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Early Life Circumstances and Life Cycle Labor Market Outcomes

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ABSTRACT

We investigate how early life circumstances—childhood health and socioeconomic status (SES)—are associated with labor market outcomes over an individual's entire life cycle. A life cycle approach provides insights not only into which labor market outcomes are associated with adverse childhood events but also into whether these associations show up early or only later in working life, and whether they vanish or persist over the life cycle. The analysis is conducted using the Survey of Health, Aging and Retirement in Europe, which contains retrospective information on early life circumstances and full work histories for over 20,000 individuals in thirteen European countries. We find that the associations between early life circumstances and (accumulated) labor market outcomes vary over an individual's life cycle. For men and women, the effect of childhood SES on lifetime earnings accumulates over the life cycle through the associations with both working years and annual earnings. Moreover, for men this association with lifetime earnings reverses sign from negative to positive over their working life. We also find a smaller, positive long-term association between childhood health and lifetime earnings operating mainly through annual earnings and only to a lesser extent through working years, and which is not present at the beginning of the working life for women. Most of these life cycle profiles differ between European country-groups. Finally, for women we find a so-called buffering effect, i.e. that a higher parental SES reduces the negative impact of poor health during childhood on accumulated earnings over the life cycle.

JEL Classification: D10, I14, J14, J24, J31, O15

Keywords: Early life circumstances, lifetime earnings, life cycle, SHARE

1. Introduction

There is a growing literature that demonstrates that early life circumstances have long-lasting effects on later life health and socioeconomic status (SES)-related outcomes such as earnings and work effort (Almond and Currie 2011a, Black and Devereux 2011). However, to the best of our knowledge, there is no empirical study to date that has attempted to quantify how such early life circumstances relate to individual earnings and other labor market outcomes over the entire life cycle. This is particularly worthy of investigation if some consequences of adverse events early in life may not become apparent until later in adult life (Barker 1995, Almond and Currie 2011b) or if their impacts accumulate over the life cycle (Kuh and Wadsworth 1993). Therefore, studies that focus on a single age later in life—as is common in this literature—are likely to give incomplete or even biased estimates of the total impacts that early life circumstances have on individuals' labor market outcomes over the entire life cycle.[1]

Our main contribution to the existing empirical literature on the relationship between early life circumstances and later life earnings is, therefore, that we use a life cycle approach to test whether some of these associations show up early in the life cycle or instead appear at later ages, and whether they vanish or persist over the life cycle. For this, we use retrospective data on respondents' early life circumstances and full work histories from thirteen European countries to measure the associations of early life circumstances (childhood health and parental SES) with lifetime earnings at a variety of ages over the entire life cycle. This provides a more comprehensive picture on how these associations evolve over the life cycle than is currently available in the literature. For instance, for both men and women we find evidence of a cumulative impact of childhood

[1] In the literature on intergenerational earnings mobility this is referred to as a life cycle bias that stems from an increasing association over the child's life cycle between (annual) earnings of the child and lifetime earnings of the parent (e.g. Haider and Solon 2006).

SES on lifetime earnings over the life cycle. For men, however, this association is negative at early stages of their working life and reverses sign from negative to positive in their mid thirties. To a lesser extent, childhood health also shows a positive, long-term association with lifetime earnings over the life cycle, and while for men most of this association is already present at the beginning of their working life (at age 25), for women it kicks in just from that age onward. In particular our finding of an increasing association between childhood SES and accumulated earnings over the life cycle emphasizes the importance of not focusing on a single age later in life if one is interested in the overall effect that early life circumstances have on labor market outcomes, but focusing on individuals' entire life cycles.

A further contribution of our paper is that we shed light on the implicit labor market behavior behind this association, i.e. on whether the association between early life circumstances and accumulated lifetime earnings operates through the number of years worked or through average annual earnings. Our main results show that for both men and women in Europe, the strong evidence of a cumulative impact of childhood SES on lifetime earnings over the life cycle operates through both working years and annual earnings. Most importantly, we show that the associations between early life circumstances and (accumulated) labor market outcomes are not constant over an individual's life cycle. In particular for working years, we find a strong negative association with childhood SES at the beginning of the working life, which decreases with age as individuals with a higher childhood SES also enter the labor market and those with a low childhood SES accumulate more employment gaps. This finding could explain Smith's (2009) apparently surprising result of an insignificant association of parental income and educational levels with (annual) weeks worked in adulthood (at ages 25–47), and also Case *et al.*'s (2005) result for British men of a positive association between

family income at age 16 and the employment probability at age 42, one that is, however, insignificant at age 33. We also find that the smaller, quite persistent, positive long-term association between childhood health and lifetime earnings operates mainly through annual earnings and only to a lesser extent through working years.

Previous studies (Case *et al*. 2002; Currie and Stabile 2003) also argue that income buffers children from the negative effects of adverse childhood health; this is called the buffering hypothesis. Therefore, an additional contribution of the paper is that we test whether a higher parental SES reduces the negative impact of poor health during childhood on accumulated earnings over the life cycle, and find some evidence in favor of this buffering hypothesis for women but not for men.

Last, we explore whether there are differences in the life cycle profiles between European country-groups, which is what one could expect given the cross-country differences in levels of development, labor market conditions and social protection policies, amongst others, over the period of analysis. Our results show that, in particular for women, most of these associations (for instance, those with accumulated earnings) are larger in the Mediterranean and Continental countries than in Nordic and Transitional countries. For all groups, however, we find a relatively strong, cumulative impact of childhood SES on earnings over the life cycle which operates through both annual earnings and working years.

The remainder of the paper is organized into six sections. The first summarizes previous studies that examine the effects of early life circumstances (childhood health and parental SES) on labor market outcomes later in life. Section 3 describes the data and the main variables for analysis. In Section 4, we use a life cycle approach to investigate the associations of early life circumstances with lifetime earnings. In addition, we explore the associations of early life circumstances with different labor

market outcomes that may drive the previous association and also test for the buffering hypothesis in lifetime earnings. In Section 5, we examine whether some of these associations over the life cycle differ between European country-groups. Section 6 analyzes the robustness of our main results. Section 7 summarizes the main findings and concludes.

2. Background

Several previous studies have shown the effects of childhood SES on earnings at a specific age in adulthood. Some of the first studies in addressing this issue focus on parental education to investigate the so-called family background bias in returns to education in earnings equations (Behrman and Wolfe 1984, Heckman and Hotz 1986, Lam and Schöeni 1993), usually identifying a larger association with mother's education than with father's education (see also Behrman and Rosenzweig 2004). Parental income is also widely known to be positively associated with individual's later life earnings in the literature on intergenerational mobility in earnings. Moreover, these intergenerational elasticities in earnings vary across gender, time, country and age of both the parents and offspring (see Black and Deveraux (2011) for a survey). More recently, two studies explore the role of income shocks induced by changes in the labor market status of a parent (due to firm closures), providing evidence for Canada (Oreopoulos *et al.* 2008) but no evidence for Norway (Bratberg *et al.* 2008) of a causal effect of parental income on children's earnings early in adulthood (at ages 25–33 and 25–30 respectively). Brunello *et al*. (2012) use a similar dataset to our study and tackle the aforementioned life cycle bias by examining the associations of early life circumstances with individual's total lifetime earnings. They find a long-term association between access to books in the parental home—a measure for parents'

cultural background or education—and lifetime earnings for men in Europe, but provide no evidence on how these associations with accumulated earnings evolve over a life cycle.

Also the relationship between childhood health and later life earnings has received a great deal of attention in the empirical literature. For instance, Black *et al*. (2007) use administrative data for a sample of Norwegian twins and find a positive association between birth weight—a measure for health in utero—and earnings in early adulthood (at ages 25–35) that is similar with and without controlling for twin fixed effects. Similarly, Behrman and Rosenzweig (2004) use a U.S. sample of female monozygotic (MZ) twins but find that the (positive) association between birth weight and hourly wages in mid adulthood (at ages 39–58) is significant when controlling for (MZ) twin fixed effects only. Alternatively, Almond (2006) uses the 1918 Influenza Pandemic as a measure of a health shock around birth and shows that it reduced annual wage income of U.S. men in mid adulthood (at about ages 40, 50 or 60). However, Nelson (2010), who uses also the 1918 Influenza Pandemic, does not find a significant effect on hourly wages of relatively old males (above age 65) in Brazil, and Chen and Zhou (2007), who use the 1959-1961 famine in China, find only limited evidence of a negative effect on the earnings of the survivors in rural areas in early adulthood (at ages 24–37). In a paper that is closely tied to our work, Goodman *et al*. (2011) use prospectively collected data from the British National Child Development Study (NCDS) to assess the long-term effects of childhood psychological and physical health problems on economic outcomes at ages 23, 33, 42 and 50. They find that childhood psychological problems are associated with about 15 percent lower hourly wages from early adulthood into middle age. They also show that the association of family income with psychological conditions is substantially larger than that with physical health

conditions during childhood.[2] Finally, Smith (2009) uses a subsample of U.S. siblings from the Panel Study of Income Dynamics (PSID) aged 25–47 in 1999 to estimate the associations of both childhood self-reported health (SRH) status and parental income during childhood with an individual's initial level of (annual) earnings at age 25 and its average growth between age 25 and age in 1999. He finds that about 50 percent of their overall impact is already present at age 25, while the remaining 50 percent is the consequence of faster individual income growth after age 25.[3] However, a potential drawback of his analysis is that he focuses on (at most) two years of an individual's work career and that the oldest individuals in his sample are still relatively young from a life cycle perspective (namely, 47 years old).

The existing evidence regarding the effects of early life circumstances on employment is scarcer and also mixed. For example, Case *et al*. (2005) use data from a 1958 British birth cohort and report that the employment probability in mid adulthood is negatively associated with (early life) chronic conditions and positively associated with parental income at age 16. In contrast, Black *et al.* (2007) find that the positive association between birth weight and the probability of working full time in early adulthood disappears after controlling for twin fixed effects, and Smith (2009) reports no evidence of an association of childhood health with (annual) weeks worked at age 25, but a positive one with the change in weeks worked from age 25 onward. Goodman *et al.* (2011), for their part, find that childhood psychological problems are associated with about 11 percent lower employment probability from early adulthood into middle age.

[2] This latter finding, however, might also be related to the fact that some of the consequences of early life physical health conditions may become apparent later (that is, after age 50), as predicted by the *fetal origins hypothesis* (Barker 1995, Almond and Currie 2011b).

[3] Interestingly, when unobserved family effects are controlled for (using within-siblings estimates), the estimate of childhood SRH on post-25 individual income growth is substantially larger, which he attributes to a diminishing role of measurement error due to reporting bias in childhood SRH.

3. Data and descriptive statistics

We use individual-level data from the first three waves of the Survey of Health, Aging, and Retirement in Europe (SHARE; http://www.share-project.org/), a multidisciplinary and representative cross-national panel of the European population aged 50 and over. The first two waves were conducted in 2004/2005 and 2006/2007 respectively. These waves include, for instance, information on sociodemographic background characteristics, current health and socioeconomic status (education, employment, and earnings), and expectations with regard to, e.g. retirement age. Most of our data, however, stem from the third wave, carried out in 2008/2009 and referred to as SHARELIFE. This third wave has collected retrospective information on the entire life histories of about 75 percent of the individuals who participated in waves 1 or 2, which ranges from early life circumstances to work careers and other social, economic and health events occurring in the course of a lifetime.[4] In our analysis, we combine this with cleaned information provided in the retrospective SHARE Job Episodes Panel Data. This retrospective panel contains the start and end dates of all the job spells that SHARELIFE respondents had during their work career, plus some job characteristics such as job income and whether they work full- or part-time, and some additional information on year of retirement and unemployment spells (see Brugiavini *et al*. (2013) for details).[5]

[4] Currently, four waves of SHARE data are available. The fourth wave does not contain information on (net) wages. However, we use wave 4 data to update and replace missing values for expectations with regard to retirement age for individuals who participated in waves 1 to 3.

[5] SHARELIFE uses a life history calendar approach for collecting retrospective data. The PSID and the NCDS (used by Smith (2009) and Goodman *et al*. (2011) respectively) contain prospectively collected data, except for the retrospective childhood SRH measure in the PSID. In comparison with these two

Our initial sample consists of 10,988 male and 13,154 female European respondents (and spouses) aged 50 and over in the interview year of SHARELIFE.[6] We drop male and female respondents who had never worked or did not report any wage in SHARELIFE, nor in waves 1 or 2 (2,155 and 3,080 cases respectively), and also those who worked for less than five years (310 cases) to exclude individuals with very short employment histories. We also exclude male and female respondents for whom only one wage point is available (1,379 and 1,454 cases respectively).[7] Trimming compounded labor income by one percent from above and below in each country sets 304 values to missing. After dropping missing values in the childhood SES variables (429 cases), and childhood health variables (58 cases), we end up with our final sample of 7,803 male and 7,170 female respondents (and spouses) from the following thirteen countries: Sweden, Denmark, the Netherlands, Switzerland, Austria, Germany, France, Belgium, Spain, Italy, Greece, Czech Republic, and Poland. Table A.II reports the number of individuals, N, by country and gender.

Lifetime earnings

We construct our measure of lifetime earnings in a similar way to Alessie *et al*. (2013).[8] For each prior job spell, the retrospective SHARE Job Episodes Panel Data provides

studies, attrition bias is likely to be less of an issue in our study, although our (retrospective) data are likely to be less accurate. We return to this issue in Section 7.

[6] We do not restrict the sample to men as in previous studies such as Brunello *et al*. (2012).

[7] We exclude these respondents for practical reasons (see Appendix A.1). Because excluding all these individuals may introduce a selection bias into our analysis, we performed several robustness checks keeping these four groups in our sample. Our main results for childhood health and SES remain much unchanged for men, although not for women, which is however what one would expect as the sample workforce composition changes more for the latter (see Table A.I).

[8] We do not, however, include pension benefits in our measure of lifetime earnings. The reason for this is that we want to avoid a possible problem of double counting as would be the case if some pension benefits are funded by savings on (net) income from employment (see also Brunello *et al*. 2012). Weiss

information about start and end dates, and the first net monthly wage or net income in nominal local currencies, depending on whether the respondent worked as an employee or as a self-employed during that job spell. If the respondent was retired by the time of interview, (s)he also reports the last net monthly wage in the main job or the last net monthly income from work if self-employed. We use linear interpolation between the first wage on each job and the last wage of the main job to obtain a complete wage path.

For those still working at the time of the SHARELIFE interview, we add the current net monthly wage (or the current net monthly income for the self-employed) in that year from the original SHARELIFE wave to the retrospective panel to use it as an additional point on the wage path. Similarly, we also add net monthly wages from waves 1 and 2, and net monthly income from wave 2 for the self-employed (not available in wave 1), to the retrospective job panel.[9] During unemployment years, we assign the respondent a wage equal to 80 percent of his or her last earnings. We convert all earnings to annual PPP-adjusted German euros of 2006 as explained in Trevisan *et al*. (2011).

Our measure of compounded labor income at age t is given by:

$$L_{0t} = \sum_{\tau=1}^{t} (1+r)^{t-\tau} E_{\tau} ,$$

where r is a constant real interest rate, and E_{τ} are annual earnings from employment at age τ . Period 1 is the start of the work career, and we compound up to the SHARELIFE interview year for the non-retired, and the year before retirement (or the

(2012), who uses also SHARELIFE data, reports a correlation of 0.95 between lifetime earnings with and without pension benefits.

[9] We annualize earnings by multiplying monthly earnings by 12 (6) if the respondent works full-time (part-time). Earnings are annualized because employment spells are in years but weighted by 1 (0.5) if the respondent works full-time (part-time).

year of retirement if the individual reports to work in the year of retirement) for the retired using an annual real interest rate of two percent (Brunello *et al*. 2012; Haider and Solon 2006). After compounding, we have a cross-sectional dataset with one observation per individual.

For those individuals still working at the time of the SHARELIFE interview, we also calculate their future labor income:

$$L_{1t} = \sum_{\tau=t+1}^{R} (1+r)^{t-\tau} E_{\tau} \ .$$

We assume that future real annual earnings remain constant $\left(E_{\tau} = E_{t},\ \tau = t+1,...,R\right)$, and that retirement, R, starts in the year in which the individual reaches his or her expected retirement age, obtained from waves 1, 2, or 4 (more specifically, the age at which they expect to collect pension benefits), or the statutory retirement age (see Table A.III) in case of item non-response to that question. We use country- and gender-specific 2009 (period) life tables from Eurostat (http://epp.eurostat.ec.europa.eu/) to weight all future incomes by the survival probability.[10, 11]

To sum up, for individuals who are retired at the time of the SHARELIFE interview, their lifetime earnings are measured by L_{0t}, while for individuals who are still working, their lifetime earnings are the sum of L_{0t} and L_{1t}. Table A.II shows sample statistics for average undiscounted annual earnings (computed as the sum of all annualized earnings from employment divided by years worked),[12] by country and

[10] We use within-period survival probabilities, i.e. between age t and t+1, and allow these to vary across country, gender and age. We assume the survival probabilities remain constant after 2009.

[11] In Section 6, we test and show the robustness of our findings to some of the assumptions that we make to construct our measure of lifetime earnings.

[12] This variable is used for the descriptive analysis only.

gender. The cross-country pattern of median earnings for men is very similar to that in Alessie *et al*. (2013, Table 1, pp. 314). Eastern European countries such as Poland and the Czech Republic have considerably lower annual earnings than Western European countries, while annual earnings are highest in Switzerland. Women's pattern of median annual earnings is somewhat less clear than that of men, but all in all similar: annual earnings are lowest in Eastern European countries and highest in Switzerland.

Childhood SES

For measuring childhood SES we use four variables that capture different dimensions of the respondent's SES at age 10. First, we include the number of rooms per person and the number of facilities in the household (including fixed bath, cold and hot running water supply, inside toilet and central heating), as these have been shown to be good proxies for the parents' financial status (Cavapozzi *et al*. 2011). Second, we consider the estimated number of books at home to capture the parents' cultural background or education (Cavapozzi *et al*. 2011). Last, we use the main breadwinner's occupation (in ISCO-88 skill levels) as a measure of the household's work status. We construct a single index of childhood SES using principal component analysis (PCA). We take the first principal component (PC), which explains the largest proportion of the total variance, as a measure of an individual's SES during childhood. We estimate the index using the pooled sample of all individuals in all thirteen European countries. The index explains 50.5 percent of the total variance and all the factor loadings on the first PC have the expected positive sign (see Table A.IV).

Childhood health

For constructing a single index of childhood health we use a similar strategy as above for childhood SES. We combine subjective with self-assessed objective health measures referred to when the respondent was less than 16 years old to generate a childhood health index (HI) for each respondent. We use childhood SRH as our subjective health measure, and group the original six categories (from 1 to 6: excellent, very good, good, fair, poor, and changing) into four (from 1 to 4: excellent; very good; good; fair, poor, or changing).[13] Among the objective health measures, we consider the number of respiratory problems, infectious diseases, cardiovascular diseases, neurological and psychiatric diseases, disorders of the sense organs, and the number of neoplastic diseases and other serious health conditions an individual suffers during childhood.[14] We use PCA on the pooled sample and keep the first PC as a measure of an individual's childhood health (cf. Poterba *et al*. 2010). The index explains 20.2 percent of the total variance and all the factor loadings on the first PC have the expected positive sign (see Table A.V). The childhood HI is turned into an index of good health, and both indices are transformed into terciles.

[13] The category "changing" includes 0.4 percent of the SHARELIFE sample and is recorded only if the respondent spontaneously answers that her childhood health varied a great deal.

[14] These count variables are constructed using the information in questions hs008 and hs009 in the SHARELIFE questionnaire, where respondents are asked to report on a yes or no basis whether they had 20 specific childhood diseases between their birth and age 15. In particular, respiratory problems include asthma, and other respiratory problems and allergies. Infectious diseases include also polio, severe diarrhea, meningitis/encephalitis, and appendicitis. Cardiovascular diseases include diabetes or high blood sugar, and heart trouble. Neurological and psychiatric diseases include severe headaches or migraines, and epilepsy, fits or seizures, and emotional, nervous or psychiatric problems. Disorders of the sense organs include chronic ear problems, speech impairment, and difficulty in seeing even with eyeglasses. Finally, other serious health conditions are combined with neoplastic diseases.

Additional controls

We include dummies for birth year in all equations to control for possible secular or cohort-specific events that may have affected both an individual's early life circumstances and life cycle labor market behavior. Moreover, we include country dummies to control for institutional differences between European countries.[15]

4. Early life circumstances and life cycle labor market outcomes

4.1. Early life circumstances and total lifetime earnings

We first examine the associations of early life circumstances with the logarithm of lifetime earnings using linear regression models. As shown in Columns (1) in Table I, childhood SES is strongly associated with total lifetime earnings, and most notably for women. For instance, men and women with a low childhood SES (in the bottom tercile of childhood SES) earn, respectively, up to 27 (exp(0.241) − 1) and 52 percent less income during their working life than individuals who had a high SES during childhood (those in the highest tercile of childhood SES). To a lesser extent, we also find a positive association with childhood health. Men and women with a low childhood HI (in the bottom tercile of childhood health) earn up to, respectively, 6 and 8 percent less income during their working life than those who had a high HI during childhood (in the highest tercile of childhood health).

Previous studies (Case *et al*. 2002; Currie and Stabile 2003) argue that income buffers children from the negative effects of chronic conditions (which are also more common among low-SES children); this is called the buffering hypothesis. Here, we test

[15] These additional controls are also of relevance to the use of the objective childhood health measures as there is a relatively large variation in response rates across countries, and some evidence of a negative association between age and reporting on these conditions. Importantly, however, there is no evidence of recall error in these health measures (Havari and Mazzonna 2011).

this hypothesis for lifetime earnings. We therefore add interaction terms between the childhood health and SES terciles in Columns (2). In particular, we want to test whether having a higher SES during childhood reduces the negative correlation between lifetime earnings and poor health during childhood. If childhood SES has a protective effect, i.e. there is a buffering effect, we would expect the difference in lifetime earnings between persons with a high childhood HI and a low childhood HI to be smaller for persons with a high childhood SES than for persons with a low childhood SES. Hence, we test whether $\beta_{HighHI*LowSES} - \beta_{LowHI*LowSES} > \beta_{HighHI*HighSES} - \beta_{LowHI*HighSES}$, where the βs are the regression coefficients corresponding to the variables in the subindex and $\beta_{HighHI*HighSES} = 0$. As the bottom part of the table shows, we reject the null of no buffering effect of childhood SES for women but not for men.

<Insert Table I about here>

4.2. How does the association between early life circumstances and lifetime earnings evolve over the life cycle?

As discussed in Section 2, Smith (2009) finds that the association of childhood health (and parental income) with individuals' (annual) earnings is larger when measured in their forties than at age 25, which he argues is consistent with both the fact that some consequences of poor childhood health in terms of earlier adult life onset of disease do not appear until later in adult life and also that their impacts might be cumulative. Goodman *et al*. (2011) show a similar increasing association of childhood psychological problems and (low) birth weight with family income between ages 23 and 50, and a rather constant one for summary indices of minor and major physical health problems. Our main advantage over Smith's study is that while he considers (at most) two years of

an individual's work career, our data allows us to explore how these associations evolve over the whole work career of an individual. Hence, in contrast to Goodman *et al*. (2011), as well as investigating the associations with childhood SES, we also explore the period of over 50 years of age, which is when some of the consequences of early life physical health conditions may actually become apparent.

In particular, we estimate the associations of early life circumstances with the logarithm of lifetime earnings at different ages of men and women's working life (at five-year age intervals between the ages of 25 and 65). Our interest lies in understanding how the association between early life circumstances and lifetime earnings evolves over time until resulting in the correlations at the end of the working life shown in the previous section. Therefore, we focus our attention on the association with *accumulated earnings until different ages* instead of *earnings at different ages*, which is what previous studies—including Smith (2009) and Goodman *et al*. (2011)—have done.[16] The results are shown in Figure 1 and Table A.VI in the appendix.

Panel A in Figure 1 shows that, compared to men with a high childhood HI, those with a low and medium childhood HI accumulate significantly fewer earnings over their whole working life, but that these effects are not dramatic and remain more or less constant (between 6 and 9 percent). On the other hand, those with a low childhood SES accumulate more earnings at younger ages (around 26 percent (exp(0.230) − 1) more at age 25), most likely because they start working earlier (see next section), but end up with about 27 percent lower lifetime earnings (at age 65) than men with a high

[16] This approach, we believe, might be more informative of the possible cumulative impacts that early life circumstances have on earnings. In the next section, we also present estimates on an individual's *cumulative* (average) annual earnings at different ages, which might be more comparable to the results of previous studies.

childhood SES. Men with a high childhood SES have already caught up in (accumulated) earnings by their early thirties.

Panel B in Figure 1 shows that women with a low childhood HI present a similar pattern to that of men, and earn over most of the life cycle about 6–8 percent less income than women with a high childhood HI. This association, although not present at the beginning of their working life, becomes evident as early as age 25. Instead, women with a medium and in particular a low SES during childhood start accumulating increasingly fewer earnings over their working life at an earlier age than their male counterparts, as early as age 30. Compared to women with a high childhood SES, those with a low childhood SES already accumulate 21 percent fewer earnings at age 30 and end up with 52 percent (exp(0.421) − 1) lower lifetime earnings at age 65.

<Insert Figure 1 about here>

Panels A and B in Figure 2 show the same picture for men and women respectively, but with the interaction terms needed for testing the buffering hypothesis in lifetime earnings ($\beta_{\text{HighHI*LowSES}} - \beta_{\text{LowHI*LowSES}} > \beta_{\text{HighHI*HighSES}} - \beta_{\text{LowHI*HighSES}}$) over the working life (the full set of estimates are available in Table A.VII in the appendix). The pattern of lifetime earnings over the life cycle for men who had a low childhood SES compared to men with a high childhood SES is similar for those who were in the top or bottom part of the childhood health distribution. Therefore, we find no evidence of a buffering effect (see Table A.VII). In contrast, for women the negative effect of having a low SES during childhood is larger for those who also had a low childhood HI compared to those with a low childhood SES but a high childhood HI, and this difference increases over the life cycle. In fact, we find evidence that parental SES buffers (part of) the negative effect of childhood health on lifetime earnings in the oldest age intervals, 55–60 and 60–65 (see Table A.VII).

<Insert Figure 2 about here>

4.3. What is the implicit labor market behavior in the association between early life circumstances and lifetime earnings over the life cycle?

Our previous results show that the associations of childhood health and SES with (accumulated) earnings vary over an individual's life cycle, and that there are some differences between men and women. The evolution of lifetime earnings over the life cycle depends on how the number of years worked and/or the average annual earnings evolve.[17] Therefore, to better understand the labor market behavior behind the associations of early life circumstances with lifetime earnings, we further analyze whether early life circumstances are correlated with the number of years worked and with annual earnings. This will shed light on whether the (cumulative) association of early life circumstances with accumulated lifetime earnings operates through working years and/or through average annual earnings.

We estimate linear models for the associations of early life circumstance with the logarithm of (accumulated) years worked and the logarithm of (average) annual earnings. The estimates for the bottom SES and health terciles are shown in Figures 3 and 4 respectively for men and women (the full set of estimates can be found in Tables A.VIII and A.IX in the appendix). As shown in Figure 3, men and women with a low childhood SES start working earlier, but during their working life individuals with a high childhood SES catch up, and women with a low childhood SES actually end up working fewer years than those with a high childhood SES. Men and women with a low childhood SES also have, respectively, about 23 (exp(0.208) − 1) and 39 percent lower

[17] The logarithm of lifetime earnings is approximately equal to the logarithm of years worked plus the logarithm of annual earnings.

annual earnings at age 25. But while for women this difference remains constant over their working life, for men it increases to more than 30 percent in their mid thirties and remains constant afterwards. These results suggest that the pattern (i.e. the different magnitudes and even different signs) in the association between childhood SES and lifetime earnings over the life cycle is driven by working years rather than by (average) annual earnings. Moreover, men from a lower childhood SES background compensate to some extent their lower annual earnings by working more years.

Figure 4 shows that, although to a lesser extent, also men with a low childhood health have lower annual earnings, but do not work significantly less over their working life than those with a high childhood health. For their part, women with a low childhood health also have lower annual earnings, although over a shorter age interval (from about age 30 to age 50), and in addition work significantly less after age 40. However, in contrast to the results for childhood SES, the difference in average annual earnings for individuals with a high and low childhood health shrinks over time; for men from 9 percent at age 25 to 5 percent at age 50 and over, and for women it even becomes insignificant from age 50 onward. Hence, while for men the association between childhood health and lifetime earnings over the life cycle operates through average annual earnings rather than through working years, for women, this association appears to be driven by annual earnings from their early thirties to mid forties and mainly by the number of years worked after age 50.

<Insert Figures 3 and 4 about here>

The previous figures have shown that individuals from a low-SES background accumulate a larger number of working years at the beginning of their working life and that this difference declines over time. Moreover, the evolution over the life course differs by gender so that women and men in the lowest SES tercile end up working at

the end of their careers almost 10 percent fewer and 5 percent more years than their peers from the highest tercile respectively. This suggests that individuals with a low childhood SES may have more employment gaps during their working life and/or are more likely to leave the labor market earlier than individuals with a high childhood SES. In addition, the explanation may be different for men and women.

Figures 5 and 6 present estimates for the bottom health and SES terciles on the accumulated number of career gaps[18] and on the probability of leaving the labor market over the life cycle, respectively, for both men and women (the full set of estimates can be found in Tables A.X and A.XI in the appendix). The difference in the number of career gaps between low- and high-childhood SES individuals is larger among women. Those with a low childhood SES accumulate more gaps from the beginning of their working life and the difference increases from around 2 gaps at age 25 to 5 gaps at age 55, and diminishes after age 60, although it remains as high as 4.6 career gaps at the end of their working life. The pattern is similar for men, although the largest estimated marginal effect is about 1.6. These results can explain to some extent why the negative association between childhood SES and working years diminishes over the life cycle.

On top of this, estimates from simple linear probability models (Figure 6) show that men and women with a low childhood SES are not more likely to leave the labor market before age 50 than individuals with high childhood SES. However, men, and to a lesser extent also women, are more likely to early-retire from that age onward than individuals with a high childhood SES.

Women with a low childhood health also accumulate significantly more career gaps during their late twenties and during their thirties (see Figure 5) and in addition

[18] As there is a large number of individuals without career gaps, we estimate Tobit models and present marginal effects in Figure 5.

have a higher probability of leaving the labor market until age 50 (see Figure 6) than women who had a high childhood health. For men we do not find such associations.

<Insert Figures 5 and 6 about here>

5. Are there differences between country-groups in life cycle profiles?

In the previous analyses, we have assumed that labor market responses over the life cycle to childhood health and SES are homogeneous across our sample of European countries. However, there are large cross-country differences in the levels of development over the period in which the individuals in our sample were born and raised. These large differences in economic resources and access to medical treatments may affect the associations between early life circumstances and later life outcomes as a more favorable environment in this respect may dampen the consequences of adverse health shocks early in life (Bengtsson and Mineau 2009). Moreover, equality of opportunities in educational attainment and social protection policies may enhance the intergenerational income mobility, and therefore we would expect a lower association between childhood SES and lifetime earnings in more egalitarian countries.

We investigate these conjectures more closely by allowing the estimates to differ between four groups of countries: i) Nordic (Sweden and Denmark), ii) Continental (Netherlands, Switzerland, Austria, Germany, France and Belgium), iii) Mediterranean (Spain, Italy and Greece) and iv) Transitional (Czech Republic and Poland). We use the country-group-specific distributions of childhood SES and health (instead of the distribution from the pooled sample) to create the terciles of childhood SES and health to ensure that these are equally distributed within country-groups. Figures 7 to 9 show estimates for low childhood HI and low childhood SES on the logarithm of lifetime earnings, the logarithm of years worked and the logarithm of (average) annual earnings

respectively (the full set of estimates can be found in Tables A.XII to A.XIV in the appendix).

It is mostly in the Mediterranean countries that individuals with a low childhood health accumulate fewer earnings during their work career, and to some extent also for men in Nordic and women in Continental countries. Moreover, while for Mediterranean men most of this association is already present early in their working life, for Mediterranean women it tends to kick in a bit later, but is also larger and slightly increasing with age (Panels A and B in Figure 7). To illustrate this, Mediterranean women with a lower childhood health accumulate 20 percent (exp(0.184) − 1) fewer lifetime earnings at age 35, which increases to about 26 percent at age 65. For Mediterranean men, these differences at age 35 and 65 are about the same (17 and 16 percent respectively).

Although for men the profiles of the association between low childhood SES and earnings over the life cycle are similar in all country-groups (Panel C in Figure 7), only in Continental and Mediterranean countries do those with a low childhood SES accumulate significantly more earnings at younger ages (29 and 18 percent respectively at age 25). At age 65, however, those with a low childhood SES have between 20 and 30 percent lower lifetime earnings in all country-groups. Instead, for women, these profiles are more heterogeneous across country-groups (Panel D in Figure 7). For instance, at age 35 the magnitude of the association between childhood SES and lifetime earnings is largest in Continental and Transitional countries, where women with a low childhood SES have about 40 percent lower lifetime earnings than women with a high childhood SES. But from that age onward, it is women with a low childhood SES from Continental and Mediterranean countries who accumulate increasingly lower lifetime earnings. At age 65, these women have about 59 percent lower lifetime

earnings than their female peers with a high childhood SES, a difference that falls to 26 and 35 percent for women from Nordic and Transitional countries respectively.

<Insert Figure 7 about here>

To better understand the implicit labor market behavior that may cause these associations across country-groups, we further analyze whether early life circumstances are correlated with (average) annual earnings (Figure 8) and (accumulated) working years (Figure 9). Within country-groups, and for both men and women, the profiles of the associations of childhood health and childhood SES with (average) annual earnings remain quite constant over the life cycle (Figure 8). However, across country-groups there are some differences in the magnitude and significance of these estimates. For example, it is in the Mediterranean countries, and mostly from the beginning of their working life, that individuals with a low childhood health have lower (average) annual earnings (Panels A and B in Figure 8). On the other hand, it appears that in all country-groups men and women with a low childhood SES accumulate lower annual earnings during their working life (Panels C and D in Figure 8); these estimates are largest for women from Continental countries.

<Insert Figure 8 about here>

Only for women from Mediterranean and Transitional countries is there some evidence of a negative association between having a low childhood health and working years over the life cycle (Panels A and B in Figure 9). These associations are not apparent at the beginning of their working life, but at age 65 women with a low childhood health in Mediterranean and Transitional countries have worked 11 and 5 percent fewer years respectively than those with a high childhood health. Also, in all country-groups men and women with a low childhood SES start working earlier, but

individuals with a high childhood SES catch up, although the gap only disappears for men and women from Transitional countries, and for women from Nordic countries (Panels C and D in Figure 9). Furthermore, the difference in the number of years worked between socioeconomic groups switches sign for women from Continental and in particular from Mediterranean countries, where women with a low childhood SES end up working fewer years than those with a high childhood SES.

<Insert Figure 9 about here>

6. Robustness of the results

Table II shows the results of several sensitivity analyses. We present estimates for the bottom health and SES terciles obtained from estimating linear models on the logarithm of lifetime earnings of men and women in Europe, together with the R-squared and the number of observations (the full estimation results are available upon request). To facilitate comparison, we repeat in Row 0 our main estimation results from Table I.

First, we tested the robustness of our results to the method and sample used to construct our indices of childhood health and SES. In Row 1, Table II, we present estimates when using the polychoric correlation matrix to perform the PCA, which takes into account the discrete nature of some of the variables used to measure childhood SES (number of facilities, number of books and main breadwinner's occupation) and childhood health (childhood SRH and number of several objective health conditions). The variance explained by the first principal component slightly increases in this case (to 0.288 for childhood health and 0.529 for childhood SES), but the estimation results

remain unchanged.[19] The results in Row 2 show that using country- and gender-specific distributions to construct the terciles of childhood SES and childhood HI do not affect our main estimation results.

Second, we tested the influence of some of our assumptions for constructing our measure of lifetime earnings. In Row 3 we exclude those individuals who have been self-employed at any stage during their working life, and obtain similar results. The results are also robust to not adjusting for differences in working hours when constructing our measure of lifetime earnings (Row 4);[20] and they are also robust to assigning no unemployment benefits during unemployment spells instead of 80 percent of the previous wage (Row 5).

Third, as one could be concerned about the influence of possible extreme values due to measurement error in our measure of lifetime earnings, we exclude Greece and Poland from our sample as these two countries have rather high (undiscounted) annual lifetime earnings (see Table A.II), which may seem unreliable and could cast doubt on the validity of our analysis. This exclusion does not change our main results (see Row 6). Similarly, because the cross-country distribution of median lifetime earnings shown in Table A.II may appear more reliable than the distribution of mean values that might be influence by outliers, we use median regression to estimate the log lifetime earnings equations, and obtain again similar results (see Row 7).

Finally, because some studies have used height as an indicator for early life circumstances to explore the height premium in earnings that is typically observed in

[19] This finding is supported by Kolenikov and Angeles (2009), who show the relevance of using the polychoric correlation matrix when performing the PCA on dichotomous variables rather than on ordinal (and continuous) variables, as is our case.

[20] This increases the female sample somewhat, as fewer observations are dropped because of working less than five years (see Section 3).

adulthood,[21] we re-estimate our main models for lifetime earnings controlling also for self-reported height (at the time of the SHARELIFE interview). As shown in Row 8, the estimates for the bottom childhood health and SES terciles remain virtually the same, which suggests that the association of these early life circumstances with lifetime earnings is not mediated through height.[22] All in all, none of these sensitivity analyses changes the main results and conclusions of our paper.

7. Summary and discussion

To the best of our knowledge, this study is the first to investigate how early life circumstances—as measured by two indices of childhood health and socioeconomic status (SES)—are associated with earnings and other labor market outcomes over the entire life cycle. In particular, we focus on accumulated earnings, average annual earnings, number of years worked, number of career gaps, and the timing of retirement. The analysis is conducted using data from the Survey of Health, Aging and Retirement in Europe, which contains retrospective information on respondent's early life circumstances and full work histories.

Our results show that in general childhood SES has a larger impact on individual's life cycle labor market outcomes than childhood health, and most notably for women. For instance, men and women with a low childhood SES earn, respectively, up to 27 and 52 percent less income during their working life than individuals with a high SES during childhood. These differences fall to 6 and 8 percent respectively when we compare men and women with a low and high childhood health. But our results also

[21] For instance, Case and Paxson (2008) use height (at various ages) to examine the role of (childhood) cognitive ability as a possible channel through which the height premium in earnings operates.

[22] The coefficient for a 10 centimeter increase in height with standard error in parentheses is 0.063 (0.012) for men and 0.045 (0.018) for women.

show that these associations, and especially those with childhood SES, are not constant over the life cycle. While women with a low childhood SES accumulate increasingly fewer earnings almost from the beginning of their working life (21 percent less as early as age 30), men with a low childhood SES accumulate significantly more earnings up to that age (still about 9 percent more at age 30). These associations operate through annual earnings, which show a persistent, fairly constant effect during working life that favors individuals with a high childhood SES, but also through working years. This latter effect, instead, favors at the beginning of the working life individuals with a low childhood SES (who start working earlier), but diminishes thereafter when these individuals accumulate more career gaps than individuals with a high childhood SES. For women, the association between childhood SES and working years even reverses sign after age 45, favoring women with a high childhood SES. With regard to childhood health, its smaller, fairly persistent, positive long-term association with lifetime earnings appears to operate through (lower) annual earnings rather than through working years, except for women.

Hence, our results for working years are to some extent in line with Smith's (2009) finding of a positive association between childhood health and earnings that operates in part through a greater adult work effort. However, we show that this finding of Smith is driven by women who had a worse health during childhood and, moreover, that this positive association becomes significant after age 40. In addition, we show that while for men the association between childhood health and lifetime earnings is already present at the beginning of their working life (at age 25), for women it kicks in just after that age.

Our additional results also point to some differences in these life cycle profiles across European country-groups. For instance, the relatively small and positive long-

term association between childhood health and earnings over the life cycle is mainly present in the Mediterranean countries. On the other hand, the relatively strong cumulative impact of childhood SES on earnings over the life cycle is present in all country-groups and for men and women. Nevertheless, for women most of the life cycle profiles (for instance, those with accumulated earnings) are larger in the Mediterranean and Continental countries than in Nordic and Transitional countries. Also for women only, we find evidence of a buffering effect, i.e. that a higher parental SES reduces the negative impact of poor health during childhood on lifetime earnings.

A question that arises when interpreting the relatively larger impact of childhood SES on life cycle labor market outcomes when compared to that of childhood health is whether this is due to measured changes in childhood SES being more severe than those in childhood health. Our descriptive evidence does not support this hypothesis. Although individuals in the bottom tercile of the distribution of childhood SES lived, on average, in relatively small and badly equipped houses (with 0.48 rooms per person and 56 percent having none of the facilities included in Table A.IV), with few books (98 percent did not have enough books to fill one bookcase), and predominantly with a low-skilled breadwinner (for 39 percent the main breadwinner worked in a low-skilled occupation),[23] also the shift from the highest to the lowest tercile of childhood health is large, and possibly even more extreme. Basically, it implies comparing individuals who on average suffered from none of the conditions listed in Table A.V (except for infectious diseases) and without anyone reporting a poor, fair or changing childhood health with individuals who to some extent suffered from all these conditions (19 percent from respiratory problems, 2 percent from cardiovascular diseases, 13 percent from neurological and psychiatric diseases, 13 percent from disorders of the sense

[23] These numbers for individuals with a high childhood SES are respectively, 1, and 1, 16, and 5 percent.

organs, 14 percent from neoplastic and other serious health conditions) and with 22 percent reporting a fair, poor or changing childhood health. Hence, a more plausible explanation for the larger associations with childhood SES could be that children are exposed for a longer period to their parents' SES than to any specific health condition.[24]

Further research could extend our analyses to assess the causal effects of early life circumstances on labor market outcomes over the entire life cycle and shed light on the underlying mechanisms that drive these relationships. This will make it possible to assess the influence of confounding factors[25] in the results presented here and show how the causal effects and underlying mechanisms found elsewhere evolve over the life cycle. For instance, Maccini and Yang (2009) provide suggestive evidence that the causal effect of weather conditions early in life—measured by birth year rainfall—on the adult SES of Indonesian women is mediated more strongly by schooling attainment, and not as importantly by adult health. Also Brunello *et al*. (2012) find that the long-term association between access to books in the parental home and lifetime earnings for men in Europe is in part mediated through educational attainment. Flores and Kalwij (2014), for their part, find that the significant associations of favorable early life

[24] Neither can we rule out the possibility of measurement error being more severe in our measure of childhood health due to an underreporting in some of the health conditions and possible reporting bias in childhood SRH (Smith 2009). Together with previous lack of evidence of coloring bias (i.e. the response to childhood health questions being influenced by a worsening in current health status) in childhood SRH (Smith 2009) and in childhood attention deficit/hyperactivity disorders (Fletcher 2014), we would expect this to result in an attenuation bias. Other typical problems in this context such as differential mortality, which causes individuals from disadvantaged social backgrounds to be less likely to reach the age of 50 (and be in our panel), or parental efforts to compensate the negative effects of childhood health problems may—if anything—also attenuate our estimates of childhood health (and SES) towards zero (Currie 2009; Palloni *et al*. 2009).

[25] These could include (inherited) factors that are correlated with family background and which are rewarded in the labor market such as cognitive skills (Case and Paxson 2008), social skills (Persico *et al*. 2004) and other noncognitive skills related to personality (Lundborg *et al*. 2014; Mueller and Plug 2006), and beauty (Scholz and Sicinski 2014).

circumstances with a higher incidence of later life employment are transmitted mostly through both education and later life health. Goodman *et al*. (2011) and Smith (2009) also show that part of the negative impact of adverse health during childhood operates through marriage markets, as individuals with childhood (mental) health conditions are less likely to get married, and if they do, they are less likely to stay with the same partner or their partner is less likely to work.

All in all, our empirical findings show that following a life cycle approach like ours is important because—as some theoretical models stipulate (e.g. *fetal origins hypothesis* and *life course models*) and our results confirm—some consequences of adverse (health) events early in life may not become apparent until later in adult life and because some of their impacts, in particular those related to childhood SES, may change and accumulate over the life cycle. Our findings also shed light on the potential gains in terms of different labor market outcomes for public policies that invest in children's health and parents' SES. Therefore, we show the importance of considering the possibility that the effects of poor health during childhood on lifetime earnings are larger for some groups (in our case, women from a lower SES background). Finally, our results also help in identifying who is more likely to leave the labor market at earlier ages, which can facilitate the design of policies aimed at attaining higher labor market participation rates over the life cycle.

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CT-2006-028812), and through the 7th Framework Program (SHARE-PREP, N° 211909, SHARE-LEAP, N° 227822 and SHARE M4, N° 261982). Additional funding is also gratefully acknowledged from the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, R21 AG025169, Y1-AG-4553-01, IAG BSR06-11 and OGHA 04-064) and the German Ministry of Education and Research, as well as from various national sources (see http://www.share-project.org/ for a full list of funding institutions). We use release 2.6.0 of waves 1 and 2, and release 1 of wave 3 (SHARELIFE). We also use data from the generated job episodes panel; for methodological details see the SHARE working paper 11-2013 "Working life histories from SHARELIFE: a retrospective panel" by Brugiavini, Cavapozzi, Pasini and Trevisan.

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contents lies with the authors and does not represent the views of the OECD or the Governments of OECD member countries.

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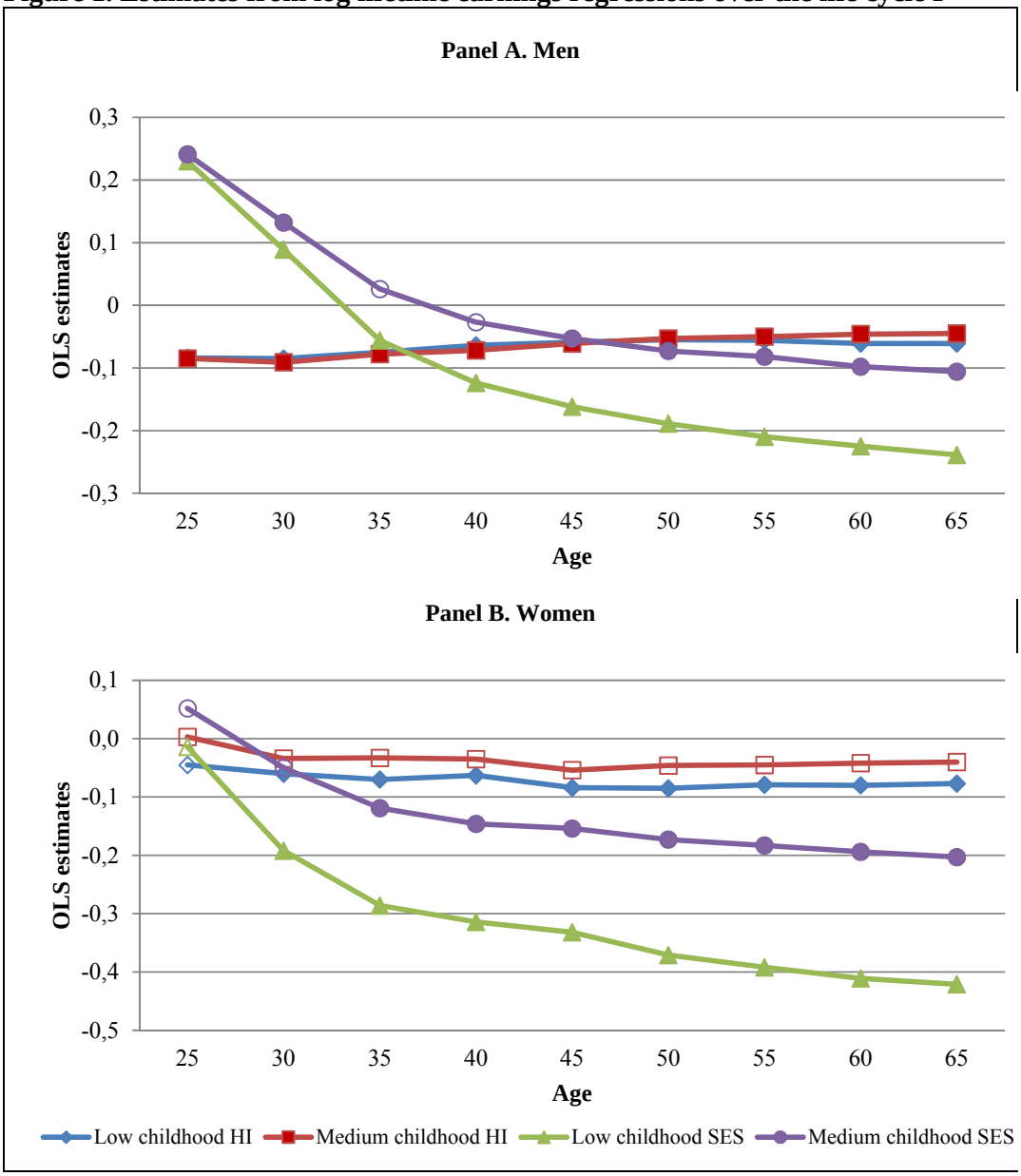
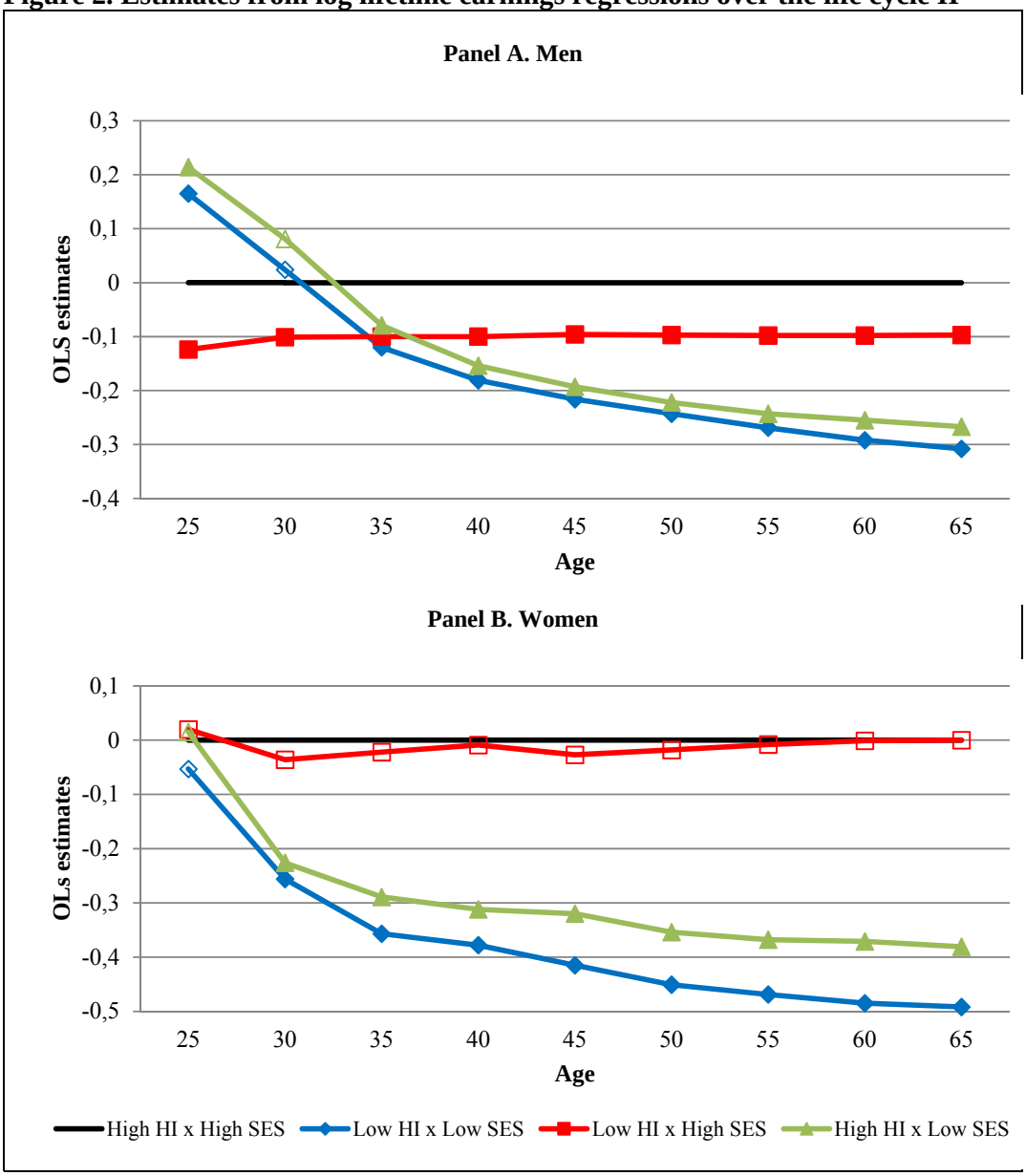
Figure 1. Estimates from log lifetime earnings regressions over the life cycle I[a]



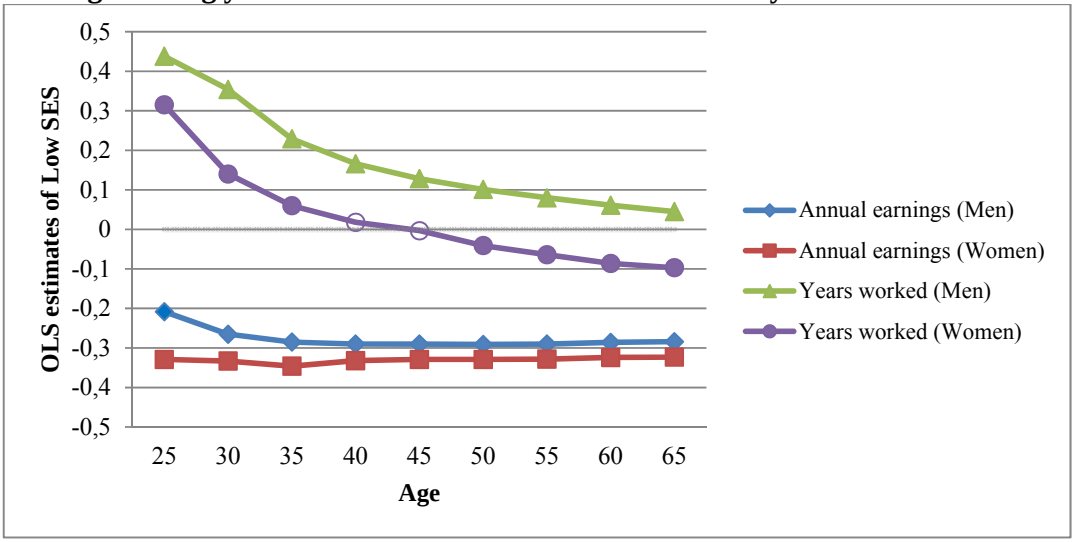
[a] The figure shows OLS estimates for Low and Medium childhood HI and Low and Medium childhood SES obtained from estimating linear models on the logarithm of accumulated earnings at different ages over an individual's working life. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 2. Estimates from log lifetime earnings regressions over the life cycle II[a]



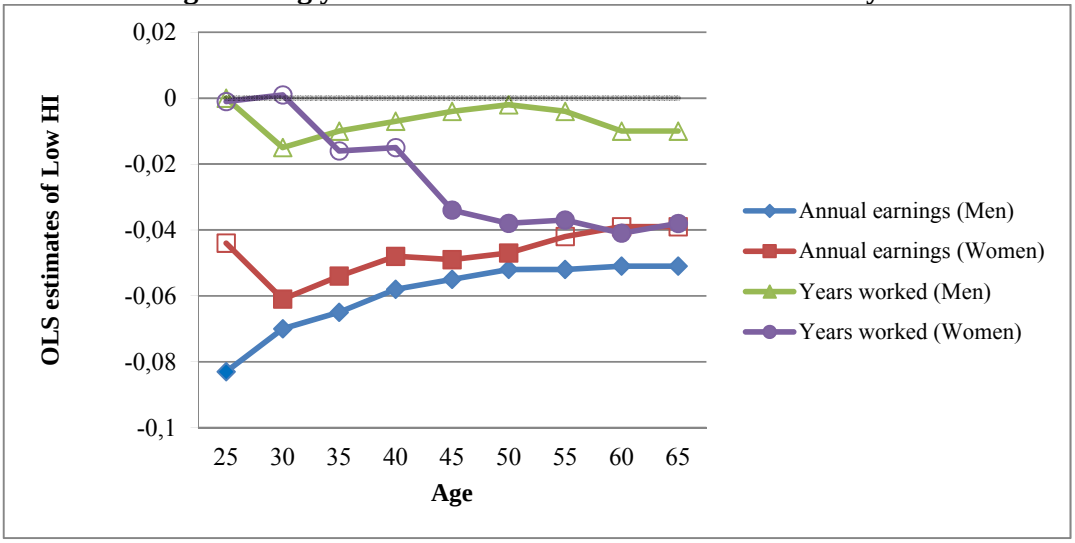
[a] The figure shows OLS estimates only for the interaction terms needed to compute the buffering hypothesis ($\beta_{HighHI*LowSES} - \beta_{LowHI*LowSES} > \beta_{HighHI*HighSES} - \beta_{LowHI*HighSES}$) obtained from estimating linear models on the logarithm of accumulated earnings at different ages over an individual's working life (the reference category High HI x High SES is represented by the bold zero line). All models include country dummies and birth-year dummies. A solid square, diamond or triangle indicates significance at a 5% level based on robust standard errors. The full estimation results are in the appendix.

Figure 3. Estimates for low childhood SES from regressions on log average annual earnings and log years worked over men and women's life cycle[a]



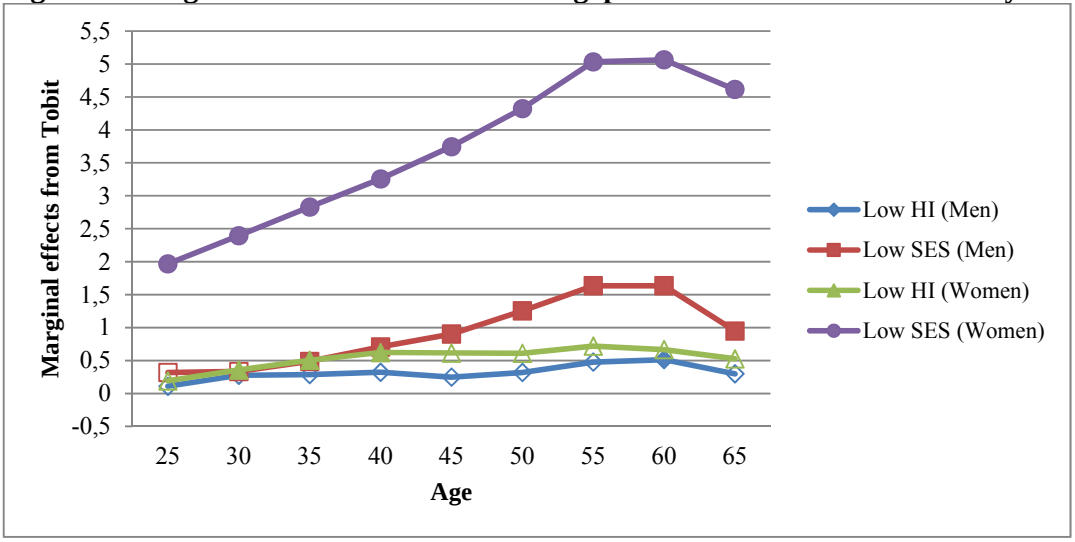
[a] The figure shows OLS estimates for Low childhood SES obtained from estimating linear models on the logarithm of (average) annual earnings and the logarithm of (accumulated) years worked at different ages over an individual's working life. The reference category is High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 4. Estimates for low childhood health from regressions on log average annual earnings and log years worked over men and women's life cycle[a]



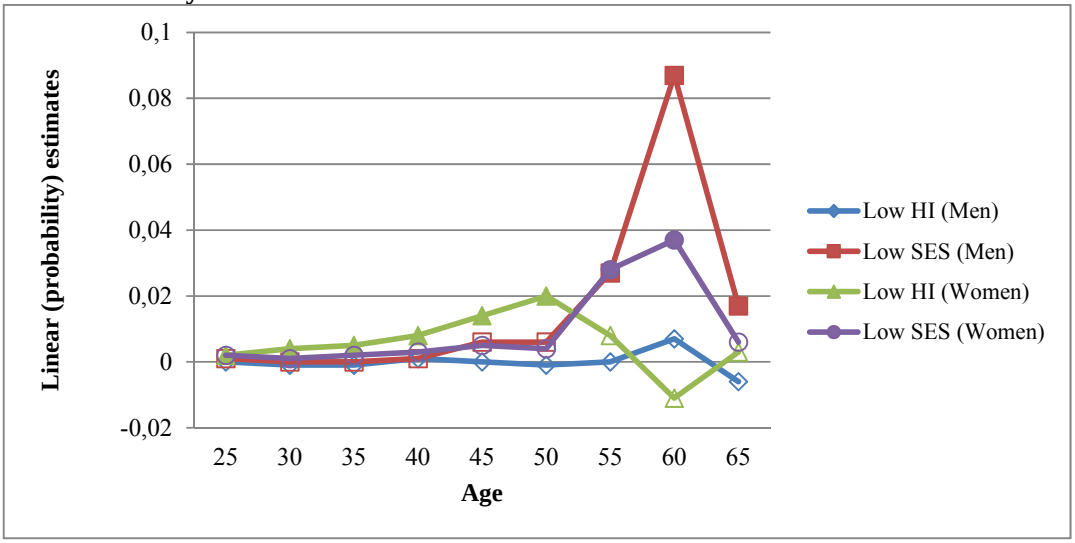
[a] The figure shows OLS estimates for Low childhood HI obtained from estimating linear models on the logarithm of (average) annual earnings and the logarithm of (accumulated) years worked at different ages over an individual's working life. The reference category is High childhood HI. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 5. Marginal effects on the number of gaps over men and women's life cycle[a]



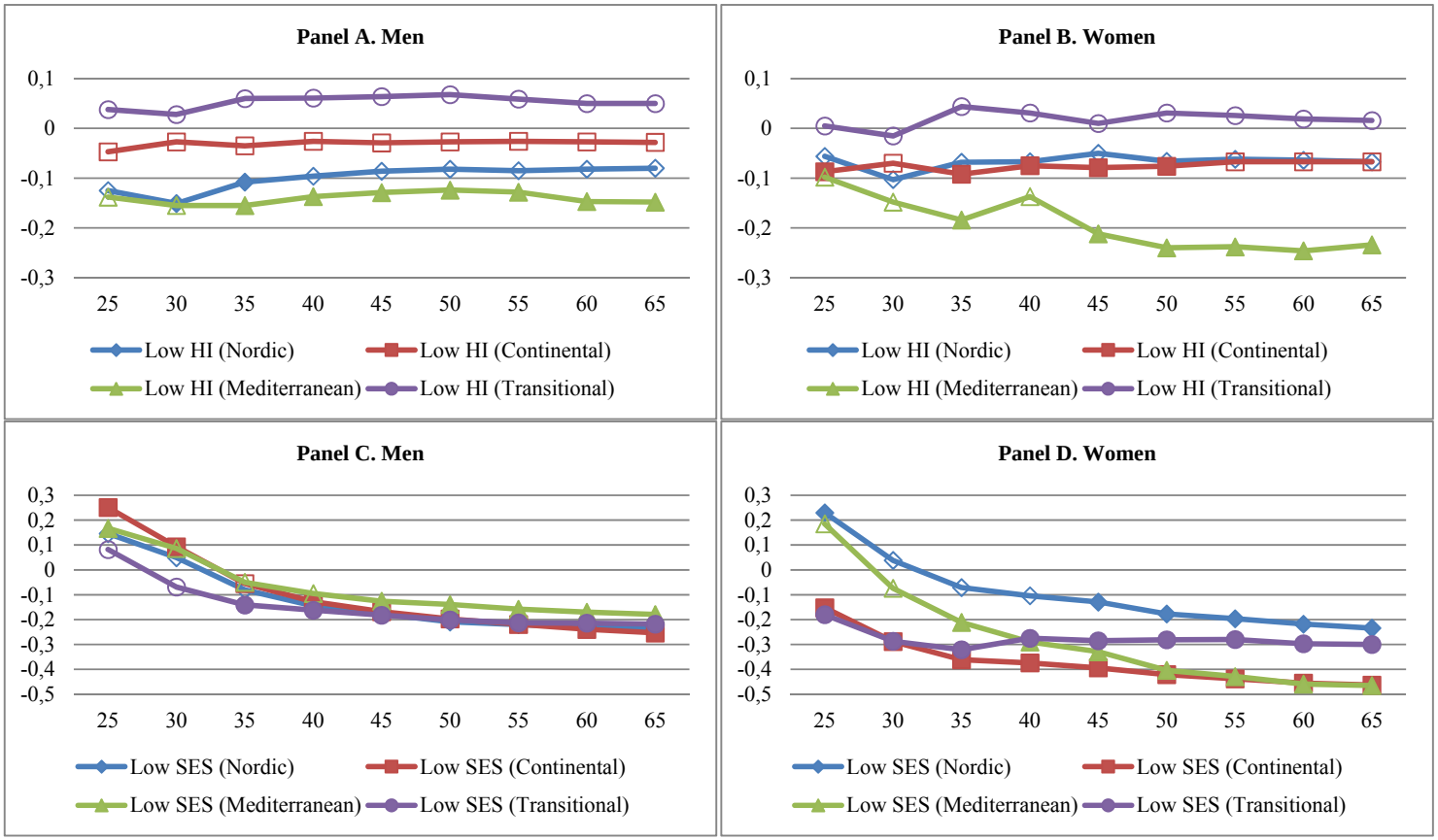
[a] The figure shows marginal effects (conditional on being uncensored) for Low childhood HI and Low childhood SES based on the estimation of Tobit models on the (accumulated) number of employment gaps at different ages over an individual's working life. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 6. Estimates on the probability of leaving the labor market over men and women's life cycle[a]



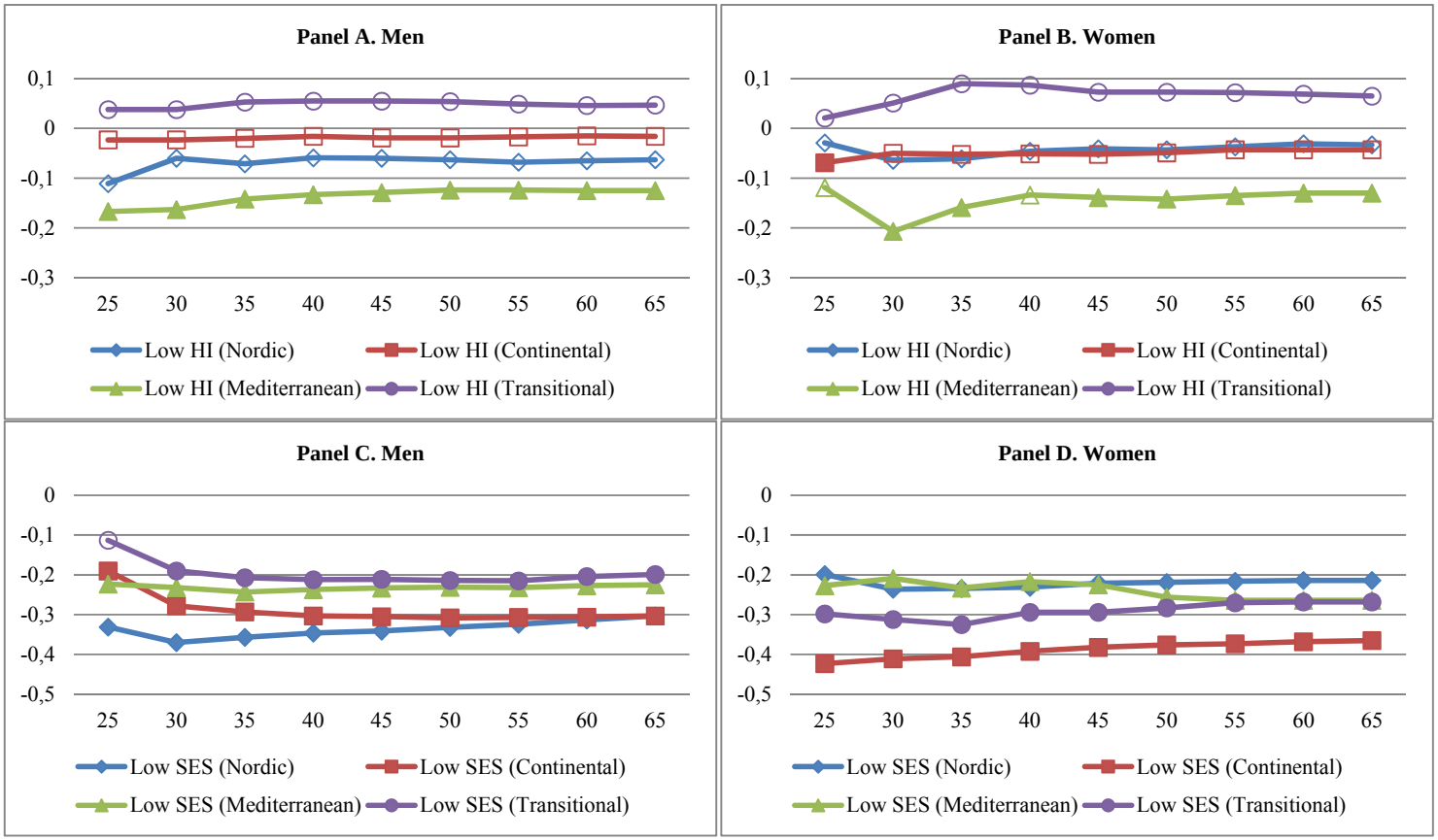
[a] The figure shows OLS estimates for Low childhood HI and Low childhood SES obtained from estimating linear models on the probability of leaving the labor market at different ages over an individual's working life. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 7. Estimates from log lifetime earnings regressions over men and women's life cycle in Nordic, Continental, Mediterranean and Transitional countries[a]



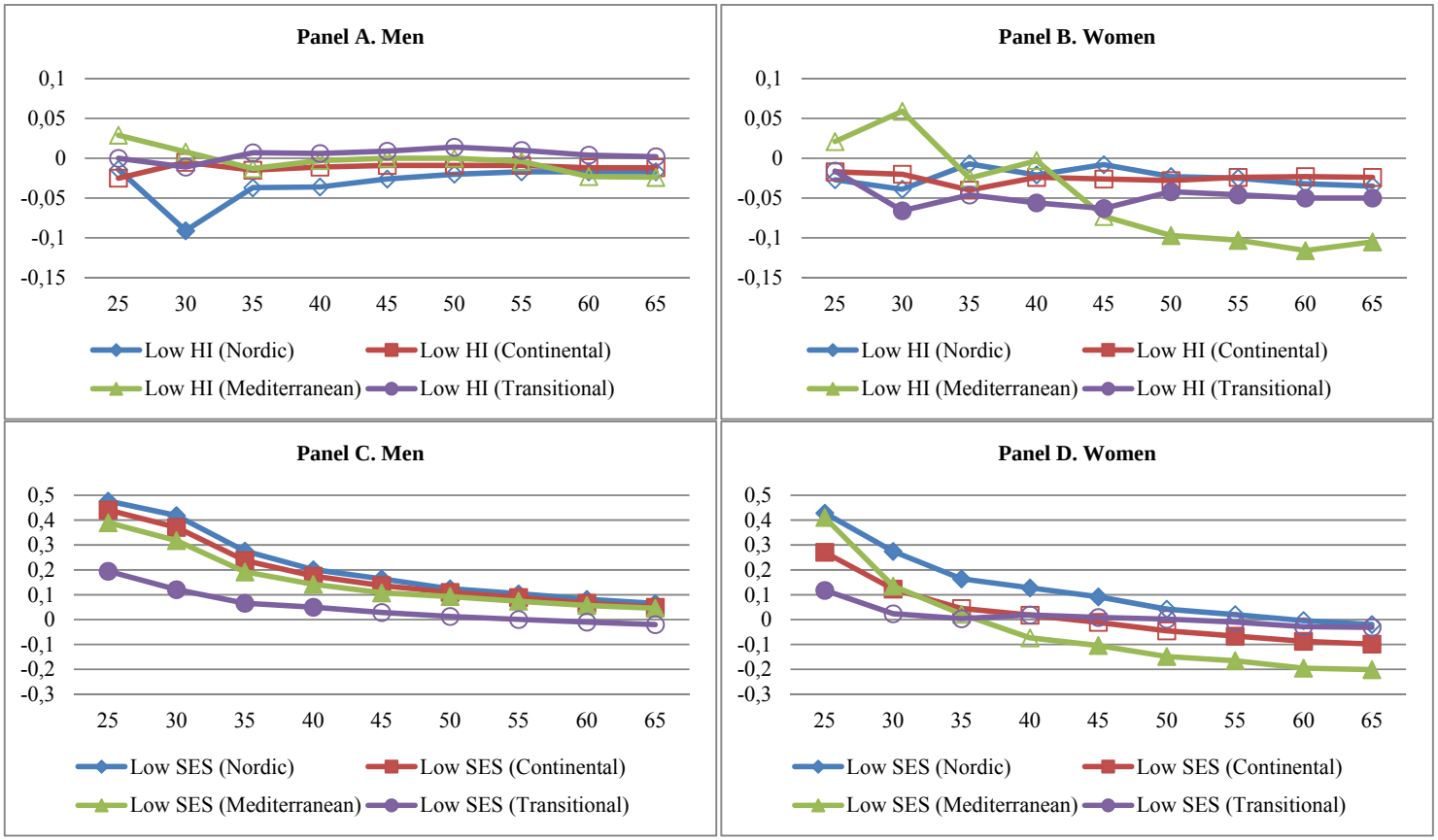
[a] The figure shows OLS estimates for Low childhood HI and Low childhood SES obtained from estimating linear models on the logarithm of accumulated earnings at different ages over an individual's working life by country-groups and for men and women. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 8. Estimates from log average annual earnings regressions over men and women's life cycle in Nordic, Continental, Mediterranean and Transitional countries[a]



[a] The figure shows OLS estimates for Low childhood HI and Low childhood SES obtained from estimating linear models on the logarithm of (average) annual earnings at different ages over an individual's working life by country-groups and for men and women. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Figure 9. Estimates from log working years regressions over men and women's life cycle in Nordic, Continental, Mediterranean and Transitional countries[a]



[a] The figure shows OLS estimates for Low childhood HI and Low childhood SES obtained from estimating linear models on the logarithm of (accumulated) working years at different ages over an individual's working life by country-groups and for men and women. The reference categories are, respectively, High childhood HI and High childhood SES. All models include country dummies and birth-year dummies. A solid square, diamond, triangle or dot indicates significance at a 5% level based on robust standard errors.

Table I Log lifetime earnings regressions for men and women in Europe[a]

	Men		Women	
	(1)	(2)	(1)	(2)
Low childhood HI	-0.061***		-0.076***	
	(0.020)		(0.027)	
Medium childhood HI	-0.045**		-0.038	
	(0.020)		(0.029)	
Low childhood SES	-0.241***		-0.420***	
	(0.022)		(0.030)	
Medium childhood SES	-0.106***		-0.203***	
	(0.019)		(0.025)	
Low HI * Low SES		-0.309***		-0.491***
		(0.035)		(0.048)
Low HI * Medium SES		-0.181***		-0.279***
		(0.031)		(0.042)
Low HI * High SES		-0.096***		0.001
		(0.029)		(0.040)
Medium HI * Low SES		-0.310***		-0.398***
		(0.035)		(0.054)
Medium HI * Medium SES		-0.164***		-0.194***
		(0.033)		(0.044)
Medium HI * High SES		-0.065*		-0.054
		(0.034)		(0.043)
High HI * Low SES		-0.267***		-0.382***
		(0.035)		(0.052)
High HI * Medium SES		-0.135***		-0.147***
		(0.032)		(0.048)
Buffering hypothesis[b]		0.873		0.049
R-squared	0.247	0.247	0.180	0.181
Observations	7803	7803	7170	7170

[a] Based on the estimation of linear models on the logarithm of lifetime earnings using OLS. All models include both country dummies and birth-year dummies.

[b] The buffering hypothesis in Columns (2) shows the resulting p-value when testing $\beta_{\text{HighHI*LowSES}} - \beta_{\text{LowHI*LowSES}} > \beta_{\text{HighHI*HighSES}} - \beta_{\text{LowHI*HighSES}}$, where $\beta_{\text{HighHI*HighSES}} = 0$. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table II Estimates for low childhood HI and low childhood SES from log lifetime earnings regressions for men and women in Europe (sensitivity analyses)[a]

	Men				Women			
	Low HI coefficient (standard error)	Low SES coefficient (standard error)	R^2	N	Low HI coefficient (standard error)	Low SES coefficient (standard error)	R^2	N
0. Basic results from Table I	-0.061*** (0.020)	-0.241*** (0.022)	0.247	7803	-0.076*** (0.027)	-0.420*** (0.030)	0.180	7170
1. Polychoric correlation matrix for PCA	-0.063*** (0.020)	-0.241*** (0.022)	0.247	7803	-0.091*** (0.028)	-0.409*** (0.030)	0.179	7170
2. Country-specific distributions for terciles	-0.053*** (0.020)	-0.223*** (0.020)	0.247	7803	-0.081*** (0.027)	-0.365*** (0.028)	0.178	7170
3. Excluding self-employed	-0.043** (0.021)	-0.246*** (0.024)	0.273	6070	-0.070** (0.029)	-0.412*** (0.032)	0.188	6246
4. Without adjusting for part-time/full-time work	-0.059*** (0.019)	-0.243*** (0.022)	0.252	7803	-0.063** (0.027)	-0.404*** (0.030)	0.203	7207
5. Assuming zero unemployment benefits	-0.062*** (0.020)	-0.243*** (0.022)	0.246	7802	-0.072*** (0.027)	-0.433*** (0.031)	0.179	7171
6. Excluding Greece and Poland	-0.066*** (0.020)	-0.243*** (0.022)	0.208	6785	-0.068** (0.028)	-0.389*** (0.030)	0.168	6387
7. Median regression	-0.037** (0.018)	-0.217*** (0.021)	-	7803	-0.063** (0.030)	-0.408*** (0.033)	-	7170
8. Controlling for height	-0.056*** (0.019)	-0.223*** (0.022)	0.251	7739	-0.074*** (0.027)	-0.412*** (0.031)	0.179	7123

[a] Based on the estimation of linear models on the logarithm of lifetime earnings using OLS, except in Row 7, where median regression is used. All models include both country dummies and birth-year dummies. Robust standard errors in parentheses, except for median regression in Row 7. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Appendix to "Early life circumstances and life cycle labor market outcomes"

July 4, 2015

This appendix provides additional analyses and information to the main paper.

A.1. Does our sample selection introduce a selectivity bias into our analysis?

As described in more detail in Section 3, in our sample selection we exclude respondents who had never worked, who did not report any wage in SHARE (waves 1, 2 or 3) or for whom only one wage point is available, as well as a small number of individuals who worked for less than five years. We exclude these respondents for practical reasons (see also Alessie *et al*. 2013). However, because excluding all these individuals may introduce a selectivity bias into our analysis, we performed several robustness checks keeping these four groups in our sample, as shown in Table A.I. The table shows estimates for the bottom health and SES terciles obtained from estimating lifetime earnings regressions for men and women in Europe together with the number of observations (the full estimation results are available upon request). To facilitate comparison, we repeat our main estimation results from Table I in Row 0.

The first group of individuals, those who had never worked (i.e. also without lifetime earnings), are excluded because in order to investigate the implicit labor market behavior that may cause the associations between early life circumstances and lifetime earnings over the life cycle we need to estimate regressions on the logarithm of lifetime earnings, the logarithm of working years, and the logarithm of average annual earnings respectively. The reason for excluding respondents for whom only one wage point is available is that they would be assigned the same wage over their whole work career, because we use linear interpolation between respondents' wages to construct the wage

profiles (see Section 3). Finally, the small number of individuals with less than five years of work experience are dropped to exclude individuals with very short employment histories. In a first robustness check, we replicated our main results in Columns (1) in Table 1 using our final sample but estimating the lifetime earnings regression in levels (Row 1 in Panel A). Next, we re-estimated the models keeping the three aforementioned groups of respondents (Row 2 in Panel A). Individuals who had never worked were assigned zero lifetime earnings (cf. Goodman *et al.* 2011). As shown, the estimates for the bottom childhood health and SES terciles remain virtually the same.

In the previous analysis, however, we still exclude respondents who despite working did not report any wage in SHARE (i.e. neither in SHARELIFE nor in waves 1 or 2). A more in-depth analysis of such respondents revealed that having been self-employed at some point in their career had a positive effect on having worked over the life cycle but reporting no wage. In a final robustness check (Panel B), we estimated a Heckman selection model where the dependent variable, the logarithm of lifetime earnings, is missing if the individual had never worked or if despite working (s)he did not report any wage in SHARE. Having been self-employed during one's work career (self-employment spells) serves as an instrumental variable (IV) for having worked without reporting any wage, and the number of biological children is used as an IV for having never worked. As shown, the estimates of low childhood health and SES remain largely unchanged for men although not for women. Nevertheless, in the selection equation the estimate of self-employment spells is as expected (i.e. negative) for men only. The estimates of the other exclusion restrictions, the number of biological children, are positive for men and negative for women, as expected.

In sum, when investigating this possible sample selection issue, our main results for childhood health and SES remain largely unchanged for men, although not for women, which is however what one would expect as the sample workforce composition changes more for the latter.

Table A.I Additional sensitivity analyses

Panel A[a]	Men			Women		
	Low HI coefficient (standard error)	Low SES coefficient (standard error)	N	Low HI coefficient (standard error)	Low SES coefficient (standard error)	N
0. Regression in logs – final sample (see Columns (1) in Table 1)	-0.061***	-0.241***	7,803	-0.076***	-0.420***	7,170
	(0.020)	(0.022)		(0.027)	(0.030)	
1. Regression in levels – final sample	-113,282**	-273,889***	7,803	-31,261	-266,543***	7,170
	(50808)	(60650)		(55792)	(52002)	
2. Regression in levels – extended sample	-109,699***	-296,728***	9,196	-970	-208,787***	10,724
	(40776)	(45127)		(27824)	(32548)	
Panel B[b]						
	Log lifetime earnings equation	Selection equation	N	Log lifetime earnings equation	Selection equation	N
Low childhood HI	-0.054**	-0.030	10,229	-0.206***	0.135***	12,312
	(0.024)	(0.039)		(0.033)	(0.036)	
Low childhood SES	-0.249***	-0.152***		-0.230***	-0.201***	
	(0.027)	(0.049)		(0.052)	(0.035)	
One child (0-1)		0.169**			-0.066	
		(0.075)			(0.051)	
Two children (0-1)		0.236***			-0.162***	
		(0.056)			(0.048)	
Three or more children (0-1)		0.186***			-0.314***	
		(0.058)			(0.051)	
Self-employment spells (0-1)		-0.254***			0.231***	
		(0.049)			(0.042)	

[a] Based on the estimation of linear models on lifetime earnings using OLS. In Row 2, we keep respondents without lifetime earnings (and assign them zero lifetime earnings), with only one wage reported or who worked less than five years. However, we still drop respondents who despite working did not report any wage in SHARE (waves 1, 2 or 3). All models include both country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

[b] Based on the estimation of a Heckman selection model. The dependent variable, log lifetime earnings, is missing if the respondent had never worked or if despite working she did not report any wage in SHARE (waves 1, 2 or 3). Having been self-employed during one's work career (self-employment spells) and the number of biological children serve as exclusion restrictions in the log lifetime earnings equation. All models include both country dummies and birth-year dummies. Bootstrapped standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.II Annual lifetime earnings (undiscounted, in PPP-adjusted German euros of 2006)[a]

	Men			Women		
	Medians	Means	N	Medians	Means	N
Austria	16,069	18,343	187	9,565	11,346	198
Germany	18,981	21,779	633	10,555	11,782	626
Sweden	17,505	22,657	628	11,418	14,341	723
Netherlands	16,899	18,905	758	7,643	9,657	684
Spain	14,092	22,272	496	8,409	15,142	316
Italy	12,817	15,967	878	9,636	12,099	621
France	20,416	35,059	614	12,879	26,752	576
Denmark	17,396	19,640	740	11,082	13,180	746
Greece	17,141	26,731	536	12,939	19,425	309
Switzerland	35,111	41,264	438	17,203	19,854	459
Belgium	19,719	21,740	856	13,824	14,872	666
Czech Republic	8,461	9,708	557	6,570	7,307	772
Poland	6,734	15,619	482	4,835	15,582	474

[a] The table shows sample median and mean values for annualized earnings from employment obtained from SHARE (waves 1, 2 and 3), as well as sample sizes (N) by country and gender. All amounts are undiscounted and in PPP-adjusted German euros of 2006.

Table A.III Official age of retirement[a]

	Men	Women
Sweden	65	65
Denmark	65	65
Switzerland	65	64
Netherlands	65	65
Germany	65	65
Belgium	65	65
France	60	60
Austria	65	60
Spain	65	65
Italy	65	60
Greece	65	60
Czech Republic	62.2	59.3
Poland	65	60

Source: OECD Pensions at a Glance (www.oecd.org/els/social/pensions/PAG).[a] The official age of retirement is shown for 2010 and corresponds to the age at which a pension can be received irrespective of whether a worker has a long insurance record of years of contributions.

Table A.IV Childhood SES index[a]

	Pooled sample
Rooms per person in the household when 10 years old	0.434***
	(0.00735)
Number of books at home when 10 years old	0.569***
	(0.00460)
Main breadwinner's occupation when 10 (in ISCO-88 skill levels)	0.432***
	(0.00742)
Number of facilities in the household when 10 years old (range 0-5)	0.548***
	(0.00511)
Explained variance	0.505
N	14973

[a] The table shows the factor loadings on the first principal component with its explained variance. Standard errors are in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.V Childhood health index (HI)[a]

	Pooled sample
Childhood SRH (1 = excellent, 4 = fair, poor or changing)	0.609***
	(0.0111)
Number of respiratory problems	0.422***
	(0.0172)
Number of infectious diseases	0.263***
	(0.0213)
Number of cardiovascular diseases	0.211***
	(0.0220)
Number of neurological and psychiatric diseases	0.365***
	(0.0190)
Number of disorders of the sense organs	0.346***
	(0.0190)
Number of neoplastic diseases and other serious health condition	0.290***
	(0.0221)
Explained variance	0.203
N	14973

[a] The table shows the factor loadings on the first principal component with its explained variance. Standard errors are in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.VI Log lifetime earnings regressions over the life cycle for men and women in Europe (I)[a]

Men	Until age 25 (1)	Until age 30 (2)	Until age 35 (3)	Until age 40 (4)	Until age 45 (5)	Until age 50 (6)	Until age 55 (7)	Until age 60 (8)	Until age 65 (9)
Low childhood HI	-0.084***	-0.085***	-0.075***	-0.064***	-0.059***	-0.055***	-0.056***	-0.061***	-0.061***
	(0.030)	(0.025)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.020)
Medium childhood HI	-0.085***	-0.091***	-0.078***	-0.072***	-0.061***	-0.053**	-0.050**	-0.046**	-0.045**
	(0.032)	(0.027)	(0.024)	(0.023)	(0.022)	(0.021)	(0.021)	(0.021)	(0.021)
Low childhood SES	0.230***	0.089***	-0.056**	-0.124***	-0.162***	-0.189***	-0.210***	-0.225***	-0.239***
	(0.034)	(0.029)	(0.025)	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)
Medium childhood SES	0.241***	0.132***	0.026	-0.027	-0.053***	-0.073***	-0.082***	-0.098***	-0.106***
	(0.031)	(0.025)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
R-squared	0.144	0.161	0.192	0.202	0.213	0.220	0.231	0.238	0.247
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803
Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.045	-0.060**	-0.070**	-0.063**	-0.084***	-0.085***	-0.079***	-0.080***	-0.077***
	(0.031)	(0.029)	(0.028)	(0.028)	(0.028)	(0.028)	(0.027)	(0.027)	(0.027)
Medium childhood HI	0.003	-0.034	-0.033	-0.035	-0.054*	-0.046	-0.045	-0.042	-0.040
	(0.033)	(0.031)	(0.029)	(0.030)	(0.030)	(0.029)	(0.029)	(0.029)	(0.029)
Low childhood SES	-0.014	-0.192***	-0.286***	-0.314***	-0.332***	-0.371***	-0.392***	-0.411***	-0.421***
	(0.033)	(0.032)	(0.031)	(0.032)	(0.031)	(0.031)	(0.031)	(0.030)	(0.030)
Medium childhood SES	0.052*	-0.050*	-0.119***	-0.146***	-0.154***	-0.173***	-0.183***	-0.194***	-0.203***
	(0.029)	(0.027)	(0.026)	(0.026)	(0.026)	(0.026)	(0.025)	(0.025)	(0.025)
R-squared	0.159	0.159	0.163	0.157	0.153	0.156	0.161	0.173	0.181
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Based on the estimation of linear models on the logarithm of accumulated earnings at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.VII Log lifetime earnings regressions over the life cycle for men and women in Europe (II)[a]

Men	Until age 25	Until age 30	Until age 35	Until age 40	Until age 45	Until age 50	Until age 55	Until age 60	Until age 65
Low HI * Low SES	0.165***	0.024	-0.120***	-0.181***	-0.216***	-0.243***	-0.269***	-0.292***	-0.308***
	(0.055)	(0.047)	(0.040)	(0.038)	(0.037)	(0.037)	(0.036)	(0.036)	(0.035)
Low HI * Medium SES	0.147***	0.043	-0.070**	-0.114***	-0.134***	-0.149***	-0.158***	-0.177***	-0.182***
	(0.051)	(0.042)	(0.035)	(0.033)	(0.033)	(0.032)	(0.031)	(0.031)	(0.031)
Low HI * High SES	-0.124**	-0.101**	-0.100***	-0.100***	-0.096***	-0.097***	-0.098***	-0.098***	-0.097***
	(0.052)	(0.041)	(0.033)	(0.032)	(0.031)	(0.031)	(0.030)	(0.030)	(0.029)
Medium HI * Low SES	0.109*	-0.018	-0.158***	-0.225***	-0.252***	-0.274***	-0.290***	-0.298***	-0.308***
	(0.058)	(0.049)	(0.042)	(0.040)	(0.038)	(0.037)	(0.036)	(0.036)	(0.035)
Medium HI * Medium SES	0.149***	0.036	-0.056	-0.109***	-0.126***	-0.140***	-0.148***	-0.156***	-0.164***
	(0.054)	(0.046)	(0.038)	(0.036)	(0.035)	(0.035)	(0.034)	(0.033)	(0.033)
Medium HI * High SES	-0.063	-0.070	-0.088**	-0.084**	-0.077**	-0.070**	-0.072**	-0.069**	-0.068**
	(0.059)	(0.047)	(0.039)	(0.037)	(0.036)	(0.035)	(0.034)	(0.034)	(0.034)
High HI * Low SES	0.214***	0.081*	-0.079**	-0.154***	-0.193***	-0.222***	-0.243***	-0.255***	-0.267***
	(0.055)	(0.047)	(0.040)	(0.038)	(0.037)	(0.036)	(0.036)	(0.035)	(0.035)
High HI * Medium SES	0.228***	0.137***	0.015	-0.047	-0.075**	-0.102***	-0.114***	-0.129***	-0.136***
	(0.052)	(0.044)	(0.037)	(0.035)	(0.034)	(0.034)	(0.033)	(0.032)	(0.032)
Buffering hypothesis[b]	0.845	0.756	0.868	0.923	0.928	0.938	0.934	0.899	0.881
R-squared	0.145	0.161	0.193	0.202	0.214	0.220	0.232	0.238	0.247
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803

Table A.VII Continued

Women	Until age 25	Until age 30	Until age 35	Until age 40	Until age 45	Until age 50	Until age 55	Until age 60	Until age 65
Low HI * Low SES	-0.053	-0.256***	-0.357***	-0.378***	-0.415***	-0.451***	-0.469***	-0.485***	-0.492***
	(0.053)	(0.049)	(0.049)	(0.051)	(0.048)	(0.048)	(0.048)	(0.048)	(0.048)
Low HI * Medium SES	0.018	-0.142***	-0.204***	-0.226***	-0.247***	-0.266***	-0.268***	-0.272***	-0.279***
	(0.049)	(0.045)	(0.043)	(0.045)	(0.043)	(0.043)	(0.042)	(0.042)	(0.042)
Low HI * High SES	0.020	-0.036	-0.022	-0.009	-0.027	-0.018	-0.008	-0.001	-0.000
	(0.050)	(0.045)	(0.043)	(0.044)	(0.042)	(0.041)	(0.040)	(0.040)	(0.040)
Medium HI * Low SES	0.055	-0.195***	-0.268***	-0.298***	-0.333***	-0.356***	-0.371***	-0.388***	-0.400***
	(0.059)	(0.056)	(0.054)	(0.057)	(0.055)	(0.055)	(0.054)	(0.054)	(0.054)
Medium HI * Medium SES	0.083	-0.070	-0.126***	-0.149***	-0.175***	-0.182***	-0.186***	-0.188***	-0.193***
	(0.052)	(0.047)	(0.046)	(0.047)	(0.045)	(0.045)	(0.044)	(0.044)	(0.044)
Medium HI * High SES	0.003	-0.086*	-0.070	-0.073	-0.082*	-0.072	-0.072	-0.057	-0.055
	(0.056)	(0.050)	(0.046)	(0.047)	(0.046)	(0.044)	(0.044)	(0.043)	(0.043)
High HI * Low SES	0.015	-0.226***	-0.289***	-0.312***	-0.320***	-0.354***	-0.368***	-0.371***	-0.381***
	(0.060)	(0.056)	(0.054)	(0.056)	(0.053)	(0.053)	(0.052)	(0.052)	(0.052)
High HI * Medium SES	0.113**	-0.028	-0.079	-0.105**	-0.109**	-0.118**	-0.128***	-0.136***	-0.147***
	(0.056)	(0.052)	(0.050)	(0.051)	(0.050)	(0.049)	(0.048)	(0.048)	(0.048)
Buffering hypothesis[b]	0.123	0.531	0.251	0.207	0.158	0.121	0.080	0.043	0.047
R-squared	0.160	0.160	0.163	0.158	0.154	0.157	0.162	0.174	0.182
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Based on the estimation of linear models on the logarithm of accumulated earnings equations at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies.

[b] The buffering hypothesis shows the resulting p-value when testing $\beta_{HighHI*LowSES} - \beta_{LowHI*LowSES} > \beta_{HighHI*HighSES} - \beta_{LowHI*HighSES}$, where $\beta_{HighHI*HighSES} = 0$. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.VIII Log annual earnings regressions over the life cycle for men and women in Europe[a]

Men	Until age 25 (1)	Until age 30 (2)	Until age 35 (3)	Until age 40 (4)	Until age 45 (5)	Until age 50 (6)	Until age 55 (7)	Until age 60 (8)	Until age 65 (9)
Low childhood HI	-0.083***	-0.070***	-0.065***	-0.058***	-0.055***	-0.052***	-0.052***	-0.051***	-0.051***
	(0.026)	(0.023)	(0.021)	(0.021)	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)
Medium childhood HI	-0.071**	-0.061**	-0.057**	-0.056**	-0.050**	-0.048**	-0.046**	-0.043**	-0.042**
	(0.029)	(0.025)	(0.023)	(0.022)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)
Low childhood SES	-0.208***	-0.265***	-0.285***	-0.290***	-0.290***	-0.291***	-0.290***	-0.286***	-0.284***
	(0.030)	(0.026)	(0.024)	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)
Medium childhood SES	-0.053**	-0.107***	-0.132***	-0.139***	-0.144***	-0.146***	-0.144***	-0.145***	-0.145***
	(0.026)	(0.023)	(0.021)	(0.020)	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
R-squared	0.216	0.232	0.242	0.239	0.240	0.239	0.242	0.243	0.243
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803
Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.044	-0.061**	-0.054**	-0.048**	-0.049**	-0.047**	-0.042*	-0.039*	-0.039*
	(0.028)	(0.026)	(0.024)	(0.024)	(0.023)	(0.023)	(0.022)	(0.022)	(0.022)
Medium childhood HI	0.006	-0.027	-0.018	-0.013	-0.016	-0.014	-0.015	-0.013	-0.014
	(0.030)	(0.027)	(0.025)	(0.025)	(0.025)	(0.024)	(0.024)	(0.023)	(0.023)
Low childhood SES	-0.329***	-0.333***	-0.346***	-0.332***	-0.329***	-0.329***	-0.328***	-0.324***	-0.323***
	(0.030)	(0.029)	(0.027)	(0.027)	(0.026)	(0.025)	(0.025)	(0.024)	(0.024)
Medium childhood SES	-0.167***	-0.181***	-0.195***	-0.192***	-0.182***	-0.179***	-0.176***	-0.173***	-0.172***
	(0.025)	(0.023)	(0.022)	(0.021)	(0.021)	(0.020)	(0.020)	(0.019)	(0.019)
R-squared	0.245	0.242	0.248	0.236	0.224	0.218	0.215	0.212	0.212
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Based on the estimation of linear models on the logarithm of average annual earnings at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.IX Log working years regressions over the life cycle for men and women in Europe (I)[a]

	Until age 25	Until age 30	Until age 35	Until age 40	Until age 45	Until age 50	Until age 55	Until age 60	Until age 65
Men	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.000	-0.015	-0.010	-0.007	-0.004	-0.002	-0.004	-0.010*	-0.010*
	(0.016)	(0.013)	(0.009)	(0.007)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
Medium childhood HI	-0.013	-0.030**	-0.021**	-0.016**	-0.011*	-0.005	-0.004	-0.002	-0.003
	(0.017)	(0.013)	(0.009)	(0.007)	(0.006)	(0.006)	(0.005)	(0.006)	(0.006)
Low childhood SES	0.438***	0.354***	0.229***	0.166***	0.128***	0.101***	0.080***	0.061***	0.045***
	(0.020)	(0.015)	(0.010)	(0.008)	(0.006)	(0.006)	(0.006)	(0.006)	(0.007)
Medium childhood SES	0.294***	0.239***	0.158***	0.111***	0.090***	0.072***	0.062***	0.047***	0.040***
	(0.019)	(0.014)	(0.009)	(0.007)	(0.006)	(0.005)	(0.005)	(0.006)	(0.006)
R-squared	0.133	0.125	0.121	0.106	0.095	0.081	0.066	0.056	0.063
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803
Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.001	0.001	-0.016	-0.015	-0.034**	-0.038***	-0.037***	-0.041***	-0.038***
	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Medium childhood HI	-0.003	-0.008	-0.015	-0.022	-0.038**	-0.033**	-0.029*	-0.029*	-0.026*
	(0.017)	(0.016)	(0.015)	(0.016)	(0.016)	(0.015)	(0.015)	(0.015)	(0.016)
Low childhood SES	0.315***	0.140***	0.060***	0.018	-0.003	-0.041**	-0.064***	-0.086***	-0.097***
	(0.017)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)
Medium childhood SES	0.220***	0.130***	0.076***	0.046***	0.028**	0.006	-0.007	-0.021	-0.031**
	(0.016)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
R-squared	0.113	0.067	0.087	0.116	0.135	0.156	0.168	0.164	0.159
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Based on the estimation of linear models on the logarithm of accumulated working years at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.X Regressions on the number of employment gaps over the life cycle for men and women in Europe[a]

	Until age 25	Until age 30	Until age 35	Until age 40	Until age 45	Until age 50	Until age 55	Until age 60	Until age 65
Men	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.110	0.276	0.287	0.323	0.248	0.319	0.477*	0.514**	0.299*
	(0.149)	(0.169)	(0.186)	(0.207)	(0.232)	(0.259)	(0.271)	(0.238)	(0.173)
Medium childhood HI	-0.116	-0.100	-0.087	-0.234	-0.395	-0.513*	-0.316	-0.279	-0.161
	(0.159)	(0.179)	(0.196)	(0.220)	(0.247)	(0.278)	(0.288)	(0.253)	(0.178)
Low childhood SES	0.319*	0.334*	0.487**	0.707***	0.902***	1.254***	1.635***	1.635***	0.949***
	(0.171)	(0.190)	(0.212)	(0.238)	(0.267)	(0.301)	(0.315)	(0.277)	(0.199)
Medium childhood SES	-0.070	-0.210	-0.233	-0.245	-0.337	-0.318	-0.169	0.196	-0.045
	(0.164)	(0.182)	(0.201)	(0.224)	(0.251)	(0.280)	(0.292)	(0.252)	(0.168)
Pseudo R-squared	0.018	0.015	0.013	0.013	0.014	0.016	0.017	0.016	0.016
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803
Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.192	0.357**	0.504**	0.622**	0.615*	0.610*	0.719*	0.667*	0.526
	(0.141)	(0.170)	(0.220)	(0.270)	(0.315)	(0.354)	(0.388)	(0.388)	(0.366)
Medium childhood HI	-0.138	-0.011	0.099	0.078	-0.130	-0.277	-0.217	-0.309	-0.282
	(0.156)	(0.192)	(0.248)	(0.303)	(0.355)	(0.399)	(0.436)	(0.431)	(0.404)
Low childhood SES	1.968***	2.395***	2.830***	3.257***	3.747***	4.324***	5.033***	5.064***	4.614***
	(0.157)	(0.193)	(0.250)	(0.308)	(0.361)	(0.408)	(0.447)	(0.442)	(0.425)
Medium childhood SES	0.989***	1.165***	1.355***	1.571***	1.820***	2.120***	2.511***	2.586***	2.346***
	(0.142)	(0.169)	(0.216)	(0.265)	(0.311)	(0.352)	(0.385)	(0.380)	(0.355)
Pseudo R-squared	0.034	0.041	0.045	0.045	0.045	0.044	0.042	0.037	0.042
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Marginal effects (conditional on being uncensored) obtained from the estimation of Tobit models on the (accumulated) number of employment gaps at different ages over an individual's working life. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.XI Regressions on the probability of leaving the labor market over the life cycle for men and women in Europe[a]

	Until age 25	Until age 30	Until age 35	Until age 40	Until age 45	Until age 50	Until age 55	Until age 60	Until age 65
Men	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.000	-0.001*	-0.001	0.001	0.000	-0.001	0.000	0.007	-0.006
	(0.000)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.008)	(0.012)	(0.008)
Medium childhood HI	0.000	-0.000	-0.000	-0.002	-0.003	0.001	-0.001	0.009	0.010
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.005)	(0.008)	(0.012)	(0.008)
Low childhood SES	0.001	0.000	-0.000	0.001	0.006*	0.006	0.027***	0.087***	0.017**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.005)	(0.009)	(0.014)	(0.009)
Medium childhood SES	0.000	-0.000	-0.000	0.002	0.002	0.004	0.015**	0.051***	0.013*
	(0.000)	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.007)	(0.012)	(0.008)
R-squared	0.007	0.007	0.008	0.007	0.010	0.027	0.083	0.182	0.144
Observations	7060	7693	7772	7793	7798	7800	7800	7803	7803
Women	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.002**	0.004***	0.005***	0.008***	0.014***	0.020***	0.008	-0.011	0.003
	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.005)	(0.009)	(0.011)	(0.007)
Medium childhood HI	0.002*	0.003**	0.004**	0.006**	0.009**	0.007	-0.002	-0.024*	0.005
	(0.001)	(0.001)	(0.002)	(0.003)	(0.004)	(0.006)	(0.010)	(0.012)	(0.007)
Low childhood SES	0.002	0.001	0.002	0.003	0.005	0.004	0.028***	0.037***	0.006
	(0.002)	(0.002)	(0.002)	(0.004)	(0.005)	(0.007)	(0.010)	(0.013)	(0.008)
Medium childhood SES	0.001*	-0.000	0.001	0.001	0.006*	0.003	0.027***	0.046***	0.004
	(0.001)	(0.001)	(0.002)	(0.002)	(0.004)	(0.005)	(0.008)	(0.011)	(0.007)
R-squared	0.008	0.008	0.006	0.008	0.014	0.028	0.136	0.404	0.144
Observations	6505	6849	6972	7063	7128	7160	7167	7169	7170

[a] Based on the estimation of linear models on the probability of leaving the labor market at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: *** p<0.01 ** p<0.05 * p<0.10.

Table A.XII Log lifetime earnings regressions over the life cycle in Nordic, Continental, Mediterranean and Transitional countries (Men)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.125	-0.151*	-0.108*	-0.096	-0.086	-0.082	-0.085	-0.082	-0.080
	(0.080)	(0.064)	(0.054)	(0.052)	(0.050)	(0.049)	(0.048)	(0.046)	(0.045)
Medium childhood HI	-0.125	-0.139*	-0.134*	-0.125*	-0.121*	-0.111*	-0.110*	-0.110*	-0.112*
	(0.072)	(0.059)	(0.050)	(0.048)	(0.047)	(0.046)	(0.044)	(0.043)	(0.042)
Low childhood SES	0.146	0.049	-0.080	-0.145*	-0.177*	-0.209*	-0.220*	-0.230*	-0.238*
	(0.087)	(0.069)	(0.058)	(0.056)	(0.054)	(0.053)	(0.052)	(0.050)	(0.049)
Medium childhood SES	0.109	0.111	0.024	-0.035	-0.065	-0.088	-0.099*	-0.106*	-0.110*
	(0.082)	(0.064)	(0.053)	(0.051)	(0.049)	(0.048)	(0.046)	(0.044)	(0.043)
R-squared	0.036	0.033	0.039	0.045	0.053	0.064	0.076	0.075	0.074
Observations	1181	1336	1360	1366	1367	1368	1368	1368	1368
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.047	-0.027	-0.035	-0.026	-0.029	-0.027	-0.026	-0.027	-0.028
	(0.039)	(0.031)	(0.028)	(0.027)	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)
Medium childhood HI	-0.035	-0.006	-0.018	-0.027	-0.031	-0.032	-0.032	-0.033	-0.035
	(0.043)	(0.034)	(0.032)	(0.030)	(0.029)	(0.028)	(0.028)	(0.028)	(0.028)
Low childhood SES	0.251*	0.093*	-0.055	-0.128*	-0.168*	-0.197*	-0.219*	-0.239*	-0.253*
	(0.044)	(0.034)	(0.031)	(0.030)	(0.029)	(0.028)	(0.028)	(0.028)	(0.028)
Medium childhood SES	0.215*	0.102*	-0.001	-0.051*	-0.075*	-0.089*	-0.095*	-0.103*	-0.110*
	(0.040)	(0.031)	(0.027)	(0.026)	(0.025)	(0.024)	(0.024)	(0.024)	(0.024)
R-squared	0.120	0.105	0.116	0.122	0.133	0.138	0.142	0.148	0.156
Observations	3184	3455	3480	3486	3486	3486	3486	3486	3486
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.138	-0.155*	-0.155*	-0.137*	-0.129*	-0.124*	-0.128*	-0.147*	-0.148*
	(0.076)	(0.066)	(0.057)	(0.053)	(0.051)	(0.049)	(0.047)	(0.048)	(0.047)
Medium childhood HI	0.022	0.008	0.007	0.007	0.005	0.010	0.006	0.009	0.008
	(0.077)	(0.065)	(0.057)	(0.053)	(0.051)	(0.049)	(0.047)	(0.046)	(0.045)
Low childhood SES	0.167*	0.086	-0.050	-0.095	-0.126*	-0.139*	-0.158*	-0.170*	-0.179*
	(0.078)	(0.066)	(0.056)	(0.052)	(0.050)	(0.048)	(0.047)	(0.046)	(0.046)
Medium childhood SES	0.069	0.045	-0.049	-0.087	-0.107*	-0.114*	-0.127*	-0.143*	-0.142*
	(0.076)	(0.064)	(0.054)	(0.051)	(0.049)	(0.048)	(0.046)	(0.046)	(0.045)
R-squared	0.092	0.101	0.103	0.110	0.115	0.114	0.120	0.120	0.128
Observations	1686	1867	1894	1902	1906	1907	1907	1910	1910
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.038	0.028	0.060	0.061	0.064	0.068	0.059	0.050	0.050
	(0.069)	(0.059)	(0.056)	(0.058)	(0.061)	(0.062)	(0.062)	(0.062)	(0.061)
Medium childhood HI	0.072	0.053	0.072	0.062	0.060	0.061	0.060	0.062	0.063
	(0.066)	(0.058)	(0.056)	(0.057)	(0.058)	(0.058)	(0.058)	(0.058)	(0.059)
Low childhood SES	0.082	-0.069	-0.141*	-0.162*	-0.182*	-0.201*	-0.213*	-0.214*	-0.218*
	(0.080)	(0.068)	(0.063)	(0.065)	(0.065)	(0.066)	(0.065)	(0.064)	(0.064)
Medium childhood SES	0.195*	0.054	-0.022	-0.054	-0.076	-0.095	-0.104*	-0.108*	-0.114*
	(0.067)	(0.056)	(0.051)	(0.052)	(0.052)	(0.053)	(0.052)	(0.051)	(0.051)
R-squared	0.151	0.155	0.156	0.127	0.106	0.092	0.088	0.091	0.091
Observations	1009	1035	1038	1039	1039	1039	1039	1039	1039

Table A.XII Continued (Women)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.056	-0.103	-0.068	-0.067	-0.050	-0.066	-0.062	-0.064	-0.067
	(0.076)	(0.068)	(0.062)	(0.059)	(0.057)	(0.057)	(0.054)	(0.052)	(0.052)
Medium childhood HI	-0.009	-0.046	-0.063	-0.076	-0.099	-0.089	-0.107*	-0.109*	-0.112*
	(0.073)	(0.065)	(0.060)	(0.057)	(0.059)	(0.056)	(0.054)	(0.052)	(0.051)
Low childhood SES	0.230*	0.038	-0.071	-0.104	-0.129*	-0.177*	-0.196*	-0.218*	-0.234*
	(0.079)	(0.067)	(0.062)	(0.060)	(0.058)	(0.058)	(0.056)	(0.055)	(0.054)
Medium childhood SES	0.290*	0.110	0.011	-0.018	-0.064	-0.075	-0.077	-0.086	-0.100*
	(0.082)	(0.070)	(0.062)	(0.059)	(0.060)	(0.056)	(0.053)	(0.051)	(0.050)
R-squared	0.043	0.028	0.034	0.040	0.035	0.034	0.036	0.043	0.049
Observations	1312	1405	1427	1444	1462	1468	1469	1469	1469
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.087*	-0.070	-0.092*	-0.075*	-0.079*	-0.076*	-0.067	-0.067	-0.067
	(0.038)	(0.037)	(0.038)	(0.038)	(0.038)	(0.037)	(0.037)	(0.037)	(0.037)
Medium childhood HI	-0.025	-0.028	-0.054	-0.064	-0.072	-0.073	-0.064	-0.062	-0.059
	(0.040)	(0.041)	(0.042)	(0.043)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
Low childhood SES	-0.152*	-0.288*	-0.361*	-0.374*	-0.394*	-0.421*	-0.438*	-0.455*	-0.463*
	(0.041)	(0.040)	(0.041)	(0.042)	(0.041)	(0.041)	(0.041)	(0.042)	(0.042)
Medium childhood SES	-0.005	-0.104*	-0.147*	-0.155*	-0.182*	-0.192*	-0.198*	-0.208*	-0.212*
	(0.037)	(0.037)	(0.037)	(0.038)	(0.038)	(0.037)	(0.037)	(0.037)	(0.037)
R-squared	0.130	0.153	0.166	0.174	0.180	0.190	0.195	0.200	0.201
Observations	3046	3134	3165	3191	3203	3207	3209	3209	3209
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.098	-0.148	-0.184*	-0.137	-0.212*	-0.240*	-0.238*	-0.246*	-0.234*
	(0.092)	(0.088)	(0.080)	(0.085)	(0.079)	(0.079)	(0.078)	(0.079)	(0.079)
Medium childhood HI	0.016	0.017	-0.068	-0.022	-0.133	-0.134	-0.131	-0.140	-0.130
	(0.100)	(0.089)	(0.085)	(0.087)	(0.084)	(0.082)	(0.081)	(0.081)	(0.081)
Low childhood SES	0.185	-0.074	-0.211*	-0.290*	-0.329*	-0.404*	-0.429*	-0.459*	-0.465*
	(0.096)	(0.090)	(0.086)	(0.093)	(0.086)	(0.085)	(0.084)	(0.085)	(0.085)
Medium childhood SES	0.231*	-0.025	-0.078	-0.067	-0.112	-0.167*	-0.180*	-0.178*	-0.185*
	(0.094)	(0.090)	(0.083)	(0.083)	(0.081)	(0.080)	(0.078)	(0.078)	(0.078)
R-squared	0.116	0.117	0.135	0.134	0.147	0.144	0.149	0.156	0.155
Observations	969	1089	1146	1189	1218	1239	1243	1245	1246
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.005	-0.015	0.044	0.031	0.010	0.031	0.026	0.019	0.016
	(0.062)	(0.058)	(0.058)	(0.058)	(0.062)	(0.062)	(0.061)	(0.061)	(0.061)
Medium childhood HI	-0.006	-0.087	-0.003	0.010	0.019	0.043	0.043	0.042	0.039
	(0.062)	(0.060)	(0.055)	(0.055)	(0.058)	(0.058)	(0.058)	(0.057)	(0.057)
Low childhood SES	-0.180*	-0.287*	-0.321*	-0.275*	-0.285*	-0.281*	-0.280*	-0.297*	-0.300*
	(0.076)	(0.075)	(0.065)	(0.070)	(0.069)	(0.068)	(0.068)	(0.067)	(0.067)
Medium childhood SES	-0.013	-0.017	-0.068	-0.061	-0.064	-0.060	-0.061	-0.072	-0.073
	(0.058)	(0.056)	(0.050)	(0.052)	(0.051)	(0.050)	(0.049)	(0.049)	(0.049)
R-squared	0.222	0.239	0.236	0.199	0.172	0.157	0.156	0.164	0.165
Observations	1178	1221	1234	1239	1245	1246	1246	1246	1246

[a] Based on the estimation of linear models on the logarithm of accumulated earnings at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: * $p<0.05$.

Table A.XIII Log annual earnings regressions over the life cycle in Nordic, Continental, Mediterranean and Transitional countries (Men)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.111	-0.060	-0.071	-0.059	-0.060	-0.063	-0.068	-0.065	-0.063
	(0.071)	(0.060)	(0.054)	(0.052)	(0.051)	(0.050)	(0.048)	(0.047)	(0.046)
Medium childhood HI	-0.116	-0.105	-0.109*	-0.103*	-0.097*	-0.094*	-0.093*	-0.092*	-0.090*
	(0.063)	(0.054)	(0.048)	(0.047)	(0.047)	(0.046)	(0.044)	(0.043)	(0.042)
Low childhood SES	-0.331*	-0.370*	-0.357*	-0.346*	-0.341*	-0.332*	-0.324*	-0.313*	-0.303*
	(0.077)	(0.064)	(0.057)	(0.056)	(0.055)	(0.054)	(0.052)	(0.050)	(0.049)
Medium childhood SES	-0.144*	-0.190*	-0.174*	-0.175*	-0.177*	-0.175*	-0.172*	-0.167*	-0.162*
	(0.070)	(0.059)	(0.052)	(0.050)	(0.049)	(0.048)	(0.046)	(0.045)	(0.044)
R-squared	0.047	0.057	0.063	0.062	0.066	0.071	0.079	0.078	0.075
Observations	1181	1336	1360	1366	1367	1368	1368	1368	1368
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.023	-0.023	-0.020	-0.016	-0.019	-0.019	-0.017	-0.015	-0.016
	(0.034)	(0.029)	(0.028)	(0.027)	(0.026)	(0.025)	(0.025)	(0.025)	(0.025)
Medium childhood HI	-0.016	-0.012	-0.020	-0.021	-0.026	-0.026	-0.026	-0.027	-0.028
	(0.037)	(0.033)	(0.031)	(0.030)	(0.029)	(0.028)	(0.028)	(0.027)	(0.027)
Low childhood SES	-0.190*	-0.278*	-0.293*	-0.303*	-0.305*	-0.308*	-0.307*	-0.306*	-0.303*
	(0.038)	(0.032)	(0.031)	(0.030)	(0.029)	(0.029)	(0.028)	(0.028)	(0.028)
Medium childhood SES	-0.073*	-0.147*	-0.158*	-0.165*	-0.167*	-0.167*	-0.165*	-0.162*	-0.161*
	(0.033)	(0.027)	(0.026)	(0.025)	(0.025)	(0.025)	(0.024)	(0.024)	(0.024)
R-squared	0.201	0.188	0.182	0.176	0.179	0.177	0.174	0.171	0.167
Observations	3184	3455	3480	3486	3486	3486	3486	3486	3486
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.167*	-0.163*	-0.142*	-0.133*	-0.129*	-0.124*	-0.124*	-0.125*	-0.125*
	(0.068)	(0.059)	(0.054)	(0.052)	(0.049)	(0.048)	(0.046)	(0.045)	(0.044)
Medium childhood HI	0.041	0.036	0.034	0.029	0.025	0.022	0.015	0.014	0.011
	(0.070)	(0.060)	(0.055)	(0.052)	(0.049)	(0.047)	(0.046)	(0.044)	(0.043)
Low childhood SES	-0.223*	-0.232*	-0.243*	-0.237*	-0.233*	-0.231*	-0.232*	-0.227*	-0.225*
	(0.070)	(0.060)	(0.054)	(0.051)	(0.049)	(0.047)	(0.045)	(0.044)	(0.043)
Medium childhood SES	-0.186*	-0.196*	-0.206*	-0.194*	-0.188*	-0.184*	-0.183*	-0.181*	-0.178*
	(0.067)	(0.058)	(0.053)	(0.050)	(0.048)	(0.047)	(0.045)	(0.044)	(0.043)
R-squared	0.135	0.143	0.142	0.141	0.140	0.140	0.142	0.140	0.138
Observations	1686	1867	1894	1902	1906	1907	1907	1910	1910
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.038	0.038	0.053	0.055	0.055	0.054	0.049	0.046	0.047
	(0.059)	(0.055)	(0.053)	(0.057)	(0.059)	(0.060)	(0.060)	(0.059)	(0.059)
Medium childhood HI	0.047	0.046	0.051	0.044	0.036	0.030	0.026	0.027	0.030
	(0.055)	(0.053)	(0.053)	(0.055)	(0.056)	(0.057)	(0.057)	(0.057)	(0.057)
Low childhood SES	-0.113	-0.190*	-0.207*	-0.212*	-0.211*	-0.214*	-0.215*	-0.204*	-0.199*
	(0.067)	(0.060)	(0.059)	(0.062)	(0.064)	(0.064)	(0.063)	(0.062)	(0.061)
Medium childhood SES	0.002	-0.071	-0.108*	-0.125*	-0.129*	-0.131*	-0.130*	-0.124*	-0.125*
	(0.055)	(0.051)	(0.049)	(0.051)	(0.052)	(0.053)	(0.052)	(0.051)	(0.050)
R-squared	0.176	0.153	0.142	0.115	0.094	0.076	0.067	0.062	0.061
Observations	1009	1035	1038	1039	1039	1039	1039	1039	1039

Table A.XIII Continued (Women)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.029	-0.064	-0.061	-0.046	-0.041	-0.043	-0.037	-0.031	-0.033
	(0.068)	(0.061)	(0.054)	(0.052)	(0.050)	(0.049)	(0.047)	(0.045)	(0.044)
Medium childhood HI	-0.038	-0.054	-0.065	-0.058	-0.069	-0.068	-0.070	-0.065	-0.064
	(0.068)	(0.059)	(0.053)	(0.050)	(0.048)	(0.047)	(0.045)	(0.043)	(0.042)
Low childhood SES	-0.199*	-0.236*	-0.234*	-0.231*	-0.221*	-0.219*	-0.216*	-0.214*	-0.214*
	(0.071)	(0.062)	(0.055)	(0.053)	(0.051)	(0.050)	(0.048)	(0.047)	(0.046)
Medium childhood SES	0.031	-0.032	-0.056	-0.063	-0.073	-0.068	-0.072	-0.075	-0.077
	(0.072)	(0.062)	(0.055)	(0.051)	(0.050)	(0.048)	(0.046)	(0.044)	(0.042)
R-squared	0.039	0.041	0.047	0.045	0.040	0.038	0.040	0.043	0.044
Observations	1312	1405	1427	1444	1462	1468	1469	1469	1469
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.069*	-0.050	-0.052	-0.051	-0.052	-0.049	-0.043	-0.043	-0.043
	(0.034)	(0.032)	(0.031)	(0.030)	(0.029)	(0.029)	(0.028)	(0.028)	(0.028)
Medium childhood HI	-0.052	-0.053	-0.064	-0.068*	-0.072*	-0.070*	-0.066*	-0.064*	-0.063*
	(0.035)	(0.034)	(0.034)	(0.033)	(0.032)	(0.032)	(0.031)	(0.031)	(0.031)
Low childhood SES	-0.423*	-0.411*	-0.406*	-0.392*	-0.382*	-0.376*	-0.373*	-0.368*	-0.365*
	(0.036)	(0.034)	(0.033)	(0.032)	(0.032)	(0.031)	(0.031)	(0.031)	(0.031)
Medium childhood SES	-0.199*	-0.200*	-0.194*	-0.188*	-0.187*	-0.186*	-0.186*	-0.183*	-0.181*
	(0.031)	(0.030)	(0.029)	(0.028)	(0.028)	(0.027)	(0.027)	(0.027)	(0.027)
R-squared	0.239	0.228	0.221	0.216	0.213	0.209	0.204	0.200	0.197
Observations	3046	3134	3165	3191	3203	3207	3209	3209	3209
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.119	-0.207*	-0.159*	-0.134	-0.139*	-0.142*	-0.135*	-0.130*	-0.130*
	(0.084)	(0.077)	(0.072)	(0.070)	(0.066)	(0.063)	(0.062)	(0.061)	(0.060)
Medium childhood HI	0.050	-0.044	-0.018	-0.019	-0.035	-0.032	-0.036	-0.035	-0.034
	(0.090)	(0.080)	(0.076)	(0.074)	(0.070)	(0.067)	(0.066)	(0.065)	(0.064)
Low childhood SES	-0.227*	-0.209*	-0.233*	-0.217*	-0.225*	-0.256*	-0.264*	-0.264*	-0.264*
	(0.089)	(0.082)	(0.078)	(0.077)	(0.072)	(0.069)	(0.068)	(0.067)	(0.067)
Medium childhood SES	-0.050	-0.054	-0.080	-0.051	-0.090	-0.105	-0.113	-0.110	-0.109
	(0.084)	(0.077)	(0.073)	(0.070)	(0.065)	(0.062)	(0.061)	(0.060)	(0.059)
R-squared	0.174	0.168	0.161	0.145	0.143	0.134	0.130	0.128	0.128
Observations	969	1089	1146	1189	1218	1239	1243	1245	1246
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.021	0.051	0.090	0.087	0.073	0.073	0.072	0.069	0.065
	(0.054)	(0.053)	(0.053)	(0.055)	(0.059)	(0.059)	(0.059)	(0.059)	(0.058)
Medium childhood HI	0.031	0.026	0.060	0.072	0.073	0.070	0.061	0.059	0.057
	(0.054)	(0.052)	(0.048)	(0.050)	(0.055)	(0.056)	(0.055)	(0.055)	(0.054)
Low childhood SES	-0.298*	-0.312*	-0.325*	-0.294*	-0.294*	-0.283*	-0.270*	-0.268*	-0.268*
	(0.068)	(0.067)	(0.059)	(0.063)	(0.063)	(0.063)	(0.062)	(0.062)	(0.061)
Medium childhood SES	-0.125*	-0.111*	-0.121*	-0.101*	-0.084	-0.081	-0.072	-0.070	-0.068
	(0.052)	(0.051)	(0.046)	(0.047)	(0.047)	(0.047)	(0.046)	(0.046)	(0.045)
R-squared	0.206	0.199	0.194	0.156	0.126	0.106	0.098	0.096	0.096
Observations	1178	1221	1234	1239	1245	1246	1246	1246	1246

[a] Based on the estimation of linear models on the logarithm of average annual earnings at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: * p<0.05.

Table A.XIV Log working years regressions over the life cycle in Nordic, Continental, Mediterranean and Transitional countries (Men)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.014	-0.091*	-0.037	-0.036	-0.026	-0.020	-0.017	-0.017	-0.017
	(0.045)	(0.037)	(0.023)	(0.020)	(0.014)	(0.012)	(0.011)	(0.011)	(0.011)
Medium childhood HI	-0.009	-0.034	-0.026	-0.022	-0.025	-0.016	-0.017	-0.019	-0.022
	(0.040)	(0.031)	(0.022)	(0.017)	(0.015)	(0.012)	(0.011)	(0.011)	(0.012)
Low childhood SES	0.477*	0.419*	0.276*	0.201*	0.164*	0.124*	0.104*	0.082*	0.065*
	(0.048)	(0.039)	(0.026)	(0.020)	(0.018)	(0.015)	(0.014)	(0.013)	(0.014)
Medium childhood SES	0.254*	0.301*	0.197*	0.140*	0.112*	0.086*	0.073*	0.061*	0.051*
	(0.047)	(0.036)	(0.024)	(0.020)	(0.016)	(0.012)	(0.011)	(0.011)	(0.012)
R-squared	0.154	0.152	0.140	0.118	0.118	0.103	0.096	0.082	0.074
Observations	1181	1336	1360	1366	1367	1368	1368	1368	1368
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.025	-0.005	-0.015	-0.011	-0.009	-0.009	-0.009	-0.012	-0.012
	(0.024)	(0.018)	(0.013)	(0.009)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Medium childhood HI	-0.019	0.005	0.002	-0.005	-0.005	-0.005	-0.006	-0.007	-0.007
	(0.025)	(0.019)	(0.013)	(0.010)	(0.008)	(0.008)	(0.007)	(0.008)	(0.008)
Low childhood SES	0.441*	0.371*	0.238*	0.175*	0.137*	0.110*	0.089*	0.066*	0.050*
	(0.027)	(0.020)	(0.013)	(0.010)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
Medium childhood SES	0.289*	0.248*	0.157*	0.113*	0.092*	0.078*	0.069*	0.060*	0.052*
	(0.027)	(0.021)	(0.014)	(0.010)	(0.008)	(0.007)	(0.007)	(0.007)	(0.008)
R-squared	0.141	0.145	0.142	0.132	0.130	0.115	0.089	0.057	0.050
Observations	3184	3455	3480	3486	3486	3486	3486	3486	3486
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.029	0.008	-0.013	-0.003	0.000	-0.000	-0.004	-0.023	-0.024
	(0.036)	(0.029)	(0.022)	(0.016)	(0.014)	(0.013)	(0.013)	(0.017)	(0.016)
Medium childhood HI	-0.019	-0.028	-0.027	-0.022	-0.020	-0.012	-0.008	-0.005	-0.003
	(0.038)	(0.029)	(0.020)	(0.016)	(0.014)	(0.012)	(0.011)	(0.012)	(0.012)
Low childhood SES	0.390*	0.318*	0.192*	0.142*	0.108*	0.093*	0.074*	0.057*	0.046*
	(0.040)	(0.031)	(0.021)	(0.015)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)
Medium childhood SES	0.255*	0.241*	0.157*	0.107*	0.081*	0.070*	0.056*	0.038*	0.036*
	(0.041)	(0.030)	(0.020)	(0.016)	(0.013)	(0.012)	(0.012)	(0.015)	(0.014)
R-squared	0.159	0.150	0.141	0.128	0.107	0.095	0.070	0.053	0.060
Observations	1686	1867	1894	1902	1906	1907	1907	1910	1910
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.000	-0.011	0.007	0.006	0.009	0.014	0.010	0.004	0.002
	(0.037)	(0.023)	(0.018)	(0.015)	(0.015)	(0.016)	(0.018)	(0.019)	(0.020)
Medium childhood HI	0.025	0.006	0.021	0.018	0.025	0.031*	0.034*	0.036*	0.033
	(0.035)	(0.024)	(0.018)	(0.015)	(0.014)	(0.015)	(0.016)	(0.018)	(0.019)
Low childhood SES	0.195*	0.121*	0.066*	0.050*	0.029	0.013	0.001	-0.010	-0.020
	(0.041)	(0.030)	(0.020)	(0.018)	(0.016)	(0.016)	(0.018)	(0.019)	(0.020)
Medium childhood SES	0.192*	0.125*	0.085*	0.071*	0.052*	0.036*	0.026	0.017	0.011
	(0.038)	(0.024)	(0.015)	(0.014)	(0.012)	(0.013)	(0.014)	(0.015)	(0.016)
R-squared	0.060	0.073	0.090	0.075	0.073	0.077	0.092	0.114	0.106
Observations	1009	1035	1038	1039	1039	1039	1039	1039	1039

Table A.XIV Continued (Women)[a]

	≤ 25	≤ 30	≤ 35	≤ 40	≤ 45	≤ 50	≤ 55	≤ 60	≤ 65
Nordic	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.027	-0.039	-0.007	-0.021	-0.008	-0.023	-0.025	-0.032	-0.035
	(0.039)	(0.034)	(0.031)	(0.030)	(0.029)	(0.029)	(0.026)	(0.025)	(0.025)
Medium childhood HI	0.030	0.008	0.001	-0.019	-0.030	-0.021	-0.036	-0.044	-0.048
	(0.036)	(0.031)	(0.030)	(0.028)	(0.030)	(0.028)	(0.026)	(0.025)	(0.026)
Low childhood SES	0.429*	0.275*	0.164*	0.128*	0.092*	0.042	0.020	-0.004	-0.020
	(0.040)	(0.033)	(0.032)	(0.031)	(0.029)	(0.029)	(0.028)	(0.027)	(0.028)
Medium childhood SES	0.259*	0.142*	0.066*	0.045	0.009	-0.007	-0.005	-0.011	-0.023
	(0.041)	(0.035)	(0.031)	(0.029)	(0.030)	(0.027)	(0.025)	(0.024)	(0.025)
R-squared	0.140	0.078	0.040	0.046	0.048	0.049	0.047	0.048	0.052
Observations	1312	1405	1427	1444	1462	1468	1469	1469	1469
Continental	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.017	-0.020	-0.040	-0.024	-0.026	-0.028	-0.024	-0.023	-0.024
	(0.020)	(0.020)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)
Medium childhood HI	0.026	0.024	0.010	0.005	-0.000	-0.004	0.001	0.002	0.003
	(0.022)	(0.022)	(0.022)	(0.024)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)
Low childhood SES	0.271*	0.123*	0.045	0.018	-0.011	-0.045	-0.066*	-0.087*	-0.098*
	(0.023)	(0.022)	(0.023)	(0.024)	(0.024)	(0.024)	(0.025)	(0.025)	(0.025)
Medium childhood SES	0.193*	0.096*	0.048*	0.033	0.005	-0.006	-0.013	-0.025	-0.031
	(0.023)	(0.021)	(0.022)	(0.022)	(0.023)	(0.022)	(0.022)	(0.023)	(0.023)
R-squared	0.095	0.040	0.055	0.073	0.085	0.100	0.107	0.107	0.102
Observations	3046	3134	3165	3191	3203	3207	3209	3209	3209
Mediterranean	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	0.021	0.059	-0.025	-0.003	-0.073	-0.097*	-0.103*	-0.116*	-0.105*
	(0.045)	(0.050)	(0.043)	(0.045)	(0.041)	(0.041)	(0.041)	(0.043)	(0.042)
Medium childhood HI	-0.034	0.061	-0.051	-0.004	-0.099*	-0.102*	-0.095*	-0.105*	-0.096*
	(0.051)	(0.049)	(0.046)	(0.047)	(0.044)	(0.042)	(0.040)	(0.041)	(0.042)
Low childhood SES	0.411*	0.135*	0.022	-0.073	-0.104*	-0.148*	-0.165*	-0.195*	-0.201*
	(0.050)	(0.047)	(0.044)	(0.047)	(0.044)	(0.043)	(0.042)	(0.043)	(0.043)
Medium childhood SES	0.281*	0.029	0.002	-0.016	-0.021	-0.062	-0.066	-0.068	-0.075
	(0.048)	(0.047)	(0.043)	(0.042)	(0.042)	(0.041)	(0.039)	(0.040)	(0.041)
R-squared	0.157	0.051	0.025	0.036	0.056	0.064	0.076	0.088	0.086
Observations	969	1089	1146	1189	1218	1239	1243	1245	1246
Transitional	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Low childhood HI	-0.016	-0.066*	-0.046	-0.056*	-0.063*	-0.042*	-0.046*	-0.050*	-0.050*
	(0.030)	(0.025)	(0.024)	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)
Medium childhood HI	-0.037	-0.114*	-0.063*	-0.063*	-0.054*	-0.027	-0.018	-0.018	-0.018
	(0.032)	(0.030)	(0.026)	(0.023)	(0.021)	(0.021)	(0.021)	(0.022)	(0.022)
Low childhood SES	0.118*	0.024	0.004	0.019	0.009	0.002	-0.010	-0.028	-0.031
	(0.034)	(0.033)	(0.026)	(0.026)	(0.025)	(0.023)	(0.024)	(0.025)	(0.025)
Medium childhood SES	0.112*	0.094*	0.053*	0.041*	0.020	0.021	0.011	-0.002	-0.005
	(0.027)	(0.024)	(0.021)	(0.020)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)
R-squared	0.103	0.121	0.122	0.135	0.150	0.178	0.208	0.218	0.218
Observations	1178	1221	1234	1239	1245	1246	1246	1246	1246

[a] Based on the estimation of linear models on the logarithm of accumulated working years at different ages over an individual's working life using OLS. All models include country dummies and birth-year dummies. Robust standard errors in parentheses. Significance levels: * p<0.05.