** (0.028)	0.166*** (0.027)	0.252*** (0.025)
AgeClass 75-79	0.178*** (0.018)	0.210*** (0.033)	0.144*** (0.031)	0.162*** (0.029)	0.221*** (0.026)
AgeClass 80-84	0.244*** (0.021)	0.304*** (0.038)	0.201*** (0.035)	0.210*** (0.034)	0.299*** (0.029)
AgeClass 85-89	0.249*** (0.027)	0.352*** (0.051)	0.179*** (0.046)	0.215*** (0.044)	0.280*** (0.037)
AgeClass 90+	0.265*** (0.044)	0.351*** (0.089)	0.240*** (0.072)	0.195*** (0.069)	0.314*** (0.059)
Primary	0.133*** (0.022)	0.069 (0.045)	0.131*** (0.037)	0.169*** (0.034)	0.167*** (0.032)
LowerSecondary	0.189*** (0.022)	0.149*** (0.045)	0.203*** (0.037)	0.188*** (0.034)	0.240*** (0.033)
UpperSecondary	0.288*** (0.021)	0.241*** (0.044)	0.289*** (0.036)	0.296*** (0.033)	0.356*** (0.032)
PostSecondaryNonTertiary	0.339*** (0.028)	0.354*** (0.054)	0.327*** (0.047)	0.314*** (0.044)	0.377*** (0.042)
LowerTertiary	0.410*** (0.022)	0.402*** (0.045)	0.398*** (0.037)	0.397*** (0.034)	0.511*** (0.033)
UpperTertiary	0.573*** (0.043)	0.620*** (0.082)	0.530*** (0.073)	0.555*** (0.071)	0.774*** (0.071)
NHouseMembers	-0.028*** (0.006)	-0.024** (0.010)	-0.029*** (0.010)	-0.029*** (0.009)	-0.022*** (0.008)
2nd Income Decile	0.004 (0.027)	0.091* (0.050)	-0.034 (0.046)	-0.034 (0.045)	0.118*** (0.036)
3rd Income Decile	0.058** (0.026)	0.171*** (0.049)	0.028 (0.044)	0.004 (0.043)	0.226*** (0.035)
4th Income Decile	0.124*** (0.025)	0.160*** (0.048)	0.122*** (0.043)	0.098** (0.041)	0.302*** (0.036)
5th Income Decile	0.141***	0.205***	0.159***	0.072*	0.280***

	(0.025)	(0.047)	(0.043)	(0.041)	(0.036)
6th Income Decile	0.214***	0.292***	0.190***	0.175***	0.375***
	(0.025)	(0.046)	(0.042)	(0.040)	(0.036)
7th Income Decile	0.234***	0.252***	0.285***	0.172***	0.445***
	(0.024)	(0.046)	(0.041)	(0.039)	(0.036)
8th Income Decile	0.306***	0.358***	0.342***	0.227***	0.506***
	(0.024)	(0.045)	(0.040)	(0.039)	(0.037)
9th Income Decile	0.329***	0.341***	0.368***	0.277***	0.598***
	(0.024)	(0.046)	(0.040)	(0.038)	(0.037)
10th Income Decile	0.427***	0.452***	0.477***	0.354***	0.731***
	(0.024)	(0.045)	(0.040)	(0.038)	(0.037)
Unemployed	-0.585***	-0.703***	-0.564***	-0.479***	-0.487***
	(0.028)	(0.049)	(0.048)	(0.047)	(0.042)
Retired	0.049***	0.017	0.053***	0.078***	0.073***
	(0.012)	(0.021)	(0.020)	(0.019)	(0.017)
PartnerInH	0.420***	0.457***	0.366***	0.447***	0.454***
	(0.013)	(0.022)	(0.022)	(0.021)	(0.019)
SiblingLivingClose	0.061***	0.036**	0.033**	0.093***	0.081***
	(0.009)	(0.017)	(0.016)	(0.015)	(0.014)
LongTermIII	-0.835***	-0.836***	-0.867***	-0.803***	
	(0.029)	(0.053)	(0.049)	(0.048)	
2nd Income Decile*LongTermIII	0.118***	0.076	0.213***	0.063	
	(0.040)	(0.072)	(0.068)	(0.067)	
3rd Income Decile*LongTermIII	0.215***	0.233***	0.163**	0.230***	
	(0.039)	(0.071)	(0.066)	(0.065)	
4th Income Decile*LongTermIII	0.204***	0.206***	0.188***	0.204***	
	(0.038)	(0.070)	(0.065)	(0.063)	
5th Income Decile*LongTermIII	0.215***	0.191***	0.202***	0.234***	
	(0.038)	(0.068)	(0.065)	(0.063)	
6th Income Decile*LongTermIII	0.254***	0.187***	0.327***	0.224***	
	(0.037)	(0.068)	(0.064)	(0.062)	
7th Income Decile*LongTermIII	0.299***	0.294***	0.307***	0.270***	
	(0.037)	(0.067)	(0.063)	(0.061)	
8th Income Decile*LongTermIII	0.320***	0.285***	0.350***	0.315***	
	(0.036)	(0.067)	(0.062)	(0.061)	
9th Income Decile*LongTermIII	0.388***	0.406***	0.398***	0.350***	
	(0.036)	(0.067)	(0.062)	(0.060)	
10th Income Decile*LongTermIII	0.438***	0.473***	0.424***	0.418***	
	(0.036)	(0.066)	(0.061)	(0.060)	
2nd Income Decile*AbMedianUnMetneeds					0.009
					(0.046)
3rd Income Decile*AbMedianUnMetneeds					0.078*
					(0.045)
4th Income Decile*AbMedianUnMetneeds					0.015
					(0.044)
5th Income Decile*AbMedianUnMetneeds					0.101**
					(0.043)
6th Income Decile*AbMedianUnMetneeds					0.123***
					(0.043)
7th Income Decile*AbMedianUnMetneeds					0.108**
					(0.043)

8th Income Decile*AbMedianUnMetneeds					0.180*** (0.043)
9th Income Decile*AbMedianUnMetneeds					0.169*** (0.043)
10th Income Decile*AbMedianUnMetneeds					0.194*** (0.043)
Country Dummies	Yes	Yes	Yes	Yes	Yes
Year Dumies	Yes	No	No	No	Yes
Constant	7.585*** (0.034)	7.632*** (0.064)	7.502*** (0.059)	7.675*** (0.058)	6.631*** (0.051)
Observations	184,977	56,257	63,925	64,795	94,736
R-squared	0.162	0.169	0.179	0.152	0.135

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Figure 2.1 The income (decile)-life satisfaction slope for individuals with/without long term illness (all sample).

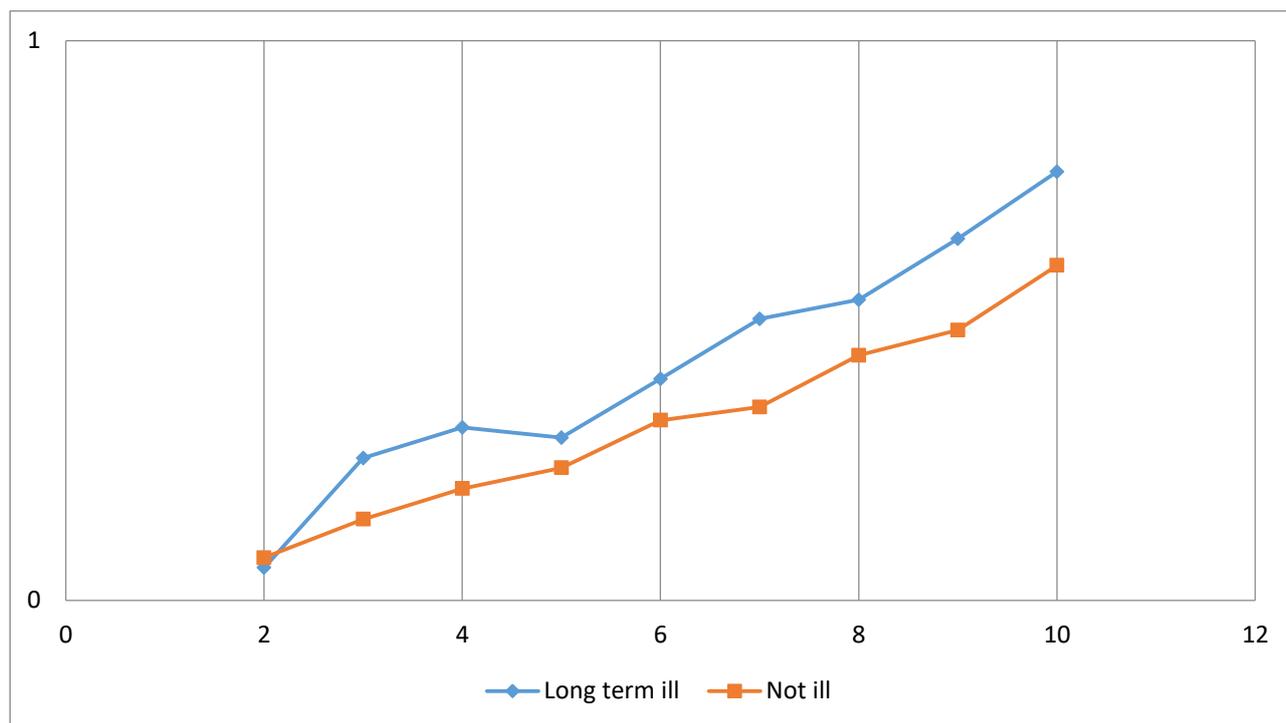


Figure 2.2 The income (decile)-life satisfaction slope for individuals with/without long term illness (wave 4).

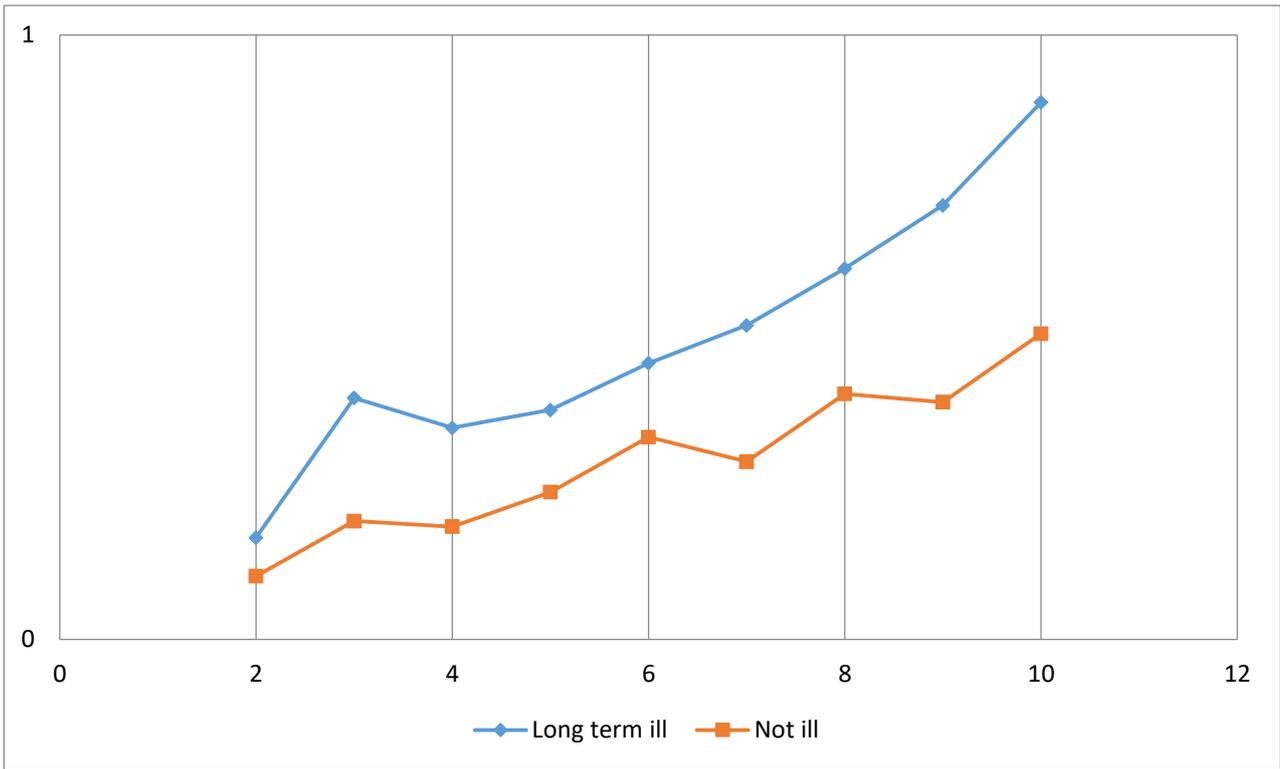


Figure 2.3 The income (decile) life satisfaction slope for individuals with/without long term illness (wave 5).

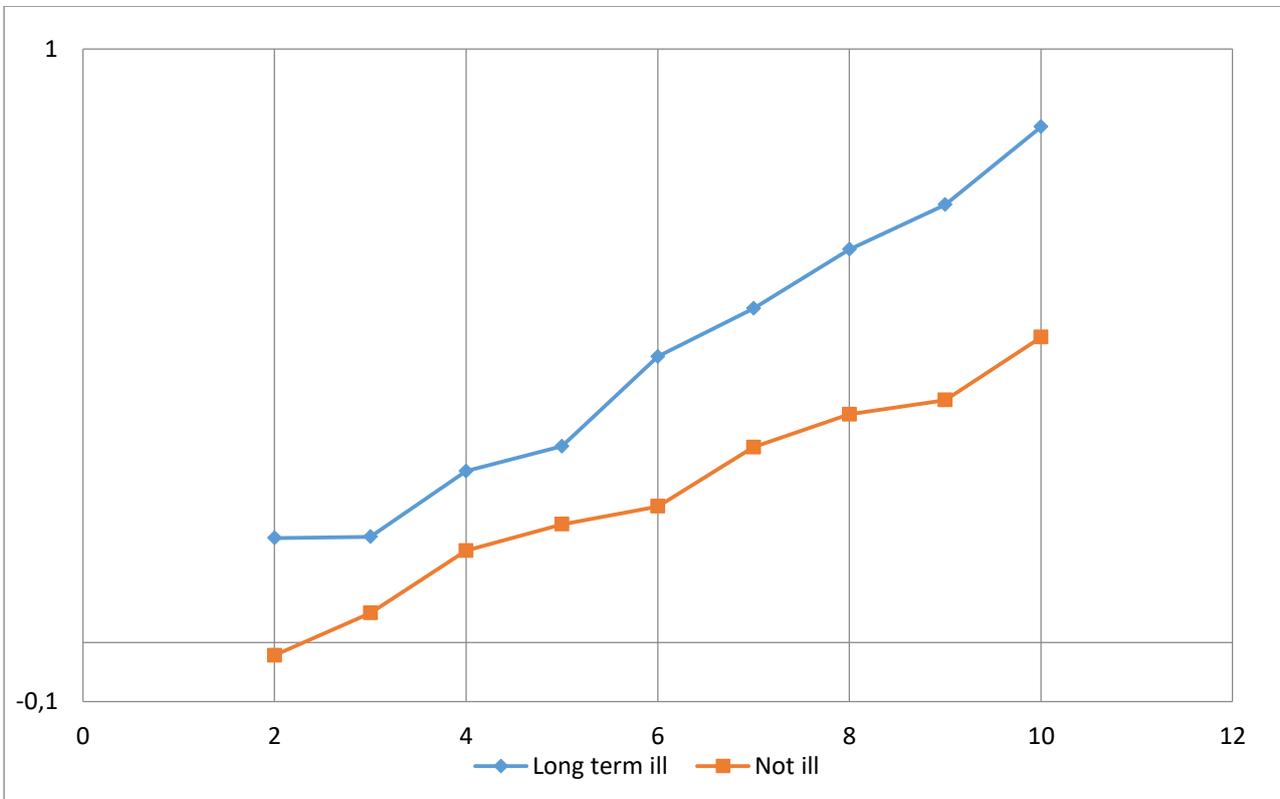


Figure 2.4 The income (decile)-life satisfaction slope for individuals with/without long term illness (wave 6).

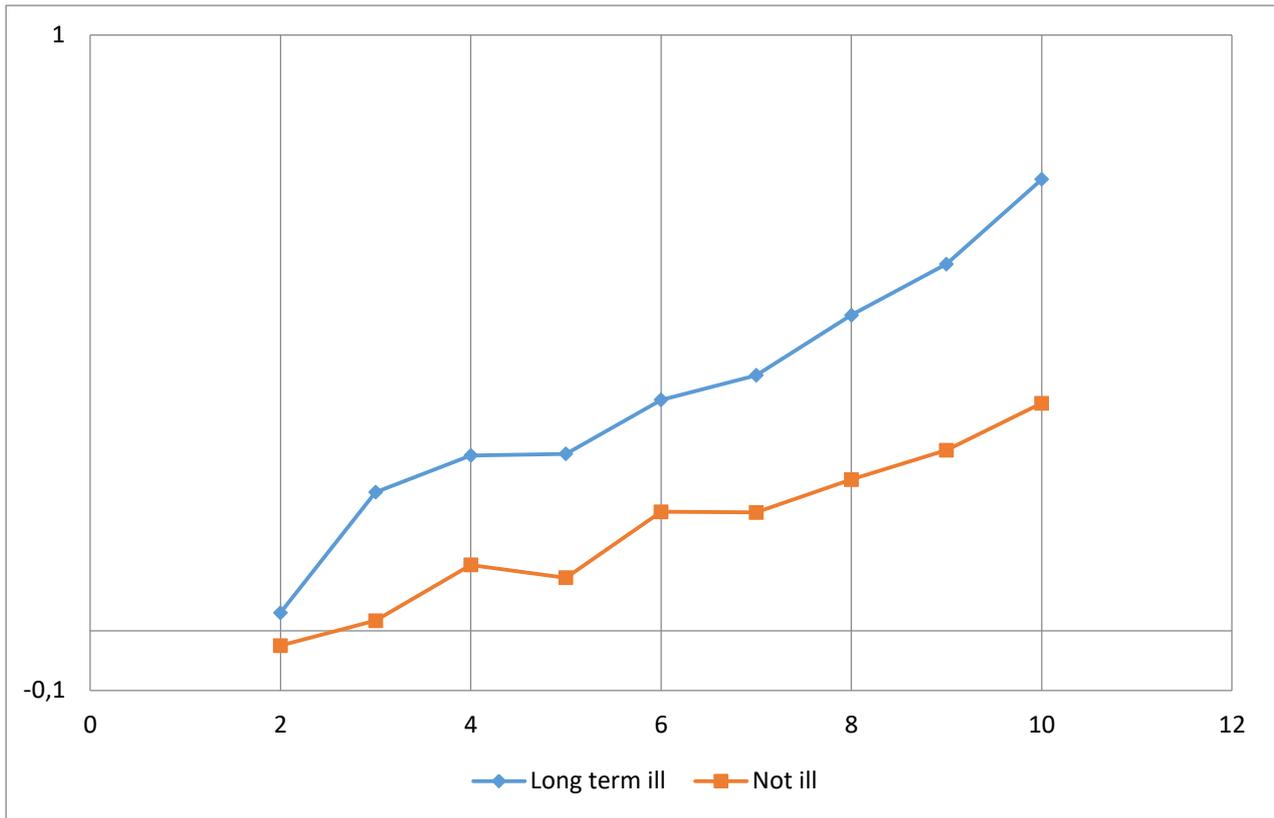
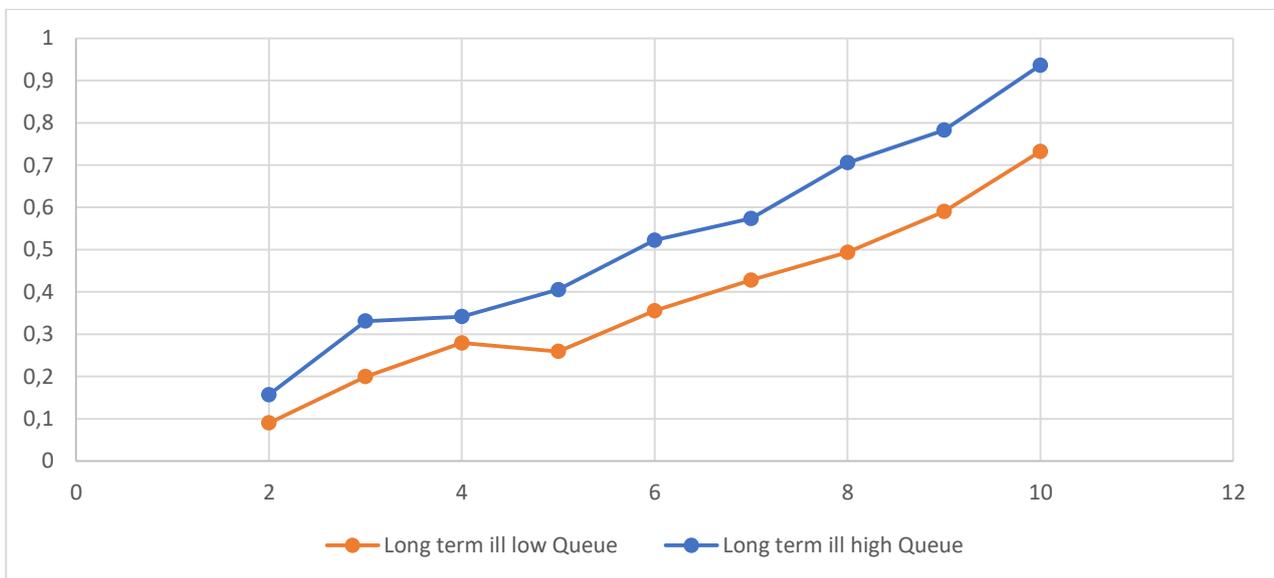


Figure 2.5 The income (decile)-life satisfaction slope for individuals with long term illness only and above/below median unmet needs for medical treatment



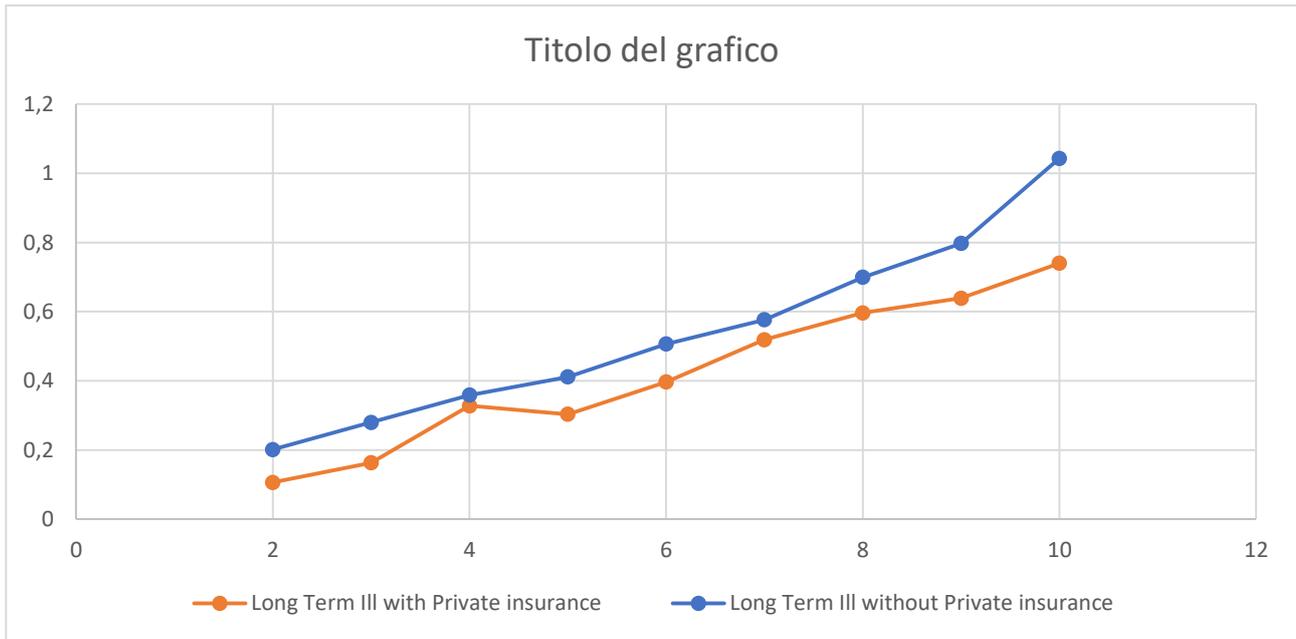


Table 3. Estimated income decile coefficients for individuals with long term illness scaled with coefficients of individuals without long term illness.

Income Deciles	Long term ill/unmet needs below median	Long Term Ill	Long term ill/unmet needs above median
2	1.089	1.466	1.897
3	1.831	2.433	3.039
4	1.739	1.923	2.128
5	1.430	1.826	2.236
6	1.204	1.486	1.769
7	1.460	1.708	1.957
8	1.380	1.676	1.972
9	1.596	1.857	2.117
10	1.411	1.605	1.804

Table 4.1 The effect of high-income on life satisfaction when having a long term illness – quadratic specification

VARIABLES	(1) All sample	(2) Wave 4	(3) Wave 5	(4) Wave 6
Female	0.054*** (0.012)	0.004 (0.022)	0.081*** (0.020)	0.068*** (0.020)
AgeClass 60-64	0.140*** (0.019)	0.147*** (0.034)	0.133*** (0.032)	0.140*** (0.032)
AgeClass 65-69	0.183*** (0.022)	0.195*** (0.040)	0.211*** (0.038)	0.140*** (0.037)
AgeClass 70-74	0.254*** (0.024)	0.307*** (0.043)	0.237*** (0.042)	0.224*** (0.041)
AgeClass 75-79	0.275*** (0.026)	0.312*** (0.048)	0.284*** (0.045)	0.236*** (0.042)
AgeClass 80-84	0.355*** (0.029)	0.461*** (0.054)	0.334*** (0.050)	0.289*** (0.048)
AgeClass 85-89	0.373*** (0.038)	0.490*** (0.071)	0.287*** (0.064)	0.364*** (0.062)
AgeClass 90+	0.467*** (0.060)	0.658*** (0.112)	0.455*** (0.104)	0.328*** (0.096)
Primary	0.081** (0.033)	-0.022 (0.066)	0.063 (0.057)	0.180*** (0.051)
LowerSecondary	0.145*** (0.033)	0.105 (0.067)	0.159*** (0.056)	0.152*** (0.052)
UpperSecondary	0.263*** (0.032)	0.197*** (0.065)	0.264*** (0.054)	0.303*** (0.049)
PostSecondaryNonTertiary	0.300*** (0.041)	0.299*** (0.080)	0.304*** (0.070)	0.279*** (0.065)
LowerTertiary	0.400*** (0.032)	0.369*** (0.066)	0.396*** (0.055)	0.411*** (0.050)
UpperTertiary	0.456*** (0.031)	0.488*** (0.069)	0.431*** (0.057)	0.423*** (0.054)
NHouseMembers	0.012 (0.009)	0.014 (0.015)	0.027* (0.016)	-0.002 (0.014)
Ln(Income)	0.177*** (0.014)	0.130*** (0.025)	0.222*** (0.025)	0.181*** (0.023)
Ln(Income)^2	-0.004*** (0.001)	-0.003** (0.001)	-0.006*** (0.001)	-0.004*** (0.001)
LongTermIll	-1.104*** (0.108)	-1.510*** (0.174)	-1.172*** (0.207)	-0.688*** (0.177)
LongTermIll*PartnerInH	0.057** (0.025)	0.085* (0.045)	0.080* (0.043)	0.012 (0.041)
LongTermIll*Ln(Income)	-0.153*** (0.025)	-0.074* (0.039)	-0.161*** (0.048)	-0.230*** (0.043)
LongTermIll*Ln(Income)^2	0.021*** (0.002)	0.017*** (0.003)	0.022*** (0.003)	0.025*** (0.003)
Unemployed	-0.564*** (0.041)	-0.719*** (0.072)	-0.493*** (0.069)	-0.471*** (0.073)

Retired	0.016 (0.017)	-0.013 (0.031)	0.002 (0.030)	0.055** (0.028)
PartnerInH	0.406*** (0.020)	0.417*** (0.036)	0.371*** (0.034)	0.421*** (0.032)
SiblingLivingClose	0.009 (0.017)	-0.032 (0.031)	-0.018 (0.028)	0.068** (0.027)
LongTermIll*SiblingLivingClose	0.049** (0.023)	0.103** (0.042)	0.033 (0.040)	0.009 (0.039)
Country Dummies	Yes	Yes	Yes	Yes
Wave Dummies	Yes	No	No	No
Constant	6.659*** (0.088)	7.090*** (0.158)	6.218*** (0.157)	6.617*** (0.144)
Observations	88,729	27,361	30,125	31,243
R-squared	0.177	0.180	0.193	0.167

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Figure 2.6. The Income/life satisfaction slope for long term ill/not long term ill estimated with a quadratic specification for income in the life satisfaction estimate.

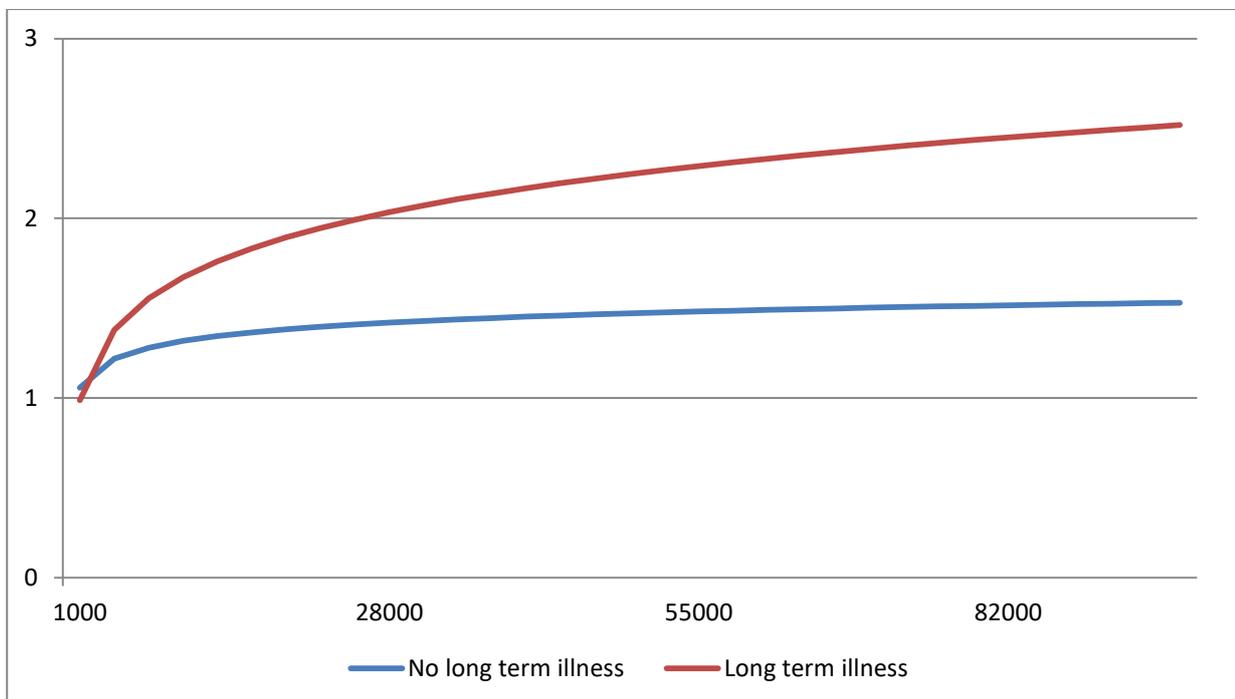


Table 4.2. The effect of high income on life satisfaction when not having a supplementary health insurance (subsample of individuals with long term illness)

VARIABLES	Supplementary health insurance (SHI)					
	High income		Income Deciles		Quadratic income	
	No SHI	SHI	No SHI	SHI	No SHI	SHI
Female	0.118*** (0.024)	0.068*** (0.024)	0.082*** (0.017)	0.031* (0.017)	0.115*** (0.024)	0.072*** (0.024)
AgeClass 60-64	0.240*** (0.037)	0.122*** (0.038)	0.165*** (0.026)	0.109*** (0.028)	0.232*** (0.037)	0.119*** (0.038)
AgeClass 65-69	0.294*** (0.043)	0.206*** (0.046)	0.211*** (0.031)	0.217*** (0.033)	0.274*** (0.043)	0.194*** (0.046)
AgeClass 70-74	0.401*** (0.047)	0.254*** (0.052)	0.282*** (0.034)	0.271*** (0.038)	0.373*** (0.046)	0.246*** (0.052)
AgeClass 75-79	0.413*** (0.049)	0.276*** (0.055)	0.255*** (0.036)	0.254*** (0.041)	0.385*** (0.049)	0.264*** (0.055)
AgeClass 80-84	0.517*** (0.055)	0.357*** (0.062)	0.316*** (0.041)	0.362*** (0.047)	0.486*** (0.055)	0.346*** (0.062)
AgeClass 85-89	0.577*** (0.068)	0.338*** (0.079)	0.369*** (0.054)	0.291*** (0.061)	0.550*** (0.068)	0.324*** (0.079)
AgeClass 90+	0.526*** (0.111)	0.565*** (0.120)	0.349*** (0.089)	0.499*** (0.100)	0.497*** (0.111)	0.559*** (0.120)
Primary	0.333*** (0.056)	-0.065 (0.072)	0.247*** (0.039)	-0.078 (0.054)	0.334*** (0.056)	-0.094 (0.072)
LowerSecondary	0.280*** (0.058)	0.021 (0.069)	0.196*** (0.040)	0.009 (0.053)	0.278*** (0.058)	-0.006 (0.069)
UpperSecondary	0.435*** (0.056)	0.134** (0.064)	0.327*** (0.039)	0.092* (0.049)	0.429*** (0.056)	0.105 (0.064)
PostSecondaryNonTertiary	0.441*** (0.076)	0.119 (0.085)	0.330*** (0.054)	0.079 (0.064)	0.438*** (0.076)	0.098 (0.085)
LowerTertiary	0.606*** (0.058)	0.216*** (0.064)	0.480*** (0.040)	0.171*** (0.049)	0.616*** (0.058)	0.205*** (0.065)
NHouseMembers	-0.011 (0.017)	-0.038** (0.018)	-0.025** (0.011)	-0.048*** (0.013)	0.032* (0.018)	-0.004 (0.018)
2nd Income decile			-0.001 (0.053)	-0.020 (0.071)		
3rd Income decile			0.060 (0.053)	-0.027 (0.065)		
4th Income decile			0.152*** (0.051)	0.095 (0.064)		
5th Income decile			0.077 (0.051)	0.084 (0.063)		
6th Income decile			0.162*** (0.051)	0.122* (0.063)		
7th Income decile			0.249*** (0.049)	0.190*** (0.061)		
8th Income decile			0.321*** (0.048)	0.242*** (0.061)		
9th Income decile			0.347*** (0.048)	0.278*** (0.060)		
10th Income decile			0.488***	0.342***		

LongTermIII	-0.695*** (0.042)	-0.643*** (0.046)	(0.048) -0.823*** (0.061)	(0.060) -0.772*** (0.082)	-0.920*** (0.183)	-0.750** (0.308)
LongTermIII*PartnerInH	0.065 (0.049)	0.207*** (0.055)	-0.035 (0.044)	0.077 (0.050)	0.001 (0.047)	0.153*** (0.052)
Unemployed	-0.572*** (0.075)	-0.256*** (0.087)	-0.556*** (0.054)	-0.217*** (0.067)	-0.573*** (0.075)	-0.253*** (0.087)
Retired	-0.025 (0.033)	0.045 (0.037)	-0.004 (0.024)	0.005 (0.027)	-0.036 (0.033)	0.033 (0.037)
PartnerInH	0.302*** (0.040)	0.363*** (0.040)	0.346*** (0.033)	0.399*** (0.034)	0.337*** (0.039)	0.407*** (0.039)
SiblingLivingClose	0.067** (0.033)	0.070** (0.032)	0.068*** (0.023)	0.048** (0.023)	0.026 (0.033)	0.042 (0.032)
LongTermIII*SiblingLivingClose	-0.031 (0.044)	-0.108** (0.049)	-0.026 (0.032)	-0.007 (0.036)	0.043 (0.045)	-0.034 (0.049)
2nd Income decile* LongTermIII			0.163** (0.076)	0.080 (0.105)		
3rd Income decile* LongTermIII			0.146* (0.076)	0.151 (0.100)		
4th Income decile* LongTermIII			0.118 (0.076)	0.192** (0.098)		
5th Income decile* LongTermIII			0.281*** (0.077)	0.154 (0.098)		
6th Income decile* LongTermIII			0.297*** (0.077)	0.229** (0.098)		
7th Income decile* LongTermIII			0.266*** (0.076)	0.277*** (0.096)		
8th Income decile* LongTermIII			0.301*** (0.076)	0.296*** (0.096)		
9th Income decile* LongTermIII			0.387*** (0.076)	0.298*** (0.096)		
10th Income decile* LongTermIII			0.441*** (0.076)	0.358*** (0.095)		
Ln(Income)	0.142*** (0.013)	0.086*** (0.013)			0.185*** (0.049)	0.187*** (0.033)
HighIncome	0.253*** (0.035)	0.219*** (0.031)				
LongTermIII*HighIncome	0.178*** (0.051)	0.111** (0.050)				
Ln(Income)^2					-0.003 (0.003)	-0.006*** (0.002)
LongTermIII*Ln(Income)					-0.246*** (0.047)	-0.211*** (0.068)
LongTermIII*Ln(Income)^2					0.029*** (0.004)	0.023*** (0.004)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.089*** (0.137)	7.240*** (0.145)	7.294*** (0.073)	7.879*** (0.092)	5.876*** (0.208)	6.848*** (0.202)

Observations	26,392	16,629	47,442	29,056	26,392	16,629
R-squared	0.180	0.180	0.166	0.164	0.180	0.181

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class. Waves 5 and 6 only, no data available for Supplementary health insurance in wave 4.

Table 4.3. The effect of high income on life satisfaction when not having a long-term care insurance (subsample of individuals with long term illness)

VARIABLES	Long-term care insurance (LTCI)					
	High income		Deciles		Quadratic income	
	LTCI	No LTCI	LTCI	No LTCI	LTCI	No LTCI
Female	0.013 (0.031)	0.117*** (0.023)	0.023 (0.022)	0.074*** (0.017)	0.014 (0.031)	0.116*** (0.023)
AgeClass 60-64	0.171*** (0.049)	0.195*** (0.037)	0.125*** (0.034)	0.150*** (0.026)	0.160*** (0.049)	0.189*** (0.037)
AgeClass 65-69	0.146** (0.058)	0.298*** (0.043)	0.158*** (0.041)	0.232*** (0.031)	0.129** (0.058)	0.278*** (0.043)
AgeClass 70-74	0.194*** (0.064)	0.398*** (0.047)	0.199*** (0.045)	0.292*** (0.034)	0.168*** (0.064)	0.376*** (0.047)
AgeClass 75-79	0.182*** (0.068)	0.381*** (0.050)	0.184*** (0.049)	0.248*** (0.037)	0.162** (0.068)	0.354*** (0.050)
AgeClass 80-84	0.256*** (0.078)	0.479*** (0.055)	0.210*** (0.057)	0.325*** (0.042)	0.233*** (0.078)	0.456*** (0.055)
AgeClass 85-89	0.241** (0.095)	0.513*** (0.070)	0.164** (0.071)	0.319*** (0.055)	0.219** (0.095)	0.487*** (0.070)
AgeClass 90+	0.389*** (0.141)	0.502*** (0.110)	0.422*** (0.115)	0.318*** (0.090)	0.378*** (0.141)	0.479*** (0.110)
Primary	0.286*** (0.083)	0.172*** (0.055)	0.171*** (0.057)	0.136*** (0.040)	0.280*** (0.083)	0.163*** (0.055)
LowerSecondary	0.307*** (0.084)	0.183*** (0.057)	0.229*** (0.058)	0.128*** (0.041)	0.297*** (0.083)	0.174*** (0.057)
UpperSecondary	0.378*** (0.079)	0.345*** (0.054)	0.305*** (0.055)	0.258*** (0.039)	0.365*** (0.079)	0.334*** (0.054)
PostSecondaryNonTertiary	0.371*** (0.105)	0.362*** (0.079)	0.251*** (0.074)	0.282*** (0.058)	0.361*** (0.105)	0.354*** (0.079)
LowerTertiary	0.463*** (0.081)	0.499*** (0.055)	0.401*** (0.056)	0.386*** (0.040)	0.464*** (0.081)	0.510*** (0.055)
NHouseMembers	-0.020 (0.025)	-0.026 (0.017)	-0.052*** (0.018)	-0.026** (0.011)	0.016 (0.025)	0.013 (0.017)
2nd Income decile			-0.171** (0.073)	0.115** (0.057)		
3rd Income decile			-0.089 (0.069)	0.097* (0.055)		
4th Income decile			-0.008 (0.068)	0.260*** (0.054)		
5th Income decile			-0.084 (0.066)	0.206*** (0.054)		
6th Income decile			-0.008 (0.068)	0.262*** (0.053)		
7th Income decile			0.077 (0.064)	0.319*** (0.051)		
8th Income decile			0.039	0.408***		

			(0.064)	(0.051)		
9th Income decile			0.165***	0.430***		
			(0.063)	(0.051)		
10th Income decile			0.253***	0.522***		
			(0.063)	(0.050)		
LongTermIII	-0.728***	-0.632***	-0.952***	-0.672***	-1.123***	-0.703***
	(0.059)	(0.041)	(0.092)	(0.065)	(0.311)	(0.229)
LongTermIII*PartnerInH	0.190***	0.080	0.033	0.020	0.166**	0.000
	(0.069)	(0.049)	(0.062)	(0.045)	(0.066)	(0.046)
Unemployed	-0.429***	-0.512***	-0.430***	-0.486***	-0.432***	-0.514***
	(0.117)	(0.077)	(0.087)	(0.057)	(0.118)	(0.077)
Retired	0.133***	-0.030	0.088***	-0.008	0.121***	-0.040
	(0.045)	(0.033)	(0.032)	(0.024)	(0.045)	(0.033)
PartnerInH	0.271***	0.334***	0.343***	0.354***	0.287***	0.390***
	(0.050)	(0.039)	(0.043)	(0.032)	(0.049)	(0.037)
SiblingLivingClose	0.124***	0.045	0.125***	0.052**	0.080*	0.007
	(0.041)	(0.031)	(0.029)	(0.022)	(0.041)	(0.031)
LongTermIII*SiblingLivingClose	-0.106*	0.012	-0.094**	-0.001	-0.019	0.089**
	(0.061)	(0.044)	(0.044)	(0.033)	(0.062)	(0.045)
2nd Income decile* LongTermIII			0.293**	0.027		
			(0.114)	(0.083)		
3rd Income decile* LongTermIII			0.263**	0.103		
			(0.112)	(0.082)		
4th Income decile* LongTermIII			0.253**	-0.016		
			(0.110)	(0.081)		
5th Income decile* LongTermIII			0.473***	0.074		
			(0.108)	(0.082)		
6th Income decile* LongTermIII			0.503***	0.117		
			(0.111)	(0.081)		
7th Income decile* LongTermIII			0.512***	0.150*		
			(0.108)	(0.081)		
8th Income decile* LongTermIII			0.514***	0.137*		
			(0.110)	(0.080)		
9th Income decile* LongTermIII			0.603***	0.191**		
			(0.109)	(0.080)		
10th Income decile* LongTermIII			0.532***	0.317***		
			(0.107)	(0.080)		
Ln(Income)	0.092***	0.102***			0.160***	0.215***
	(0.017)	(0.012)			(0.042)	(0.037)
HighIncome	0.168***	0.269***				
	(0.042)	(0.032)				
LongTermIII*HighIncome	0.248***	0.112**				
	(0.066)	(0.049)				
Ln(Income)^2					-0.004*	-0.007***
					(0.002)	(0.002)
LongTermIII*Ln(Income)					-0.161**	-0.255***
					(0.073)	(0.054)
LongTermIII*Ln(Income)^2					0.022***	0.028***
					(0.005)	(0.004)
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Wave Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	6.821***	6.563***	7.622***	7.345***	6.535***	6.109***

	(0.274)	(0.130)	(0.185)	(0.073)	(0.319)	(0.189)
Observations	11,228	24,509	20,803	42,880	11,228	24,509
R-squared	0.176	0.209	0.169	0.195	0.177	0.209

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class. Only waves 5 and 6, no data available for Long-term care insurance in wave 4

Table 5. The effect of high-income on life satisfaction when having a long term illness - fixed effect panel estimates

VARIABLES	(1)	(2)	(3)
AgeClass 60-64	0.128*** (0.022)	0.267*** (0.057)	0.096*** (0.024)
AgeClass 65-69	0.122*** (0.034)	0.254*** (0.086)	0.093*** (0.036)
AgeClass 70-74	0.133*** (0.044)	0.284** (0.116)	0.098** (0.047)
AgeClass 75-79	0.061 (0.055)	0.258* (0.143)	0.017 (0.059)
AgeClass 80-84	0.003 (0.067)	0.244 (0.173)	-0.062 (0.072)
AgeClass 85-89	-0.109 (0.082)	0.235 (0.211)	-0.202** (0.087)
AgeClass 90+	-0.177 (0.108)	0.342 (0.293)	-0.326*** (0.113)
Primary	0.088 (0.317)	0.178 (0.797)	0.030 (0.342)
Primary	0.166 (0.341)	-0.307 (0.787)	0.429 (0.389)
LowerSecondary	0.444 (0.339)	0.258 (0.667)	0.621 (0.400)
UpperSecondary	0.662 (0.439)	0.974 (0.837)	0.423 (0.535)
PostSecondaryNonTertiary	0.492 (0.382)	0.625 (0.766)	0.524 (0.447)
LowerTertiary	0.086 (0.708)	-0.284 (2.003)	0.186 (0.748)
NHouseMembers	0.030** (0.013)	0.007 (0.031)	0.046*** (0.014)
Ln(Income)	0.012*** (0.004)	0.005 (0.009)	0.023*** (0.005)
LongTermIll	-0.156*** (0.013)	-0.225*** (0.034)	-0.143*** (0.013)
LongTermIll*HighIncome	0.032* (0.017)	0.087** (0.040)	0.017 (0.018)
Unemployed	-0.318*** (0.034)	-0.480*** (0.086)	-0.277*** (0.037)
Retired	0.043** (0.018)	0.064 (0.046)	0.037* (0.020)
PartnerInH	0.326***	0.449***	0.272***

	(0.032)	(0.076)	(0.034)
SiblingLivingClose	-0.027*	-0.002	-0.035**
	(0.016)	(0.040)	(0.017)
Wave 5	-0.210***	-0.468***	-0.139***
	(0.010)	(0.026)	(0.010)
Wave 6	-0.001	-0.127***	0.043***
	(0.013)	(0.033)	(0.014)
Constant	6.938***	6.523***	6.896***
	(0.293)	(0.606)	(0.345)
Observations	184,977	44,105	140,872
R-squared	0.016	0.033	0.013
Number of id	97,871	25,463	73,715

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Overall sample; (2) respondents with above median unmet needs for medical treatment; (3) respondents with below median unmet needs for medical treatment

Table 6. The value of money for the non high-income long term ill

Country	Ratio (Macroregion values)
Austria	0.375
Germany	3.531
Sweden	The LongTermIll*HighIncome variable is not significant
Netherlands	The LongTermIll*HighIncome variable is not significant
Spain	54.72
Italy	45.68
France	11.88
Denmark	2.52
Greece	The LongTermIll*HighIncome variable is not significant
Switzerland	4.37
Belgium	The LongTermIll*HighIncome variable is not significant
Israel	263.57
Hungary	36.5
Czech Republic	8.76
Poland	193.07
Luxembourg	The LongTermIll*HighIncome variable is not significant
Portugal	89.29
Slovenia	The LongTermIll*HighIncome variable is not significant
Estonia	5.70
Croatia	42.73

Ratio: average utility for the long term ill of one euro distance from individual's median income level to the median income level of the top 30th income group divided for the average utility of one euro for the non long term ill. The ratio is calculated with the compensating surplus approach.

Table A1. Descriptive statistics for the variable used in the empirical analysis.

Variable	N. of obs.	Mean	St. Dev.	Min.	Max.
Life satisfaction	185895	7.598908	1.828401	0	10

Female		185895	.565195	.4957327	0	1
Age class	50-59	185895	.2769897	.4475126	0	1
	60-64	185895	.1793432	.3836404	0	1
	65-69					
	70-74	185895	.1704134	.3759966	0	1
	75-79	185895	.1390032	.3459508	0	1
	80-84	185895	.1095027	.3122697	0	1
	85-89	185895	.0742785	.2622243	0	1
	90+	185895	.0373598	.1896424	0	1
ISCED education level	Primary	276,887	0.120	0.325	0	1
	Lower secondary	276,887	0.125	0.331	0	1
	Upper secondary	276,887	0.226	0.418	0	1
	Post secondary non tertiary	276,887	0.031	0.173	0	1
	Lower Tertiary	276,887	0.142	0.349	0	1
	Upper Tertiary	276,887	0.006	0.076	0	1
NHouseMembers		185895	2.160252	1.0023	1	12
PartnerInH		185895	.7301972	.4438585	0	1
SiblingLivingClose		163196	.4448516	.4969509	0	1
LongTermIll		185826	.5121888	.4998528	0	1
Ln(Income)		102409	7.111523	1.218518	-6.876955	41.04107
1st Income decile		185895	.0994163	.299221	0	1
2nd Income decile		185895	.099411	.2992138	0	1
3rd Income decile		185895	.099454	.2992714	0	1
4th Income decile		185895	.0990236	.2986946	0	1
5th Income decile		185895	.100078	.3001048	0	1
6th Income decile		185895	.1001641	.3002194	0	1
7th Income decile		185895	.1004976	.3006631	0	1
8th Income decile		185895	.1004976	.3006631	0	1
9th Income decile		185895	.1006482	.3008632	0	1
10th Income decile		185895	.1008096	.3010772	0	1
Unemployed		184407	.0306333	.1723226	0	1
HighIncome		277,819	0.514	0.500	0	1
Retired		184407	.5695283	.4951436	0	1
Supplementary health insurance		89686	.3795576	.4852796	0	1
Long-term care insurance		75011	.672488	.4693089	0	1

Table A2. The effect of high income on life satisfaction with long term illness (pooled Ordered logistic regression)

VARIABLES	(1) All sample	(2) Wave 4	(3) Wave 5	(4) Wave 6
Female	0.065*** (0.013)	0.061** (0.028)	0.086*** (0.022)	0.081*** (0.021)
AgeClass 60-64	0.161*** (0.019)	0.156*** (0.034)	0.164*** (0.033)	0.164*** (0.033)
AgeClass 65-69	0.219*** (0.023)	0.216*** (0.041)	0.258*** (0.040)	0.182*** (0.039)

AgeClass 70-74	0.291*** (0.025)	0.333*** (0.045)	0.274*** (0.044)	0.274*** (0.042)
AgeClass 75-79	0.320*** (0.027)	0.364*** (0.049)	0.345*** (0.048)	0.265*** (0.045)
AgeClass 80-84	0.415*** (0.031)	0.525*** (0.059)	0.377*** (0.054)	0.368*** (0.051)
AgeClass 85-89	0.463*** (0.040)	0.607*** (0.076)	0.352*** (0.069)	0.459*** (0.066)
AgeClass 90+	0.578*** (0.065)	0.725*** (0.129)	0.575*** (0.114)	0.468*** (0.101)
Primary	0.072** (0.033)	-0.047 (0.067)	0.056 (0.058)	0.175*** (0.052)
LowerSecondary	0.121*** (0.033)	0.071 (0.068)	0.124** (0.057)	0.143*** (0.052)
UpperSecondary	0.233*** (0.032)	0.167** (0.066)	0.225*** (0.056)	0.281*** (0.049)
PostSecondaryNonTertiary	0.270*** (0.042)	0.291*** (0.082)	0.256*** (0.074)	0.242*** (0.068)
LowerTertiary	0.360*** (0.033)	0.324*** (0.067)	0.353*** (0.057)	0.379*** (0.051)
UpperTertiary	0.511*** (0.046)	0.493*** (0.078)	0.470*** (0.070)	0.531*** (0.069)
NHouseMembers	-0.027*** (0.009)	-0.029* (0.016)	-0.016 (0.016)	-0.039*** (0.015)
Ln(Income)	0.108*** (0.007)	0.084*** (0.012)	0.116*** (0.011)	0.122*** (0.013)
HighIncome	0.247*** (0.019)	0.221*** (0.035)	0.291*** (0.032)	0.223*** (0.032)
LongTermIII	-0.691*** (0.024)	-0.720*** (0.043)	-0.723*** (0.041)	-0.647*** (0.040)
LongTermIII*PartnerInH	0.093*** (0.028)	0.110** (0.050)	0.146*** (0.048)	0.037 (0.047)
LongTermIII*HighIncome	0.144*** (0.027)	0.171*** (0.049)	0.131*** (0.047)	0.142*** (0.046)
Unemployed	-0.538*** (0.039)	-0.664*** (0.066)	-0.489*** (0.067)	-0.466*** (0.072)
Retired	0.030* (0.018)	0.000 (0.032)	0.022 (0.031)	0.066** (0.029)
PartnerInH	0.410*** (0.022)	0.440*** (0.041)	0.358*** (0.039)	0.432*** (0.037)
SiblingLivingClose	0.043** (0.018)	0.020 (0.034)	-0.008 (0.031)	0.108*** (0.030)
LongTermIII*SiblingLivingClose	-0.031 (0.024)	-0.009 (0.044)	-0.025 (0.043)	-0.057 (0.041)
Country Dummies	Yes	Yes	Yes	Yes
Wave Dummies	Yes	No	No	No
Constant cut1	-4.976*** (0.087)	-5.289*** (0.152)	-4.772*** (0.149)	-4.842*** (0.153)

Constant cut2	-4.524*** (0.083)	-4.884*** (0.146)	-4.317*** (0.143)	-4.346*** (0.145)
Constant cut3	-4.029*** (0.080)	-4.406*** (0.141)	-3.785*** (0.138)	-3.871*** (0.140)
Constant cut4	-3.292*** (0.078)	-3.640*** (0.137)	-3.083*** (0.133)	-3.123*** (0.136)
Constant cut5	-2.790*** (0.077)	-3.136*** (0.135)	-2.543*** (0.132)	-2.660*** (0.135)
Constant cut6	-1.390*** (0.076)	-1.748*** (0.133)	-1.100*** (0.130)	-1.275*** (0.133)
Constant cut7	-0.836*** (0.076)	-1.182*** (0.133)	-0.563*** (0.130)	-0.712*** (0.133)
Constant cut8	0.058 (0.076)	-0.292** (0.133)	0.335*** (0.129)	0.190 (0.133)
Constant cut9	1.528*** (0.076)	1.137*** (0.133)	1.841*** (0.130)	1.668*** (0.133)
Constant cut10	2.460*** (0.076)	2.046*** (0.133)	2.778*** (0.130)	2.617*** (0.134)
Observations	88,729	27,361	30,125	31,243

*** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Table A.3 The effect of high income on life satisfaction when being long term ill – Country level findings

VARIABLES	(1) Austria	(2) Germany	(3) Sweden	(4) Netherlands	(5) Spain	(6) Italy
Female	0.075** (0.031)	0.177*** (0.033)	0.101*** (0.029)	0.047* (0.027)	-0.090*** (0.031)	-0.059* (0.033)
AgeClass 60-64	0.083* (0.048)	0.274*** (0.050)	0.146*** (0.051)	0.186*** (0.043)	0.060 (0.043)	-0.052 (0.049)
AgeClass 65-69	0.085 (0.053)	0.368*** (0.069)	0.354*** (0.066)	0.224*** (0.052)	0.142*** (0.051)	-0.187*** (0.056)
AgeClass 70-74	0.107** (0.053)	0.378*** (0.075)	0.408*** (0.073)	0.163*** (0.057)	0.173*** (0.057)	-0.119* (0.061)
AgeClass 75-79	0.174*** (0.063)	0.380*** (0.080)	0.339*** (0.079)	0.186*** (0.063)	0.023 (0.061)	-0.168** (0.069)
AgeClass 80-84	0.145* (0.075)	0.486*** (0.095)	0.284*** (0.090)	0.208*** (0.071)	0.018 (0.066)	-0.022 (0.084)
AgeClass 85-89	0.177* (0.095)	0.574*** (0.123)	0.229** (0.109)	0.252*** (0.093)	-0.099 (0.085)	-0.122 (0.120)
AgeClass 90+	-0.029 (0.162)	0.518** (0.204)	0.411*** (0.140)	0.360** (0.156)	-0.176 (0.129)	-0.546** (0.233)
Primary	-0.101 (0.141)	-0.085 (0.290)	-0.308*** (0.091)	-0.010 (0.094)	0.184*** (0.040)	0.060 (0.069)

Lower secondary	-0.132 (0.139)	0.336* (0.172)	-0.295*** (0.093)	0.027 (0.081)	0.184*** (0.045)	0.275*** (0.067)
Upper secondary	-0.004 (0.134)	0.501*** (0.164)	-0.279*** (0.090)	0.112 (0.082)	0.343*** (0.055)	0.239*** (0.068)
Post secondary non tertiary	0.244 (0.149)	0.589*** (0.177)	-0.292*** (0.094)	0.038 (0.189)	0.040 (0.114)	0.464*** (0.092)
Lower Tertiary	0.113 (0.136)	0.654*** (0.165)	-0.343*** (0.089)	0.112 (0.081)	0.481*** (0.052)	0.434*** (0.075)
Upper Tertiary	0.048 (0.157)	0.897*** (0.226)	-0.386** (0.191)	-0.340 (0.388)	0.524** (0.204)	0.460*** (0.132)
NHouseMembes	0.032* (0.018)	0.025 (0.026)	-0.036 (0.033)	-0.013 (0.028)	0.032* (0.017)	-0.015 (0.018)
Ln(Income)	0.080*** (0.021)	0.191*** (0.032)	0.030 (0.033)	0.063* (0.032)	0.020* (0.010)	0.045*** (0.008)
HighIncome	0.037 (0.044)	0.238*** (0.054)	0.062 (0.047)	0.095** (0.047)	0.207*** (0.038)	0.128*** (0.040)
LongTermIll	-0.816*** (0.054)	-0.792*** (0.077)	-0.579*** (0.064)	-0.443*** (0.063)	-0.727*** (0.068)	-0.857*** (0.082)
LongTermIll*PartnerInH	0.061 (0.068)	0.162* (0.086)	0.092 (0.075)	0.161** (0.071)	0.127* (0.076)	0.255*** (0.091)
LongTermIll*HighIncome	0.194*** (0.065)	0.221*** (0.064)	0.093 (0.061)	0.093* (0.055)	0.149** (0.059)	0.134** (0.067)
Unemployed	-0.962*** (0.128)	-0.777*** (0.108)	-0.370** (0.159)	-0.234** (0.116)	-0.428*** (0.070)	-0.940*** (0.118)
Retired	0.002 (0.041)	0.037 (0.058)	-0.083 (0.057)	-0.006 (0.039)	0.073* (0.040)	0.288*** (0.043)
PartnerInH	0.329*** (0.049)	0.289*** (0.070)	0.472*** (0.061)	0.298*** (0.055)	0.395*** (0.051)	0.690*** (0.058)
Constant	7.369*** (0.250)	5.039*** (0.364)	8.087*** (0.349)	7.068*** (0.343)	7.005*** (0.115)	6.613*** (0.110)
Observations	12,464	11,591	10,135	6,817	14,862	13,131
R-squared	0.086	0.108	0.062	0.065	0.081	0.110

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Table A.3 The effect of high income on life satisfaction when being long term ill – Country level findings (follows)

VARIABLES	(7) France	(8) Denmark	(9) Greece	(10) Switzerland	(11) Belgium	(12) Israel
Female	0.009 (0.028)	0.175*** (0.028)	0.064 (0.054)	0.062** (0.028)	-0.030 (0.023)	-0.072 (0.059)
AgeClass 60-64	0.111** (0.050)	0.151*** (0.044)	0.141* (0.074)	0.163*** (0.043)	0.091** (0.036)	0.123 (0.078)
AgeClass 65-69	0.117* (0.061)	0.270*** (0.057)	-0.034 (0.081)	0.250*** (0.052)	0.148*** (0.042)	-0.011 (0.086)
AgeClass 70-74	0.130** (0.065)	0.261*** (0.073)	0.037 (0.090)	0.332*** (0.058)	0.201*** (0.046)	-0.259** (0.117)
AgeClass 75-79	0.091 (0.069)	0.364*** (0.076)	0.010 (0.098)	0.390*** (0.064)	0.274*** (0.049)	-0.293** (0.118)
AgeClass 80-84	0.162**	0.390***	0.131	0.387***	0.416***	-0.344**

	(0.074)	(0.086)	(0.118)	(0.072)	(0.056)	(0.147)
AgeClass 85-89	0.063	0.237**	-0.081	0.531***	0.437***	-0.415**
	(0.089)	(0.114)	(0.149)	(0.099)	(0.071)	(0.198)
AgeClass 90+	0.156	0.097	-0.203	0.799***	0.399***	-0.995***
	(0.136)	(0.171)	(0.294)	(0.137)	(0.111)	(0.341)
Primary	-0.059	-0.224	0.556***	-0.403***	0.355***	0.017
	(0.059)	(0.156)	(0.076)	(0.113)	(0.104)	(0.132)
Lower secondary	0.046	-0.205	0.379***	-0.130	0.403***	0.311**
	(0.069)	(0.154)	(0.096)	(0.107)	(0.102)	(0.140)
Upper secondary	0.051	-0.176	0.428***	-0.079	0.455***	0.290**
	(0.058)	(0.146)	(0.077)	(0.099)	(0.101)	(0.121)
Post secondary non tertiary	0.819*		0.402**	0.012	0.475***	-0.126
	(0.442)		(0.168)	(0.102)	(0.169)	(0.152)
Lower Tertiary	0.286***	-0.174	0.607***	0.095	0.500***	0.049
	(0.061)	(0.146)	(0.086)	(0.102)	(0.101)	(0.120)
Upper Tertiary	0.323***	-0.338	1.236**	0.442	0.513**	0.433
	(0.089)	(0.226)	(0.501)	(0.343)	(0.216)	(0.471)
NHouseMembes	0.000	-0.027	-0.025	-0.000	0.011	-0.048*
	(0.023)	(0.025)	(0.033)	(0.019)	(0.016)	(0.028)
Ln(Income)	0.171***	0.114***	0.019*	0.059***	0.090***	0.061***
	(0.026)	(0.035)	(0.010)	(0.016)	(0.019)	(0.022)
DHighIncome	0.124***	0.102**	0.120*	0.116***	0.017	0.437***
	(0.043)	(0.044)	(0.067)	(0.037)	(0.036)	(0.083)
LongTermIll	-0.702***	-0.645***	-0.724***	-0.659***	-0.615***	-0.996***
	(0.055)	(0.068)	(0.105)	(0.068)	(0.047)	(0.139)
LongTermIll*PartnerInH	0.236***	0.213***	0.235*	0.141*	0.181***	0.270*
	(0.068)	(0.077)	(0.127)	(0.079)	(0.055)	(0.157)
LongTermIll*HighIncome	0.186***	0.171***	-0.150	0.229***	0.052	0.249**
	(0.062)	(0.058)	(0.122)	(0.063)	(0.047)	(0.115)
Unemployed	-0.400***	-0.628***	-1.073***	-1.295***	-0.327***	-0.436*
	(0.108)	(0.106)	(0.159)	(0.210)	(0.070)	(0.246)
Retired	0.089*	0.107**	0.117**	-0.032	0.087***	-0.041
	(0.048)	(0.053)	(0.058)	(0.042)	(0.032)	(0.071)
PartnerInH	0.345***	0.471***	0.507***	0.253***	0.496***	0.286**
	(0.051)	(0.057)	(0.082)	(0.047)	(0.038)	(0.114)
Constant	5.380***	7.243***	6.254***	7.583***	6.075***	7.336***
	(0.261)	(0.396)	(0.154)	(0.198)	(0.215)	(0.270)
Observations	13,676	9,975	4,775	9,508	16,265	4,012
R-squared	0.087	0.086	0.105	0.089	0.092	0.131

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Table A.3 The effect of high income on life satisfaction when being long term ill – Country level findings (follows)

VARIABLES	(13) Czech Rep.	(14) Poland	(15) Luxembourg	(16) Hungary
Female	0.078**	0.008	0.067	0.094

	(0.032)	(0.070)	(0.066)	(0.080)
AgeClass 60-64	0.241***	0.187*	-0.046	0.156
	(0.058)	(0.101)	(0.099)	(0.134)
AgeClass 65-69	0.312***	0.085	0.106	0.174
	(0.066)	(0.124)	(0.114)	(0.153)
AgeClass 70-74	0.453***	0.078	0.168	0.401**
	(0.069)	(0.144)	(0.124)	(0.176)
AgeClass 75-79	0.434***	0.002	0.347***	0.366*
	(0.076)	(0.155)	(0.132)	(0.192)
AgeClass 80-84	0.520***	0.202	0.138	0.796***
	(0.087)	(0.176)	(0.145)	(0.232)
AgeClass 85-89	0.536***	0.202	0.190	0.803**
	(0.118)	(0.264)	(0.204)	(0.316)
AgeClass 90+	0.682***	0.811**	0.249	0.967**
	(0.195)	(0.408)	(0.279)	(0.438)
Primary	-0.139	0.043	-0.049	0.797
	(0.160)	(0.131)	(0.187)	(0.695)
LowerSecondary	0.092	-0.081	0.119	1.691***
	(0.155)	(0.312)	(0.196)	(0.600)
UpperSecondary	0.306**	0.160	0.218	1.984***
	(0.154)	(0.121)	(0.185)	(0.600)
PostSecondaryNonTertiary	0.229	0.300*	0.144	2.240***
	(0.182)	(0.173)	(0.221)	(0.616)
LowerTertiary	0.461***	0.381**	0.374**	2.586***
	(0.157)	(0.153)	(0.189)	(0.605)
UpperTertiary	0.553	-1.736***	0.418*	
	(0.474)	(0.196)	(0.243)	
NHouseMembes	0.008	-0.004	0.026	-0.018
	(0.019)	(0.023)	(0.037)	(0.038)
Ln(Income)	0.069***	0.020	0.068	0.089*
	(0.016)	(0.043)	(0.054)	(0.050)
HighIncome	0.192***	0.264**	-0.124	0.213
	(0.048)	(0.118)	(0.092)	(0.146)
LongTermIII	-0.846***	-0.940***	-0.616***	-0.870***
	(0.058)	(0.142)	(0.133)	(0.174)
LongTermIII*PartnerInH	0.195***	0.025	-0.072	0.209
	(0.071)	(0.167)	(0.155)	(0.203)
LongTermIII*HighIncome	0.014	0.384***	0.197	0.118
	(0.067)	(0.144)	(0.133)	(0.171)
Unemployed	-0.836***	-0.613***	-0.433*	-1.213***
	(0.134)	(0.216)	(0.249)	(0.196)
Retired	-0.040	0.170*	0.115	-0.056
	(0.056)	(0.094)	(0.083)	(0.129)
PartnerInH	0.430***	0.556***	0.543***	0.394**
	(0.055)	(0.136)	(0.110)	(0.178)
Constant	6.247***	6.875***	6.785***	3.941***
	(0.220)	(0.392)	(0.594)	(0.723)
Observations	15,467	3,406	3,109	3,013
R-squared	0.085	0.092	0.074	0.110

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.

Table A.3 The effect of high income on life satisfaction when being long term ill – Country level findings (follows)

VARIABLES	(17) Portugal	(18) Slovenia	(19) Estonia	(20) Croatia
Female	-0.212*** (0.074)	0.171*** (0.037)	0.250*** (0.034)	0.079 (0.085)
AgeClass 60-64	0.026 (0.109)	0.003 (0.060)	0.161*** (0.050)	0.058 (0.124)
AgeClass 65-69	-0.087 (0.121)	-0.087 (0.067)	0.368*** (0.060)	0.116 (0.142)
AgeClass 70-74	-0.033 (0.138)	-0.060 (0.072)	0.416*** (0.065)	0.241 (0.158)
AgeClass 75-79	-0.269 (0.166)	0.021 (0.079)	0.398*** (0.071)	0.480*** (0.179)
AgeClass 80-84	0.127 (0.192)	-0.069 (0.087)	0.552*** (0.082)	0.448* (0.253)
AgeClass 85-89	0.103 (0.290)	0.178 (0.113)	0.751*** (0.112)	0.515 (0.376)
AgeClass 90+	0.396 (0.357)	0.627*** (0.197)	0.927*** (0.219)	0.428 (0.453)
Primary	0.105 (0.185)	-0.351** (0.144)	0.000 (0.650)	
LowerSecondary	0.307 (0.207)	0.014 (0.115)	-0.185 (0.645)	0.098 (0.160)
UpperSecondary	0.656*** (0.208)	0.335*** (0.112)	-0.052 (0.645)	0.495*** (0.172)
PostSecondaryNonTertiary	0.790** (0.369)	0.691*** (0.148)	0.039 (0.645)	
LowerTertiary	0.755*** (0.207)	0.807*** (0.116)	0.304 (0.645)	0.830*** (0.179)
Upper Tertiary	0.960*** (0.278)	1.381*** (0.201)	0.898 (0.654)	1.893*** (0.558)
NHouseMembes	-0.009 (0.036)	0.026 (0.018)	-0.026 (0.020)	0.028 (0.036)
Ln(Income)	0.019 (0.019)	0.044*** (0.015)	0.068*** (0.020)	0.001 (0.020)
HighIncome	-0.130 (0.115)	0.230*** (0.054)	0.265*** (0.064)	0.141 (0.140)
LongTermIll	-0.848*** (0.175)	-0.595*** (0.078)	-0.789*** (0.067)	-1.076*** (0.192)
LongTermIll*PartnerInH	0.117 (0.190)	0.076 (0.092)	0.132* (0.080)	0.218 (0.218)
LongTermIll*HighIncome	0.295** (0.147)	-0.019 (0.078)	0.123* (0.071)	0.292* (0.174)
Unemployed	-0.615*** (0.171)	-0.348*** (0.098)	-0.818*** (0.106)	-0.244 (0.150)
Retired	0.077	-0.009	-0.318***	-0.141

	(0.096)	(0.054)	(0.050)	(0.112)
PartnerInH	0.676***	0.405***	0.314***	0.594***
	(0.141)	(0.067)	(0.072)	(0.171)
Constant	6.663***	6.425***	5.943***	6.766***
	(0.288)	(0.183)	(0.669)	(0.280)
Observations	3,368	9,644	17,314	2,445
R-squared	0.080	0.097	0.067	0.104

Pooled OLS estimates *** p<0.01, ** p<0.05, * p<0.1 Robust standard errors in parentheses. Omitted benchmark: male, no education, 50-59 age class.